TONGA SINGLE-USE PLASTIC ROADMAP

PACIFIC OCEAN LITTER PROJECT

Australian Aid

SPREP
Secretariat of the Pacific Regional Environment Programme

NEW ZEALAND FOREIGN AFFAIRS & TRADE
Manatū Aorere

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ACRONYMS

HDPE	high-density polyethylene
LDPE	low-density polyethylene
EPR	extended producer responsibility
PA	polyamide (nylon)
PBAT	polybutylene adipate terephthalate
PBS	polybutylene succinate
PCL	polycaprolactone
PE	polyethylene
PET	polyethylene terephthalate
PHA	polyhydroxyalkanoate
PLA	polylactic acid
PLS	plasticised starch
PP	polypropylene
PS	polystyrene
PTT	polytrimethylene terephthalate
PVC	polyvinyl chloride
SUP	single-use plastic

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Malo áupito.

EXECUTIVE SUMMARY

Addressing the global challenges of plastic pollution and oceanic debris requires a systematic strategy that encompasses the entire plastic lifecycle. Tonga is dedicated to promoting sustainable development by aligning economic advancement with environmental conservation and societal well-being. This Roadmap will act as a guide to navigate the country towards a sustainable plastic economy, guided by the principles of circularity that are influenced by social and cultural considerations.

Creating a circular economy for plastics entails eradicating waste and pollution while maximising the benefits of plastic use in environmental, social, cultural and economic aspects. The objective is to eliminate problematic and unnecessary plastics and guarantee that plastics reaching the end of their life cycle can be reused, recycled, or disposed of sustainably and safely, with minimal impact on the environment. This transition not only supports the environment but also encourages innovation in materials and processes in Tonga, thus improving the country's economic position and providing significant social, cultural, environmental, and public health benefits to its people.

This Roadmap outlines strategies and plans to improve plastic circularity in Tonga. The Roadmap is based on scientific, social, and economic literature review and developed through an inclusive approach, involving public consultations to establish the guiding principles and mechanisms of a circular economy for Tonga. The literature review and consultations evaluated the parameters around policies, regulations, technologies, research and development, and financial opportunities for plastics across the whole life cycle of plastics; importation to Tonga, consumption, disposal and recycling systems within Tonga. It recognises existing and future possibilities to enhance plastic circularity within Tonga's economic and regulatory framework. Engagement with a diverse array of stakeholders, including public and private entities, Civil Society Organisations (CSOs), academics, and financial institutions, was an imperative part of the development process. Inclusivity and collaborative efforts from all sectors of society is crucial, emphasizing the collective nature of this journey towards a plastic-free future for Tonga.

GLOSSARY

Biodegradable plastics

A form of plastic that can be decomposed by natural microorganisms such as bacteria and fungi into biomass, water, carbon dioxide, and/or methane under the standard conditions of its disposal process, as defined by American Society for Testing and Materials (STM).

Circular Economy

Aligned with cradle-to-cradle concepts, the circular economy is defined as an economic structure that seeks to optimise the effective use of resources like plastics through adhering to the fundamental principles of "reduce, reuse, and recycle" whenever possible. Moreover, materials are reengineered to decompose naturally if they exit the cycle.

Compositable Plastic

Plastic that decomposes through natural biological processes while composting, generating CO2, water, inorganic compounds, and biomass at a comparable pace to other compostable materials, without leaving any discernible, visible, or detrimental remnants as per ASTM guidelines.

Deposit Return System

A method involving the incorporation of an extra cost into the price of designated products and packaging. When these items are returned as waste, consumers are reimbursed the additional fee.

End of Life

The end of the product's lifecycle indicates that users no longer derive benefits, signalling the product has reached the point of no longer being useful.

Extended Producer Responsibility

An environmental policy tool places responsibility on producers to manage the entire life cycle of their products, from creation to disposal, including waste collection and recycling.

High density polystyrene

High-density polyethylene (HDPE) is well known for its robust tensile strength and ability to withstand high temperatures. It is widely used in a range of applications, including bottles, durable containers, shopping bags, plastic pipes, water coolers, and fuel tanks, as well as protective coverings for automotive components.

Kerbside Collection

The procedure for collecting household waste in residential areas, commonly seen in urban and suburban environments, requires residents to separate their domestic waste by material type. This task is usually conducted by assigned personnel using specialised vehicles to pick up household waste from bins authorized by the local government and positioned at the kerb.

Low density Polystyrene

Low-density polyethylene (LDPE) is recognised for its outstanding ability to

withstand acids, bases, and vegetable oils. It is characterised by impressive transparency, durability, and pliability, making it ideal for a range of uses such as packaging for products such as meat, poultry, dairy items, snacks, confectionery, frozen foods, and baked goods.

Plastic

A material derived from petroleum that is either synthetic or semi-synthetic.

Polyethylene (PE)

Commonly referred to as PE, this material is used in polyethylene terephthalate (PET), high-density polyethylene (HDPE), and low-density polyethylene (LDPE).

Plastic leakage

The quantity of macro and microplastics that are not effectively recycled or managed at the end of their lifespan, leading to their leakage into the environment.

Polypropylene (PP)

Polypropylene is a plastic deemed safe for food contact. It is used for storing various food items, drinks, and drugs. Additionally, it has applications in manufacturing carpets, roofing materials, and textiles.

Polyethylene terephthalate (PET)

Polyethylene terephthalate, commonly known as PET, is a robust, long-lasting, and recyclable substance used for soda bottles, water bottles, and food containers.

Poly vinyl Chloride (PVC)

A vinyl chloride polymer used to create a wide array of affordable products with varying degrees of technical capabilities suitable for diverse applications. PVC items encompass a broad spectrum, from medical equipment like tubing and blood bags, to footwear, electrical wires, packaging, office supplies, profiles, and toys.

Polystyrene (PS)

Polystyrene is a durable plastic commonly used in items needing transparency, like food packaging and laboratory equipment. It is also employed in the production of a wide range of products including appliances, electronics, automobile components, toys, gardening tools, and containers when mixed with different colorants, additives, or other plastics.

Recyclable

A defining feature of a product, its packaging, or related component that can be separated from the waste stream using existing processes and programs, and can be gathered, treated, and recycled into raw materials or new products.

Post-consumer

Post-consumer material is the condition of an item once it has been used for its intended use. This material can result from households or businesses.

Resin

Materials that can be either organic or inorganic and are commonly used as raw

ingredients in the production of plastic goods

Recycling rate

The recycling rate is calculated by dividing the amount of recycled plastic by the total volume of plastic waste produced. This calculation excludes materials that are reused or prevented from being used.

Reusable

Attributes of a product that can be used in its original form for the same or a different intention, without resulting in waste.

Sustainable Design

Incorporating environmental considerations into the product development process involves balancing ecological and economic needs. Sustainable design should encompass environmental factors in every phase of product development, aiming for products that have minimal environmental impact throughout their life cycle.

Single-Use Plastic

Single-use plastic items are designed for a single use by consumers before being discarded.

PC: NPC-T

1 INTRODUCTION

1.1 Background

The second Tonga Strategic Development Framework 2015–2025 (TSDFII) emphasizes the critical need for improved waste recycling methods to achieve a cleaner environment in Tonga. Over the past few decades, advancements have been made in waste management through the establishment of legislation, regulations, and authorities dedicated to overseeing the sector. The waste management responsibilities are shared between the Department of Environment under the Ministry of Meteorology, Energy, Information, Disaster Management, Environment, Climate Change, and Communications (MEIDECC) as oversight Authority for the waste sector of Tonga and the Waste Authority Ltd (WAL), a state-owned enterprise under the Ministry of Public Enterprises responsible for managing waste in Tonga.

In October 2019, the Ministry of MEIDECC with the assistance of the No Pelesitiki Campaign presented to Cabinet the need for the elimination of single-use plastics (SUPs). While the Government generally agrees to support the phase-out/ban of single-use plastics, there is currently no established policy, law, or strategy in place to initiate the phase-out process. Despite the presence of a legal framework for waste management, Tonga faces ongoing challenges in effectively implementing and enforcing the ban of problematic plastics. This is largely due to limited resources and capacity to support this transition.

The formulation of this single-use plastic Roadmap, therefore offers a systematic approach to implementing specific initiatives aimed at enhancing environmental cleanliness, reducing reliance and use of plastics, increasing plastic waste recycling and identifying and promoting alternatives to single-use plastics. The Roadmap provides a platform for efficient collaboration of all stakeholders, supporting partnerships to

oversee advancements in tackling plastic pollution, pinpoint areas requiring immediate attention to plastics, and catalyse the transition to plastic-free future for Tonga.

In view of the environmental, public health, and economic risks associated with plastic waste in Tonga, this Roadmap aims to reduce and eliminate problematic single-use plastics such as plastic bottles, plastic bags, polystyrene containers, takeaway containers, wraps and straws. These types of waste make up the volume of litter found in coastal areas around Tongatapu as well as the outer islands of ‘Eua, Ha’apai, Vava’u and the Niuas. While some Roadmaps have emphasized technical and fiscal measures, this Roadmap recognizes that influencing the behaviour of both the producers and users of plastic is crucial for achieving lasting positive changes and fostering acceptance of a plastic-free future for Tonga.

1.2 Regulating Authorities

1.2.1 Ministry of MEIDECC

The Department of Environment (DOE), under the Ministry of MEIDECC, regulates the waste management sector in Tonga. The Minister in charge of the Environment, as stipulated in the Environment Management Act of 2010, holds the legal mandate to safeguard Tonga's environment. The Department of Environment is responsible for regulating all activities that may impact the environment and biodiversity in Tonga, including the waste sector managed by its Waste Management and Pollution Control Division.

The Ministry of MEIDECC is tasked with creating national policies to oversee and enforce environmental waste management practices and to establish waste management measures and facilities in compliance with legislation. It is also responsible for ensuring that financial support reaches all relevant stakeholders to enhance waste management. The DOE oversees the Environment Management Act of 2010, granting its Environmental officers the authority to enforce regulations by issuing infringement notices to any individuals, activities, or businesses that cause harm to the environment. In addition, specific to managing waste streams in Tonga, the DOE also enforces the Waste Management Act 2010 and the Hazardous Waste and Chemicals Act 2010 which has provisions for authorized officers from DOE as well as other public officers such as health officers and police officers for managing waste in Tonga.

1.2.2 Waste Authority Limited

The Waste Authority Limited (WAL) is a state-owned enterprise, established in 2006 under the Waste Management Act to oversee the management of the municipal waste in Tonga. The operations of the WAL are overseen by the Ministry of Public Enterprises. Over time, WAL has successfully enhanced the waste management sector by improving landfill facilities and waste collection services across Tongatapu, ‘Eua, Ha’apai, and Vava’u. Despite these efforts, the increasing population and waste generation have posed challenges for WAL in delivering consistent waste collection services, leading to a relatively low efficiency in managing municipal solid waste. Inadequate financial support, outdated equipment, restricted capacity, and low revenue collected from waste fees all play a role in this problem. Despite the government's strong emphasis on the need for efficient waste collection, sorting, and disposal, this remains a significant challenge for WAL due to the ongoing lack of financial support from the government and development partners.

1.2.3 Ministry of Tourism

The Ministry of Tourism, although not mandated by Tonga's Waste Management Act, often assumes the role of enhancing beautification in and around Nuku’alofa and tourist sites. The Ministry of Tourism typically collaborates with MEIDECC and WAL in clearing waste from public areas and in beautification endeavours. These actions are essential components of Ecotourism programs, which strive to uphold cleanliness and enhance the beauty of Tonga.

1.2.4 Ministry of Health

The Ministry of Health plays a key role in waste management by overseeing the collection, treatment and proper disposal of medical waste in order to prevent the spread of diseases within the community. The Ministry of Health is responsible for monitoring and providing advice to the public on the safe disposal of waste that may pose a risk to the health of society.

1.2.5 Tonga Recycling Association

The Tonga Recycling Association (TRA), an non-governmental organisation (NGO), plays a crucial role in identifying pressing initiatives that MEIDECC and WAL are unable to address. This includes the collection of plastic waste, batteries, scrap metal, and end-of-life vehicles for export overseas. The TRA also plays a significant role in raising awareness through programmes to educate the public on the safe disposal of hazardous waste and metals. In addition, the TRA is actively involved in discussions regarding a Deposit Scheme for plastic bottles.

1.2.6 No Pelesitiki Campaign - Tonga

No Pelesitiki Campaign – Tonga (NPC-T) is a civil society organisation (CSO) that aims to reduce and eventually eliminate plastic pollution from the Kingdom's landscapes and oceanscapes. Founded by the late Eleni Levin-Tevi, the NPC-T is built on the involvement and participation of youth groups from Faith Based Organisations, electoral constituencies and other interested CSOs. On a monthly basis, the NPC-T organises clean-up of the foreshore, collecting SUPs and other wastes strengthening their partnerships with various communities, NGOs, small businesses and volunteers. NPC-T is now working on changing behaviour from selected schools where lessons on circular economy and waste segregation is being taught in Tongan by the NPC-T youth trainers supported by the global Tide Turners programme, UNEP.

1.3 Legislation

1.3.1 The Waste Management Act 2005

The Waste Management Act establishes a robust legal framework for the effective management of the waste sector, necessitating the creation of the WAL with defined roles, powers, and duties. These include the management of municipal solid waste services such as collection, transport and disposal of waste in the landfill. It also includes the promotion of waste reduction and recycling initiatives, the establishment of regulations and standards, the monitoring of public health and environmental impacts, the promotion of public awareness, the delegation of community waste management tasks, the collection of waste management fees, and the enforcement of sanctions for failure to comply.

1.3.2 Waste Management (Plastic Levy) Regulations 2013

The Waste Management Regulation imposes a fee on importing plastics into Tonga. Plastic importers pay this levy to the WAL. The regulation specifies procedures for reimbursements, record keeping, recovery, and complaints related to plastic imports.

1.3.3 Environment Management Act 2010

Under the Environment Management Act, the Ministry of Environment is granted authority to safeguard the environment, efficiently manage it, and foster sustainable development. The Act empowers regulations for

controlling or prohibiting pollution of air, water, or land as well as managing litter, waste, and other harmful, unpleasant, or offensive substances. The regulation may encompass provisions for environmental offences and their respective penalties.

1.3.4 Environment Management (Litter and Waste Control) Regulation 2016

The Environment Management (Litter and Waste Control) Regulation provides guidelines for managing litter, outlines offences related to waste, specifies enforcement procedures, and authorizes the issuance of notices for infringements. These regulations, in accordance with the Environment Management Act 2010, outline the responsibilities for waste pollution and the corresponding penalties. Both landowners and tenants are responsible for keeping their properties free of litter and waste. Waste offenses encompass illegal dumping, pollution-causing waste disposal, hazardous waste mishandling, and waste incineration. Authorised officers have the power to prohibit the disposal of specific types of waste in landfills or for land reclamation and can issue notices for ceasing waste-related activities or infringement notices.

1.3.5 Hazardous Wastes and Chemicals Act 2010

The Hazardous Wastes and Chemicals Act sets international standards and convention-compliant guidelines for controlling and handling hazardous substances and chemicals. The Stockholm, Rotterdam, Basel and Waigani Conventions are the treaties referred to in the legislation. The law covers persistent organic pollutants (POPs), hazardous chemicals, and specified waste as per the Convention. Section II of the legislation oversees and in certain instances forbids the utilization of POPs in Tonga. Sections III–IV detail import, export, and transit regulations for hazardous wastes. In accordance with Article 22, Tonga exercises jurisdiction over the entry, exit and transit of substances across its borders.

1.3.6 Public Health Act 1992

The Public Health Act encompasses regulations on waste collection, containers and disposal for both solid and hazardous waste. This regulation bans the importation of harmful waste and demands licensing for recyclers. The Act extends to cover vessels as well. The Ministry of Health oversees medical waste management (collection, storage, transportation, treatment, and disposal) in all sites. Medical waste must undergo sterilization via autoclave, following standard protocols. At the Tapuhia landfill, the waste is buried in designated sections after being transported from the processing site.

1.4 Local Strategic Framework

In Tonga, the national strategic frameworks encompass all local sectors. Identifying and coordinating all relevant frameworks and strategies is crucial for creating a harmonious and efficient plan for Tonga's sustainable development. The following national frameworks are relevant and crucial to this Roadmap.

1.4.1 Tonga Strategic Development Framework II (TSDFII)

The second Tonga Strategic Development Framework 2015-2025 serves as the primary national policy guiding the sustainable development efforts of the Tongan government. The TSDFII presents a comprehensive vision for the direction Tonga aims to pursue from 2015 to 2025, building upon a more in-depth understanding of Tongan heritage and a more robust results-oriented framework compared with the first Tonga Strategic Development Framework (TSDF). The TSDFII underscores the importance of creating cleaner environments with reduced pollution through enhanced waste management, minimisation, and recycling efforts, ultimately fostering safer and healthier environment. In addition, it stresses the strengthening of national and community resilience against potential challenges caused by natural disasters and climate change impacts. As a result, the single-use plastic Roadmap will be consistent with the objectives set out in the TSDFII.

1.4.2 Joint National Action Plan II (JNAP II)

The JNAP II is a pivotal document that guides the government's continuous efforts to enhance climate change resilience and diminish disaster risks. It played an important role in shaping Tonga's climate change policy and influencing the subsequent adoption of the Climate Finance Act. The main objective of JNAP II is to implement the mission and objectives set out in the Tonga Climate Change Policy. Both the policy and JNAP II share the task of creating a resilient Tonga through an inclusive participatory approach that highlights good governance, empowers well-informed and proactive communities, and promotes sustainable development. In line with the TSDFII and the United Nations' Sustainable Development Goals (SDGs), JNAP II recognises the vital role of political leadership and commitment, government agencies as key stakeholders, and the private sectors and civil society's engagement in strengthening Tonga's resilience. It is therefore necessary to ensure that this single-use plastic Roadmap reflects and complements the initiatives set out in JNAP II, which are essential for the achievement of the objectives of both the framework and the single-use plastic Roadmap.

1.4.2.1 The Tonga Tourism Sector Roadmap 2018-2023

The Tonga Tourism Sector Roadmap 2018–2023 serves as the strategic blueprint for Tonga's tourism industry, building upon the Tonga Tourism Roadmap 2014–2018. The Roadmap envisages tourism as a key catalyst for sustainable economic development in Tonga with a view to safeguarding its unique culture and heritage, promoting environmental protection and increasing prosperity for all Tongans. The main objective is to achieve 300,000 annual arrivals by 2023, which is a significant increase compared to 2019 and a 48% increase in cruise ship arrivals by the same year. These objectives will be achieved through improvements in marketing, investment, product development, infrastructure, environmental protection, employee training and sector-wide cooperation. The Ministry of MEIDECC and Ministry of Tourism, in collaboration with the Pacific Tourism Organisation (SPTO) and the Secretariat of the Pacific Regional Environment Programme (SPREP), through the Pacific Ocean Litter Project, will participate in the research, design and development of the standards and certification programme for the reduction of single-use plastics in the sector and review its application in line with national frameworks. Linking the Tourism Sector Roadmap and the Single-Use

Plastic Roadmap will foster sustainable tourism by promoting eco-friendly initiatives to minimise waste generated by the sector in Tonga.

1.4.2.2 Tonga Energy Road Map Plus 2021-2035

The Tonga Energy Roadmap Plus 2021-2035 (TERMPLUS) is a national strategic plan to transform Tonga from a fossil-fuel economy to a clean, affordable and modern renewable energy source. While the Roadmap focuses in particular on the energy sector, with limited initiatives related to plastics, such as waste-to-energy, it is important to highlight the importance of aligning the Single-Use Plastic Roadmap with some of the TERMPLUS initiatives. This includes the use of non-recyclable plastics as a feedstock for waste-to-energy, power recycling facilities and other waste-related facilities using renewable sources. It is therefore, necessary to ensure that the single-use plastic Roadmap is coordinated and complements the efforts set out in the TERMPLUS programme.

1.4.2.3 Tonga Energy Efficiency Master Plan 2020-2030

The Tonga Energy Efficiency Master Plan 2020–2030 functions as the primary national strategy aimed at enhancing energy efficiency across various sectors in Tonga, including power, buildings, transport, and appliances. The aim of the plan is to improve energy efficiency in the supply, production, storage and consumption of energy. The Tonga Energy Efficiency Master Plan is an integral part of the single-use plastic Roadmap and contributes to ensuring that all single-use initiatives focus on energy efficiency in order to avoid wasted savings and costs due to inefficient design of products or services.

1.4.3 International Framework

Since, March 2022, Tonga has been an active member of the Intergovernmental Negotiating Committee on Plastic Pollution convened by the Executive Director of the United Nations Environment Programme to develop an international legally binding instrument on plastic pollution to address plastic waste on land and in the marine environment. This framework will address the full life cycle of plastic, including its production, design and disposal. As a “living document”, this Roadmap will be revised and include provisions of this new international framework once it comes into effect.

The global frameworks address the problem of plastic pollution; however, there is no binding agreement dedicated to reducing marine plastic debris and microplastics. While some frameworks address marine pollution, others focus on sources of pollution originating on land. These following agreements with legal enforcement are relevant to this Roadmap.

1.4.3.1 Convention on Biological Diversity

The Convention on Biological Diversity (CBD) is an international legally-binding agreement with three primary objectives: conserving biodiversity, using biodiversity sustainably, and ensuring the fair and equitable sharing of benefits from genetic resources. Its main aim is to promote actions that lead to a sustainable future. Biodiversity conservation is a global concern for all humanity. The CBD addresses

biodiversity at every level, including ecosystems, species, and genetic resources. It also encompasses biotechnology through the Cartagena Protocol on Biosafety. Essentially, the CBD covers all areas directly or indirectly related to biodiversity and its role in development, spanning fields such as science, politics, education, agriculture, business, culture, and more.

Pollution is a major factor leading to biodiversity loss. Chemicals and waste are widespread throughout the environment and can be found globally, with the production and distribution of chemical-based products continually on the rise. The Basel, Rotterdam, Stockholm, and Minamata conventions tackle some of the most critical chemical and waste pollution issues identified in recent decades, thereby aiding in the conservation and sustainable use of biological diversity.

1.4.3.2 Stockholm Convention on Persistent Organics Pollutants

The Stockholm Convention is an international agreement designed to safeguard human health and the environment from the harmful effects of persistent organic pollutants (POPs). This treaty came into effect on May 17, 2004. POPs have been found to negatively impact human health and the environment, with links to cancer, nervous system damage, reproductive issues, and weakened immune systems. Currently, the Convention regulates 29 POPs and mandates that member countries implement various control measures to reduce and, where possible, eliminate the release of these substances. For intentionally produced POPs, countries are required to ban or limit their production and use, with certain exemptions like the ongoing use of DDT. Additionally, the Convention restricts the trade of these substances. For POPs produced unintentionally, the Convention obligates nations to create national action plans to manage their release and to employ "Best Available Techniques" for their control. Furthermore, the Convention focuses on the proper management of stockpiles and waste containing POPs.

1.4.3.3 United Nations Convention on the Law of the Sea (UNCLOS)

The United Nations Convention on the Law of the Sea (UNCLOS) is the primary global agreement that governs oceans and the management of ocean resources. It establishes a fundamental obligation for nations to safeguard and maintain the marine ecosystem. The convention mandates that countries take steps to prevent, reduce, and manage pollution in the marine environment, including sources originating from land. Nations must enact legislation to tackle marine pollution, develop international and regional regulations, standards, and best practises, and enforce laws to combat pollution effectively. Additionally, nations are required to adhere to global regulations and standards to address pollution stemming from their own vessels. Addressing single-use plastics through this route is crucial for identifying interventions, establishing laws for enforcement, and promoting regional cooperation among Pacific Island Countries (PICs) to ensure efficient coordination for safeguarding and preserving the marine environment.

1.4.3.4 International Maritime Organisation Convention on Prevention of Marine Pollution by Dumping of Wastes and other Matter

The Convention concerns the disposal of waste from land into the ocean. Nations pledge to enforce actions to prevent marine pollution resulting from the disposal of waste and harmful substances that endanger

human health, damage marine life and resources, affect the marine ecosystem, or interfere with legal activities in the ocean. The single-use plastic Roadmap will include the need to ensure there are relevant laws to restrict plastic waste from entering the marine environment from land.

1.4.3.5 MARPOL Annex V

The International Convention for the Prevention of Pollution from Ships (MARPOL) is the primary global agreement aimed at preventing marine pollution caused by ships, whether from routine operations or accidental incidents. Adopted on November 2, 1973, by the International Maritime Organization (IMO), the convention saw the addition of the 1978 Protocol following a series of tanker accidents in 1976-1977. Since the original 1973 MARPOL Convention had not yet come into effect, the 1978 Protocol incorporated it, and the unified instrument became effective on October 2, 1983. In 1997, another Protocol was adopted to amend the Convention, introducing a new Annex VI, which took effect on May 19, 2005. Over the years, MARPOL has been updated with various amendments.

The Convention encompasses rules designed to prevent and reduce pollution from ships, addressing both accidental spills and pollution from regular operations. It currently comprises six technical Annexes, most of which designate Special Areas with stringent controls on operational discharges.

Annex V of the MARPOL Convention, a component of the International Maritime Organization's primary convention on preventing ship pollution, serves as an extension that prohibits the disposal of waste, including operational plastic waste, from ships in all maritime regions. The single-use plastic Roadmap will ensure necessary laws and regulation to prevent plastic waste from all marine vessels from entering Tonga.

1.4.3.6 The Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal

The Basel Convention places emphasis on controlling the export and import of dangerous and other types of waste, alongside addressing pollution by requiring Parties to restrict the production of harmful waste and guarantee the availability of appropriate disposal facilities for eco-friendly waste management. Plastics identified as "hazardous" or falling into the category of "other wastes" may be considered for classification under the Basel Convention.

1.4.4 Sustainable Development Goals

The Roadmap aims to align with various United Nations' Sustainable Development Goals (SDGs), with a particular focus on SDG 14.1, which aims to reduce marine pollution originating from land-based sources such as marine debris and nutrient pollution by 2025. Additionally, the Roadmap is consistent with other pertinent SDGs such as;

> **SDG 3.9:** Decrease fatalities and diseases resulting from toxic substances, while also reducing pollution and contamination of the air, water, and soil.

SDG 8.4: Improve worldwide resource efficiency in consumption and production, with the goal of decoupling economic growth from environmental damage, in line with the 10-year sustainable consumption and production strategy, with developed countries taking the lead.

SDG 12.5: Reduce waste generation by focussing on prevention, minimisation, recycling and reuse.

SDG 13: Take urgent action to combat climate change and its impacts

SDG 14.2: Guarantee the sustainable preservation and safeguarding of marine and coastal ecosystems to avoid substantial adverse impacts, improve their ability to withstand challenges, and perform rejuvenation actions to achieve vibrant and fruitful oceans.

SDG 15: Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss.

1.4.5 Pacific Regional Framework

In the Pacific region, several regional frameworks and strategies focus on mitigating plastic pollution through environmental protection measures. Some of these frameworks are presented below.

1.4.5.1 The Convention for the Protection of the Natural Resources and Environment of the South Pacific region (Noumea Convention)

The Noumea Convention requires participating parties to safeguard, oversee, and make every effort to implement all suitable measures to prevent, diminish, and regulate pollution. It also mandates the promotion of responsible environmental management and sustainable development of natural resources by utilising the most practical methods available and within their capabilities (Article 5).

1.4.5.2 Cleaner Pacific 2025 Pacific Regional Waste and Pollution Management Strategy

The Çleaner Pacific 2025 outlines the necessary policy structure and key actions to reduce marine litter in the Pacific Island Countries and Territories. The Strategy concentrates on these precise areas and was created in collaboration with all island nations. Taking cues from the Cleaner Pacific 2025's four key goals, this strategy adapts and puts them into practise to govern plastics, aiming to: avoid the creation of waste and pollution, extract resources from waste and pollutants, strengthen the handling of residual waste, chemicals, and pollutants, and enhance environmental monitoring.

1.4.5.3 Pacific Regional Action Plan: Marine Litter 2018–2025.

Pacific Island countries have devised the Pacific Regional Action Plan to tackle marine litter in the Pacific region. The Pacific Regional Action Plan for Marine Litter (2018–2025) emphasizes the need for extensive policies and regulations to efficiently manage marine debris. The Plan outlines essential annual actions for addressing marine litter sources, provides necessary regulatory and policy guidance, and offers practical advice for implementation and progress assessment across the Pacific Island Countries and Territories. Marine litter being transboundary in nature, this plan underlines its responsibility as a shared issue among all. This is a significant opportunity for Pacific Island countries to address the critical issue.

2 SINGLE-USE PLASTICS IN TONGA

2.1 Plastics in Tonga

2.1.1 Analysis Flow of Plastic in Tonga

In Tonga, single-use plastic products are used for various purposes and applications. According to the 2020 data collected from national reports, Tonga imports approximately 4,499 tonnes of various types of plastic products. These imported plastics primarily consist of single use bags, bottles, food containers, food packaging, and others. Approximately 3,299 tonnes of plastic waste have been disposed; 1,800 tonnes are disposed annually in landfills, 227 tonnes are recycled, and 1,227 tonnes leaked into the environment (see Figure 1).

The Figure 1 also depicts the path of imported plastics in Tonga, from their entry into the country to their final destination post-use. Most plastics in Tonga accumulate in landfills, but a considerable amount also ends up in land and marine ecosystems, or is burned, posing a significant hazard to the country. Data collected from government and development partners' reports between 2007 and 2020 served as the basis for this analysis. Accurately tracking the Roadmap's progress requires enhanced waste data collection and validation by WAL and MEIDECC.

Figure 1: Flow Analysis in Tonga

2.1.2 Type of Plastic

Plastics are typically categorized into seven primary types based on their chemical makeup and properties. The quantities of imported, used, recycled, disposed, or burned plastic types in Tonga are poorly documented. Due to insufficient data, various plastic types are often considered as a single category. The definitions of different plastic types are provided below.

1. **Polyethylene Terephthalate (PET):** is a durable and lightweight plastic frequently found in food packaging, food containers and beverage bottles such as water and soda bottles

2. **High-Density Polyethylene (HDPE):** is well known for its robust tensile strength and ability to withstand high temperatures. It is widely used in a range of applications, including bottles, durable containers, shopping bags, plastic pipes, water coolers, and fuel tanks, as well as protective coverings for automotive components.

3. **Polyvinyl Chloride (PVC):** is a commonly used plastic renowned for its resilience and adaptability. The type of plastics used in construction components such as plumbing pipes and window casings.

4. **Low-Density Polyethylene (LDPE):** is recognised for its outstanding ability to withstand acids, bases, and vegetable oils. It is characterised by impressive transparency, durability, and pliability, making it ideal for a range of uses such as packaging for products such as meat, poultry, dairy items, snacks, confectionery, frozen foods, and baked goods.

5. **Polypropylene (PP):** is a flexible plastic known for its lightweight nature, ability to withstand heat, and resistance to chemicals. It is frequently used in food containers such as ice cream containers and items such as shampoo bottles etc.

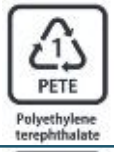
6. **Polystyrene (PS):** is a durable plastic commonly used in items needing transparency, like food packaging and laboratory equipment. It is also employed in the production of a wide range of products including appliances, electronics, automobile components, toys, gardening tools, and containers when mixed with different colorants, additives, or other plastics

7. **Others:** There are other plastics that fall under this category such as Acrylonitrile **butadiene styrene (ABS),** a durable and impact-resistant polymer that is frequently used in automotive components, electronics, and household appliances. It is easily mouldable and exhibits excellent dimensional stability. **Polycarbonate (PC**), a see-through and durable plastic, is used in situations that demand both toughness and transparency, like in eyeglass lenses, safety goggles, and electronic components.

2.1.3 Plastic Labelling

Plastics are categorized based on their chemical makeup to adhere to specific standards and ease of recycling. These labels facilitate the categorization, recycling, and correct disposal of plastics. Plastic labels, usually located at the bottom, side or lid of product helps consumers to distinguish various types of plastic and facilitate proper disposal and recycling (Table 1). In Tonga, plastic production companies, such water bottle producers, lack proper labelling due to the absence of guidelines, regulations and standards. This affects the segregation of recyclable plastics to promote plastic re-use and recycling. Therefore, a system must be developed in Tonga to address plastic labelling in order to facilitate recycling initiatives and avoid unnecessary build up in the landfills.

Table 1: Type of Plastics

Label	Common Name	Scientific Name	Applications/ Use
	PET/ PETE	Polyethylene Terephthalate	Water bottles, fizzy drink bottles (e.g. Coke)
	HDPE	High Density Polyethylene	Shampoo bottle, conditioner bottle, washing detergent bottle, plastic shopping bags
	PVC/ V	Polyvinyl Chloride	Vinyl, pipe, commercial cling wrap
	LDPE	Low Density Polyethylene	Cling wrap, bread packages, squeeze bottle, plastic shopping bags
	PP	Polypropylene	Ice cream container, take away container
	PS	Polystyrene	Styrofoam, CD case, yoghurt pack

2.1.4 Magnitude of the plastic problem in Tonga

Tonga faces similar global challenges in dealing with the plastic problem across all its islands. According to the Department of Environment, the environmental impact of plastic usage in Tonga is detrimental to biodiversity on both the land and in the sea, and also poses risks to human health. Plastic pollution has become an eye-sore around the country and has negatively impacted soil quality and coastal ecosystems posing risks to wildlife, including marine life. In addition, plastic pollution also becomes breeding grounds for mosquitoes and vectors for diseases when plastic food containers and bottles are not properly disposed in rubbish bins and collect rain water.

Single-use plastics break down over time. Specifically, plastics breakdown into micro-plastics which is a hazard to terrestrial and marine life. When ingested by fishes and marine life plastics enter the food chain and pose health risks to humans that consume these affected fish. Entanglement in plastic waste is also an issue that threatens marine life.

The magnitude of the plastic problem in Tonga stems from the convenience, affordability and availability of plastics throughout the country. Plastics are widely used by consumers and sectors for a number of uses discussed below.

2.1.4.1 Food Packaging for both retail and street vendors

The use of plastics has significantly expanded in different sectors of Tonga's economy. Street vendors who sell fruits, vegetables, and root crops mostly use plastic bags for packaging instead of traditional coconut baskets. Vendors prefer plastic bags due to their convenience over the effort required to make traditional baskets as they find this process time-consuming.

Moreover, grocery retail shops have increased their usage of light plastic bags. The combination of affordability, light-weight resin makes plastic bags an easy and convenient choice for consumers. Some stores have switched to paper bags but have reverted to using plastic bags due to paper bags' susceptibility to tearing, particularly when exposed to moisture. Despite the availability of alternatives, plastic bags remain the most affordable and durable choice for shopping and packaging.

In addition, restaurants and food stalls in Tonga use plastic containers for food packaging and takeaway orders. This becomes an issue when consumers do not dispose their food containers in appropriate bins and these containers due to their light weight are easily blown away and find their way in coastal environments. Moreover, public and residential rubbish bins that are well secured are often raided by stray dogs and causes dispersal of plastic waste.

2.1.4.2 Cultural, religious and social events

In Tonga, social and cultural events are considered large scale and usually require catering services for guests attending the events. This is also a major cause of plastic consumption and use in Tonga that generates a large volume of plastic waste. Plastic food containers, water bottles and plastic bags are commonly used in these events and thus indicates a huge reliance on plastic in Tonga.

2.1.4.3 Plastic Bottles are more convenient

Many individuals opt for purchasing new plastic bottles due to their affordability as compared to reusable bottles. Due to the scarcity of refilling stations, most locals prefer purchasing cheap plastic water bottles that are readily available in most retail and convenience stores throughout Tonga. Individuals with health concerns and those without access to clean drinking water at schools and workplaces opt for re-usable bottles filled with boiled water from home. In the residential sector, plastic water bottles are often reused for drinking by refilling and stored in refrigerators. In most Tongan homes, this is a common practice. Local small medicinal businesses, primarily run by women also reuse plastic water bottles to sell traditional herbs and medicines. However, studies have shown that drinking from plastic bottles has negative health effects. Therefore, banning plastic bottles may alleviate some of the concerns around these health problems and also promote the use of re-usable bottles such as insulated ones for safer drinking practices.

2.1.4.4 Natural Disasters and global pandemic

Both the COVID-19 pandemic and the Hunga Tonga-Hunga Ha'apai volcanic eruption sparked a major emergency response plan in Tonga. Many countries pledged support and sent food items and relief assistance in the form of packaged preserved food, canned food and water bottles when the water tanks were affected by the volcanic ash that covered Tonga after the eruption of the Hunga Tonga-Hunga Ha'apai volcano. This amassed a large volume of plastic waste that was reported by the No Pelesitikii campaign when they conducted community clean-ups.

2.2 Challenges of Phasing out Plastics in Tonga

2.2.1 Institutional challenges

Poor plastic waste management

In many sectors, a substantial amount of plastic waste goes uncollected and illegally dumped. The household's inability to pay waste disposal fees and lack of transportation hinders their ability to dispose plastic waste at Tapuhia landfill. Few locals resort to burning plastics at their own properties or illegally disposing of waste on others' lands without their permission. These pose a significant issue for both the landlord and the responsible organisation, as well as the environment. The No Pelesitiki Campaign-Tonga and other NGOs' efforts to collect plastic waste have only made a small but important impact on plastic waste in Tonga. A robust strategy is essential to encourage such programmes, assist households, and empower NGOs and civil societies in collecting plastic waste that pollutes Tonga.

Tonga's intricate waste management legislation makes it challenging for various government departments due to overlapping and unclear roles. The definition of regulatory responsibilities regarding waste management remains ambiguous under current laws. There is a lack of clarity regarding waste management obligations and pollution control between the Waste Management Act and the Environment Management Act. The specific duties of the Ministry of MEIDECC, WAL, and the Ministry of Health are not clearly defined in the Waste Management Act, Public Health Act, and Environment Management Act. This lack of clarity often leads to overlapping roles in other regulations, causing confusion. The role of the Ministry of Public Enterprises is also uncertain, especially concerning environmental programs. WAL is mandated to report to both the Minister of Public Enterprise and the Minister of MEIDECC as outlined in both the Waste Management Act and the Environment Management Act.

Tonga's waste management legislation clearly distinguishes between regulatory and operational tasks and assigns operational tasks to the WAL. The Ministry of Health is responsible for waste management in the outer islands, as provided for in the Waste Management Act. The Ministry of MEIDECC, responsible for environmental matters, plays a regulatory role in overseeing the activities of WAL. WAL's regulatory duties involve supervising the transportation, storage, and disposal of waste by individuals, granting licenses for commercial waste transportation, and managing legal proceedings. WAL is also responsible for establishing and enforcing regulations, operational procedures, and industry norms, as well as administering the levy on plastic bag imports as outlined in the guidelines. Hence, it is essential to establish a distinct division of responsibilities to avoid task overlap concerning policy formulation and implementation.

2.2.2 Lack of alternatives

Limited alternatives for plastic bags and recycling.

Local businesses in Tonga do not have the appropriate facilities or systems in place for recycling plastics or promoting recycling initiatives for their customers. This is due to lack of direction from the government regarding collection, sorting and recycling. While there are regulations that encourages businesses to be accountable for their plastic waste, there is no collaboration between manufacturers and retailers on recycling their plastic products. Accordingly, retailers are not willing to recycle if there is no system in place that will benefit their business.

Lack of research and development

Resource constraints, insufficient technical expertise, inadequate waste infrastructure and the absence of enabling legislation present challenges for Tongan government and WAL in resolving the plastic waste pollution. To tackle plastic pollution, there is a need to reduce Tonga's dependence on plastics and promote alternative methods. Prioritizing research and innovation is essential for establishing a sustainable approach to plastics. The measures should be tailored to Tonga's distinct culture and religious beliefs. Investing in plastic research and innovation that considers cultural, religious and behavioural factors alongside environmental and economic ones will enable Tonga to adopt more country appropriate and sustainable practices.

Untapped market potential for recycling

Obtaining an accurate assessment of Tonga's reuse and recycled plastic market value is difficult due to inadequate data. Tonga's revenue gains from reusing and recycling plastic hinge on the precise estimation of the reuse and recycling rate and the percentage of recycled plastic. However, to assess the economic impact of reuse and recycling plastics, it's essential for WAL and MEIDECC to gather the adequate data on plastic waste, expand and refine the available data and improve the waste database. This improvement is crucial to ensure that Tonga tapped into the market potential of recycle plastics.

Micro-plastics impacts.

Non-biodegradable plastic bags persist in the environment for up to 500 years, releasing microplastics during their breakdown process. These microplastics not only come from plastic breakdown but are also purposefully present in some other products such as health and beauty products. These small particles are harmful to human and other species' health by entering into the drinking water and food. Due to their size, microplastics are difficult to manage without the ban of importation of any products containing microplastics.

Average usage of plastic bags is 15 minutes before disposal

In Tonga, single-use plastic shopping bags commonly have a short duration of use, typically around 15 minutes when used in grocery stores. While they may be used for longer periods, it is found that consumers are generally unaware of the amount of plastic they use and the duration they use the plastic bags for before disposal. Therefore, this significant reliance on plastic bags for short-term use, coupled with a lack of awareness of their consumption behaviour and pattern continue to contribute to the plastic pollution in Tonga.

2.2.3 Insufficient Waste Facilities

Poor waste management infrastructure

Inadequate waste management infrastructure in Tongatapu and the outer islands of Tonga leads to persistent plastic waste pollution. The insufficient funds for maintenance and inadequate technical expertise among staff at WAL have led to delays in processing plastic waste, including collection, sorting, recycling, and disposal. Collaboration among regulatory bodies like MEIDECC, WAL, and the Ministry of Health is essential for effective waste sector management through strong guidelines, adequate financing, and increased capacity.

Poor collection and sorting facilities

The collection and sorting capacity of the WAL is insufficient to meet Tonga's needs. Tonga only has two designated landfills, one in Tongatapu and one in Vava'u, while the other islands have unregulated disposal sites. The outer islands lack proper waste collection and sorting systems. WAL faces a challenge in efficiently managing the increasing demand for waste collection each year due to a lack of machinery and collection trucks. It is crucial for the government to secure funding for enhancing waste facilities on both the main island of Tonga and the smaller outer islands. This includes acquiring essential resources, machinery, collection vehicles, and upgrading WAL's facilities.

Poor recycling facilities

Small local businesses can generate revenue by reusing and recycling a substantial amount of plastic. The government's lack of recycling facilities and support often hinders the potential for waste reduction and management. The disposal of plastics in Tapuhia landfills results in potential financial losses due to missed opportunities for reuse or recycling of plastics. Prioritizing recycling alleviates landfill pressure, decreases waste, and encourages plastic recycling investment. A strong framework is essential to promote local investment in recycling and minimizing plastic waste in landfills. Therefore, there is a need for a robust framework to encourage local investment in recycling and reducing plastic waste in landfills.

There is a lack of recycling infrastructure in Tonga with Geo Recycling currently the sole company in the nation that deals with recycled waste,exporting it internationally. Other companies handle batteries, vehicles, and scrap metal for overseas shipping. However, these companies do not have a system in place for gathering and recycling plastics. The WAL has obtained a plastic crushing machine in collaboration with the local NGO No Pelesitiki Campaign to gather plastic bottles, crush them, blend them with concrete, and produce pavements. Progress in this aspect has been sluggish due to limited local comprehension of these innovative concepts.

3 THE ROADMAP

3.1 Purpose

The main objective of this Roadmap is to set out the strategies and measures required to reduce the use of single-use plastics, promote a circular economy and protect and enhance the natural environment in Tonga. The Roadmap proposes 6 key targets;

Target 1: Develop a robust and interconnected institutional framework

Target 2: Ban the use of problematic single-use plastics by 2030

Target 3: Mandatory use of alternative to problematic single-use plastics by 2030

Target 4: Reduce the total plastic waste generated per person by 10% by 2030

Target 5: Recycle 25% of post-consumer single-use plastics by 2030

Target 6: Increase the use of recycled and reusable products across all sectors

Each of the 6 targets contain a number of activities and initiatives to ensure the success of achieving the targets over the next 10 years. There is flexibility in how the activities will be carried out. However, it is noted here that a few activities will require a certain order of preceding activities, while others can be undertaken concurrently. These initiatives can therefore be re-arranged in order of priority or urgency depending on the challenges or situations that arise throughout the implementation of this Roadmap.

3.2 Scope

The Roadmap focusses on 7 types of plastics; PET, HDPE, PVC, LDPE, PP, PS and others (Table 2). Other forms of plastic that are not included in this Roadmap will be included in the next revision of this Roadmap.

Table 2: Target plastics for the Roadmap

Label	Common Name	Scientific Name	Applications/ Use
	PET/ PETE	Polyethylene Terephthalate	Water bottles, fizzy drink bottles (e.g. Coke)
	HDPE	High Density Polyethylene	Shampoo bottle, conditioner bottle, washing detergent bottle, plastic shopping bags
	PVC/ V	Polyvinyl Chloride	Vinyl, pipe, commercial cling wrap
	LDPE	Low Density Polyethylene	Cling wrap, bread packages, squeeze bottle, plastic shopping bags
	PP	Polypropylene	Ice cream container, take away container
	PS	Polystyrene	Styrofoam, cd case, yoghurt pack
	Others	Others (e.g., Polyurethane (PU)	Toys, CDs, DVDs, Legos

3.3 Financing

The success of implementing this Roadmap to phase out single-use plastics hinges on the financial mechanisms and strategies put in place to carry out and implement the activities. It is imperative that the main stakeholders across government, public enterprises and small businesses collaborate to secure sufficient funding throughout the various stages of the Roadmap. This is particularly crucial for those initiatives that are pre-requisites for ongoing or subsequent activities to avoid delays in meeting the targets within the proposed timelines. Stakeholders are therefore encouraged to take ownership of the Roadmap and secure the necessary funding required to achieve the proposed targets in a timely manner. This may require seeking development assistance through bilateral or donor funding with development partners. Partnerships with local organizations, such as schools and small businesses, may be sought to promote non-monetary means to support behavioural change in managing and reducing reliance on plastics in Tonga.

3.4 Target Strategies

This section highlights each of the six targets, their objectives, targeted areas of impact and the role of lead organizations to achieve each target through an inclusive and collaborative approach. Under each activity, specific roles are assigned to the lead agencies to indicate the level of responsibility to achieve the target (lead, co-lead and supporting roles). In addition, a proposed target date for the implementation and completion of proposed activities provides a means to monitor and measure progress towards achieving these goals for phasing out plastics in Tonga by 2035.

3.4.1 Target 1 - Develop a robust and interconnected institutional framework

3.4.1.1 Overview

Having a robust institutional structure in place is crucial to reducing single-use plastics and plastic packaging. The waste sector's complex regulatory framework is hindered by overlapping roles, inadequate financing, insufficient resources, weak capacity, and ineffective enforcement due to poor institutional structures. The initial goal is to establish a comprehensive and interlinked institutional framework for regulating and coordinating the Roadmap.

3.4.1.2 Target Areas

To achieve the target, four key areas have been identified: institutional strengthening, financial security, capacity development, and an effective database. Through literature review and public consultations, these key areas have emerged requiring special focus, and a shift in policy reform towards involving NGOs and independent bodies for transformational leadership will yield new ideas and perspectives beneficial to the nation rather than solely through a governmental lens.

3.4.1.3 Lead Agencies

This Roadmap is shaped through intensive collaboration between all stakeholders, allowing for adequate roles and accountability throughout the waste sector. The Tonga Recycling Association takes the lead in Institutional reform, legislative reviews and institutional changes in the waste sector, monitoring the Ministry of MEIDECC and WAL through the necessary modifications. A champion is necessary for securing adequate funding and ensuring disruption-free distribution to all initiatives in the Roadmap. NGOs, such as the No Pelesitiki Campaign, are tasked with championing these areas and securing ongoing funding with the support of Government, WAL, Private sectors, and other stakeholders for the Roadmap's execution. Evaluating current waste sector capacity is essential to identify improvement opportunities and bridge skill gaps. CSOs, including NPC, and the Private sector are tasked with assessing the technical, policy, and decision-making skills required in the waste sector. Improving waste data and the existing database requires the collaborative effort of the government and WAL to determine the optimal methods for data collection, storage, analysis, and improvement of the national waste database to monitor the Roadmap's progress effectively.

3.4.1.4 Key Initiatives

Table 3: Initiatives to develop a robust and interconnected institutional framework

Target 1: Develop a robust and interconnected institutional framework																							
Objective: to establish a comprehensive and interlinked institutional framework for regulating and coordinating the Roadmap.																							
Target Areas: i) institutional strengthening; ii) financial security; iii) capacity development and; iv) effective data management system																							
Lead Agencies: Ministry of MEIDECC, Tonga Recycling Association (TRA), Waste Authority Limited (WAL), Department of Statistics, Ministry of Revenue & Customs, Ministry of Tourism.																							
Key Outputs	**Key Activities**	**ROLES Lead (L) Co-Lead (CL) Support (S)**								**TARGET DELIVERY DATE**													
		Government	**WAL**	**TRA**	**Private Sector**	**NGOs**	**Civil Societies**	**Communities**	**Churches**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**	**2032**	**2033**	**2034**	**2035**		
1. Waste sector institutional structure strengthened.	1.1 Conduct an independent review of all existing legislations, policies, taxes and levies, and institutional roles and responsibilities pertaining to waste management.	**CL**	**CL**	**L**	**S**	**S**																	
	1.2 Implement the required amendments to legislations and policies, and eliminate obstacles (as outlined in 1.1) to enhance the efficiency and synchronization of the Waste sector.	**L**	**CL**	**CL**	**S**	**S**																	
	1.3 Amend and establish essential bodies for improved coordination in the waste sector.	**CL**	**L**	**CL**	**S**	**S**																	

2. Sustainable financial structure and fundraising.	2.1 Conduct an independent study to linvestigate sustainable avenues for securing financing for the Waste industry.	S	CL		CL	L	S																
	2.2 Execute the recommendations from 2.1.	L	CL		S	CL	S																
3. Updated data collection and database.	3.1 Enhance the waste data collection, validation and assessment, and improve the waste database.	L	CL	S	CL	S																	
	3.2 Waste regulators to established Inter-connected database between key stakeholders to share data effectively.	CL	L	S	CL	S																	
4. Local capacity development enhanced.	4.1 Conduct a Capacity Need Assessment to identify capacity development requirements in the Waste Sector.	S	CL	S	CL	L																	
	4.2 Execute the capacity development requirements from 4.1 for all stakeholders.	CL	L	S	CL	S																	
	4.3 Long-term training/study scholarships on waste management and other relevant areas.	CL	S	L	CL	S																	
	4.4 Short-term specialised training on waste management and other relevant areas.	CL	S	L	CL	S																	
	4.5 Incorporation of plastic waste and circular economy into primary and high school curricula.	L	S	CL	CL	S																	
5. Successful political campaigns on plastic waste.	5.1 Conduct public opinion research to strengthen politicians' understanding of the public's concern over plastic waste.			L	CL	CL	S		S														
	5.2 Provide technical assistance to strengthen capacity of decision-makers in plastic waste management	L	CL	S	S	CL																	

	5.3 Encourage mass media and social media campaigns for the Roadmap.	L	CL	S	S	CL																
	5.4 Develop mobile apps to share waste information, updates and notifications.	S	L	S	CL	CL																

3.4.2 Target 2: Ban the use of Problematic Single-Use Plastic by 2030

3.4.2.1 Overview:

The second target of the Roadmap is to ban the import and use of problematic single-use plastics by 2030. The Roadmap prioritises the ban of problematic single-use plastics while enforcing a broader ban on all plastic products gradually. It is essential to address primary issues with problematic single-use plastics before phasing out all plastic types. By banning problematic single-use plastics, Tongans can reduce their reliance on imported single-use plastics and find sustainable, locally produced alternatives to address plastic pollution.

3.4.2.2 Lead Agencies

The Ministry of MEIDECC will oversee all programmes under this target. With assistance from WAL, the Ministry of MEIDECC will work on creating a favourable atmosphere for developing legislation and establishing guidelines to phase out and ban problematic single-use plastics, plastic packaging, and medical plastic waste. The Ministry of MEIDECC will oversee institutional reform, legislative and regulatory review, and development under the target's mandate.

3.4.2.3 Proposed Instruments

To achieve the target, three key outcomes are proposed: a National action plan on problematic single-use plastics, legislations against single use problematic plastics, and a clear strategy for phasing out and banning single-use plastics. For each output, key activities have been identified to meet the target by the proposed timeline.

3.4.2.4 Key Initiatives

Table 4: Initiatives to ban the use of problematic single-use plastics by 2030

Target 2: Ban the use of Problematic Single-Use Plastic by 2030																							
Objective: to reduce reliance on imported single-use plastics and find sustainable, locally produced alternatives to address plastic pollution																							
Target Areas: i) behavioural change; ii) alternatives for plastics; iii) community and capacity development																							
Lead Agencies: Ministry of MEIDECC, Ministry of Revenue & Customs, Waste Authority Limited (WAL), NGOs																							
Key Outputs	**Key Activities**	**ROLES Lead (L) Co-Lead (CL) Support (S)**								**TARGET DELIVERY DATE**													
		Government	**WAL**	**TRA**	**Private Sector**	**NGOs**	**Civil Societies**	**Communities**	**Churches**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**	**2032**	**2033**	**2034**	**2035**
1. National Action Plan on single-use plastic developed.	1.1 Conduct studies on problematic single-use plastics, packaging, and medical plastic waste in Tonga.		**L**	**S**	**S**	**CL**		**CL**													
	1.2 Develop a National Plan to ban problematic single-use plastics, packaging, and medical plastic waste.	**L**	**CL**		**S**	**CL**		**S**													
	1.3 Implement the National Action Plan to facilitate strategic phase-out and banning of problematic single-use plastics, packaging and medical plastic waste.	**CL**	**L**		**S**	**CL**		**S**													

2. Legislation banning single-use plastics, packaging and medical waste developed and enforced.	2.1 Develop legislation to phase out the import and use of problematic single-use plastics, plastic packaging, and medical plastic waste.	**L**	**CL**	**CL**		**S**		**S**															
	2.2 Enforce and implement the legislation/regulation in 2.1.	**CL**	**L**	**CL**		**S**		**S**															
3. Strategic phase-out and banning of single-use plastics enforced.	3.1 Ban the import and use of light plastic bags.	**L**	**CL**	**S**		**CL**			**S**														
	3.2 Ban the import and use of heavy plastic bags.	**L**	**CL**	**S**		**CL**			**S**														
	3.3 Ban the import and use of plastics plates, cups, straws, forks and spoons.	**L**	**CL**	**S**		**CL**			**S**														
	3.4 Ban the import and use of plastic take away food containers.	**L**	**CL**	**S**		**CL**			**S**														
	3.5 Phase out the sale of microplastics and products containing microplastics.	**L**	**CL**	**S**		**CL**			**S**														
4. Nation wide awareness programme.	4.1 Annual National Environment Awareness Week.	**L**	**CL**	**S**	**CL**			**S**															
	4.2 Zero Plastic Program for Government Organisations and Private sectors.	**L**	**CL**		**CL**	**S**	**S**																
	4.3 Zero Plastic Campaigns for Community.	**S**				**S**	**L**	**CL**	**CL**														
	4.4 Annual School Science Fair on Non-Plastic Innovation.	**S**	**S**		**L**	**CL**	**CL**																

3.4.3 Target 3: Mandatory use of Alternatives to Problematic Single-Use Plastic by 2030

3.4.3.1 Overview:

The third objective of the Roadmap is to promote the usage of sustainable alternatives to single-use plastics by 2030 through import and implementation regulations. During the transition period of banning problematic single-use plastics, it is essential to have viable alternatives available for local use. Increasing sustainable alternatives to single-use plastics in Tonga will decrease reliance on imported ones and encourage the use of locally produced eco-friendly options for addressing plastic pollution.

3.4.3.2 Lead Agencies

All programmes under this target will be managed under the purview of the Ministry of MEIDECC. With WAL's help, the Ministry of MEIDECC will create a legislation-friendly environment to establish guidelines for alternative solutions to single-use plastics, plastic packaging, and medical plastic waste. The Ministry of MEIDECC is responsible for implementing institutional reform, reviewing legislation and regulations, and promoting development according to the target's mandate.

3.4.3.3 Proposed Instruments

A National action plan, legislation, and clear strategy are proposed for the elimination of problematic single-use plastics through the implementation of alternative solutions. Target-specific key activities have been identified within the proposed timeline for each output.

3.4.3.4 Key Initiatives

Table 5: Initiatives to use alternatives for problematic single-use plastics by 2030

Target 3: Mandatory use of Alternatives to Problematic Single-Use Plastic by 2030																							
Objective: to promote the usage of sustainable alternatives to single-use plastics by 2030 through import and implementation regulations																							
Target Areas: i) Action Plans; ii) legislations; iii) behavioural change; iv) alternatives for plastics; v) financial support																							
Lead Agencies: Ministry of MEIDECC, Ministry of Revenue & Customs, Waste Authority Limited (WAL), Local businesses, NGOs																							
Key Outputs	**Key Activities**	**ROLES Lead (L) Co-Lead (CL) Support (S)**								**TARGET DELIVERY DATE**													
		Government	**WAL**	**TRA**	**Private Sector**	**NGOs**	**Civil Societies**	**Communities**	**Churches**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**	**2032**	**2033**	**2034**	**2035**		
1. National Action Plan on alternatives for problematic single-use plastic developed and implemented.	1.1 Conduct studies on the alternatives for problematic single-use plastic, packaging and medical waste.	**CL**	**CL**		**S**	**L**		**S**															
	1.2 Develop a National Action Plan to use alternatives to problematic single-use plastics, packaging and medical waste.	**L**	**CL**		**S**	**CL**		**S**															
	1.3 Implement the National Action Plan to facilitate strategic encouragement and use of alternatives to problematics single-use plastics, packaging and medical waste.	**CL**	**L**		**S**	**CL**		**S**															

2. Legislation to encourage the use of alternatives solutions to problematic single-use plastics developed and enforced.	2.1 Develop the appropriate legislation and regulation to strategically encourage and enforce the use of alternatives to problematic single-use plastics, packaging and medical waste.	L	CL		CL	S		S															
	2.2 Implement and enforced the legislation or regulation in 2.2.	CL	L		CL	S		S															
3. Strategic enforcement of alternatives to problematic single-use plastics, packaging and medical waste.	3.1 Enforce alternatives tolight plastic bags.	L	CL	S	CL	S																	
	3.2 Enforce alternatives toheavy plastic bags	L	CL	S	CL	S																	
	3.3 Enforce alternatives toplastic plates, cups, straws, forks and spoons.	L	CL	S	CL	S																	
	3.4 Enforce alternatives to plastic take away food containers.	L	CL	S	CL	S																	
	3.5 Enforce alternatives toplastic wrappings.	L	CL	S	CL	S																	
4. Sustainable financial support developed and implemented.	4.1 Develop and enforce Import Duty waiver for biodegradable products.	L	CL	S		CL	S																

3.4.4 Target 4: Reduce the total plastic waste generated per person by 10% by 2030.

3.4.4.1 Overview:

Tonga's waste management lacks sufficient resources, human capacity, and features outdated machinery and equipment. Inefficient waste collection, sorting, and disposal processes have resulted in uncollected waste, illegal dumping, and severe social, environmental, and marine consequences. The daily increasing use of problematic single-use plastics by Tongans adds pressure into the current plastic pollution and regulatory challenges by Ministry of MEIDECC and WAL.

This fourth target is set to tackle behaviour as the cause of the increasing problematic single-use plastic consumption in Tonga. Reducing the problematic single-use plastic waste per person by 10% by 2030 (based on 2020 levels) is the new target, building upon previous efforts to ban problematic plastic use. Initiating enduring consumer behaviour change programmes is the key to generating long-term impacts.

3.4.4.2 Lead Agencies

NGOs are identified as the lead agent that will spearhead all the necessary studies for the fourth target. In addition, the Ministry of MEIDECC, aided by other government agencies, will oversee the development and implementation of the National Action Plan to achieve this target. The WAL will oversee the planning, designing and construction of the Sorting and collection facilities in all required areas. The Private sector will collaborate together with the WAL to invest and maintain sorting and collection facilities to ensure sustainability. Community and church leaders, alongside the government, NGOs and WAL, will collaborate to conduct customised behaviour change studies, empowering individuals to reduce plastic waste.

3.4.4.3 Proposed Initiatives

Similar to Target 2, a National Action Plan to address problematic single-use plastics is required. It is important to note that the action plan proposed in each target are not separate action plans but one action plan that reflects the requirements for each target. The second initiative is to plan, design, and construct enhanced plastic collection and sorting systems for residential, school, and public spaces. A carefully orchestrated behavioural programme specifically addressing factors influencing single-use plastic use, and offering solutions it is also required.

3.4.4.4 Key Initiatives

Table 6: Initiatives to reduce the total waste generated per person by 10% by 2030

Target 4: Reduce the total plastic waste generated per person by 10% by 2030.																							
Objective: to tackle behaviour as the cause of the increasing problematic single-use plastic consumption in Tonga																							
Target Areas: i) action plans; ii) Waste infrastructure; iii) community and capacity development; (iv) behavioural programme																							
Lead Agencies: Ministry of MEIDECC, Ministry of Tourism, Waste Authority Limited (WAL), NGOs, CSOs, Churches																							
Key Outputs	**Key Activities**	**ROLES Lead (L) Co-Lead (CL) Support (S)**								**TARGET DELIVERY DATE**													
		Government	**WAL**	**TRA**	**Private Sector**	**NGOs**	**Civil Societies**	**Communities**	**Churches**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**	**2032**	**2033**	**2034**	**2035**
1. National Action Plan on reducing plastic waste generated by individuals developed and implemented.	1.1 Conduct a behavioural study on the plastic waste generated by individuals.				S	L	S	CL	CL												
	1.2 Develop a National Action Plan to reduce the annual plastic waste generation by individuals based on 1.1.	L	CL			CL	S	S													
	1.3 Implement the National Action Plan to facilitate strategic reduction of the waste generated by individual.	CL	L			S	S		CL												
2. Improved plastic waste	2.1 Private sector to invest in constructing sorting and collection systems in all schools and public areas.		CL		L	CL	S	S													

sorting and collection facilities.	2.2 Introduce colour-coded waste sorting and collection system for the residential area.	CL	L		CL	S	S																
	2.3 Public sector to introduce on-premises plastic sorting and collection systems.	L	CL	S	CL	S																	
	2.4 Regulator to upgrade the sorting and saste facilities at all landfills.	CL	L	S	CL	S																	
3. Behavioural driven programme developed and implemented.	3.1 NGOs to develop and implement Grassroot Behavioural Change Programme for communities and schools.			S		L	CL	CL	S														
	3.2 Private Sector to invest in introducing water re-fill system in schools and publics areas.	S	CL	S	L	CL																	
	3.3 Regulator to enforce the penalty for burning & illegal dumping of plastic waste.	L	CL	S		CL			S														
	3.4 Churches to integrate sustainability and waste reduction into their doctrines.	CL		S			CL	S	L														

3.4.5 Target 5: Recycle 25% of post-consumer single-use plastics by 2030

3.4.5.1 Overview:

In Tonga, inadequate recycling procedures, insufficient sorting and collection systems, limited financial resources, inadequate human capacity, and a lack of proper equipment for plastic collection and recycling lead to recycling challenges. The WAL and MEIDECC lack sufficient funds to motivate private investment in recycling. Stakeholders fail to recognize the recycling potential and revenue opportunities of plastics, leading to their disposal in landfills.

Partnering with NGOs and educational institutions can advance research and development in circular economy, extended producer responsibility, and identify alternatives to single-use plastics. An independent NGO is best suited to recognize nationwide-impacting innovations.

3.4.5.2 Proposed Initiatives:

Four key outputs are expected to achieve the fifth target. The Circular Economy Pathway for Tonga, a proposed initiative, aims to guide private sectors towards plastic-free activities and products while limiting their use of plastics in existing services. The second initiative calls for legislation to enforce businesses to collect and recycle their plastic products to ensure accountability, rather than ending up in landfills (through Extended Producer Responsibility). The third initiative calls for WAL to develop and enforce uniform standards for all recycling facilities and landfills, enabling them to effectively collect, sort, dispose or recycle plastic at approved levels. The final initiative calls for more research and development on plastics, prioritising local solutions instead of targeting solution from other countries.

3.4.5.3 Lead Agencies:

The Ministry of MEIDECC will spearhead the development of the Circular Economy Pathway and legislating the Extended Producers Responsibility. The WAL will spearhead the development of appropriate standards and permits for all sorting and collection facilities, landfills and related activities. Under this target, the private sector will take the lead in all recycling-related investment. NGOs, education institutions, the government, WAL, and private sectors will collaborate on research and development in critical areas for local solutions.

3.4.5.4 Key Initiatives

Table 7: Initiatives to recycle 25% of problematic single-use plastic by 2030

Target 5: Recycle 25% of post-consumer single-use plastics by 2030																					
Objective: to increase the recycle of single-use plastic by 2030																					
Target Areas: i) circular economy; ii) standards; iii) EPR; iv) research and development																					
Lead Agencies: Ministry of MEIDECC, Waste Authority Limited (WAL), NGOs, CSOs, Local business																					
Key Outputs	**Key Activities**	**ROLES Lead (L) Co-Lead (CL) Support (S)**								**TARGET DELIVERY DATE**											
		Government	**WAL**	**TRA**	**Private Sector**	**NGOs**	**Civil Societies**	**Communities**	**Churches**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**	**2032**	**2033**	**2034**	**2035**
1. Circular economy pathway clearly identified.	1.1 Conduct a study on the circular economy pathway for Tonga.	**S**	**S**	**L**	**CL**	**CL**															
	1.2 Government to develop the Circular Economy Strategy to guide stakeholders in the transition to a free plastic Tonga.	**L**	**CL**	**S**	**CL**	**S**															
	1.3 Government to develop a policy or legislation to regulate and enforce Extended Producer Responsibility in Tonga.	**L**	**S**	**S**	**CL**	**CL**															
2. Upgraded recyclingfaciliti es standards.	2.1 Develop and enforce mandatory recycling standards and permits for all landfill, recycling facilities and collection facilities.	**CL**	**L**	**CL**	**S**	**S**															

	2.2 Develop and enforce design standards and labelling for plastics and alternatives products.	CL	L	CL	S	S															
3. Extended Producer Responsibility programme developed and implemented.	3.1 Offer eco-friendly seminars for local business to design products from recycleded plastics.	S	S		CL	L		CL													
	3.2 Private sector to invest in Deposit Refund Scheme for PET Bottles.	CL	S		L		S	CL													
	3.3 WAL to offer Incentives to encourage recycling of single-use plastics.	S	L		CL	CL		S													
	3.4 Government to offer grant for micro - small local business in recycling.	L			CL	S	CL		S												
	3.5 Government to offer low interest loan for medium-large business in recycling.	L	S	S	CL	CL															
4. Research and development.	4.1 TRA and Education Institution to offer research grant on plastic recycling for local applications (i.e., construction).	CL	CL	L		S	S														
	4.2 Civil societies to lead Indigenous led-solutions research to address plastic waste.			S		S	L	CL	CL												
	4.3 Private sector to lead in Plastic Waste to Energy>	CL	CL	S	L	S															

3.4.6 Target 6: Increase the use of recycled and reusable products across all sectors.

3.4.6.1 Overview:

The sixth target is to increase the use of recycled and reusable plastic products in all sectors. Governments, businesses and individuals play an important role in the procurement and use of recycled materials to create new products, structures and infrastructure. Improving the quality of recyclable materials in Tonga, as well as finding innovative ways to develop recycled products that fit into the social and cultural dynamics of Tongan society is essential. Without an increase in the demand for these recyclable and reusable products, the sector cannot be sustainable. Therefore, this target is to ensure that policies and frameworks are in place to drive the demand and use of recycled and reusable plastic products in all sectors.

3.4.6.2 Proposed Instruments

The first initiative calls for businesses to strengthen their accountability for collecting and reusing their plastic products or partnering with local businesses to collect and reuse their plastic products for local services such as Vai Tonga. NGOs, the private sector, and education institutions are called upon to conduct research and develop innovative local solutions for reusable plastics. The Ministry of MEIDECC, with the assistance of private sectors and NGOs, will create a policy for employing reusable plastics during humanitarian aid. NGOs and the Ministry of MEIDECC will collaborate on researching optimal methods for implementing and publicizing the donation policy to all donor agencies.

3.4.6.3 Lead Agencies:

The Ministry of MEIDECC will help private sectors to enforce plastic reuse responsibility under extended producer responsibility. The Ministry of MEIDECC will seek avenues to secure financing to offer grants and loans to local businesses to re-use plastic in their services. Education institutions and the private sector will take the lead in researching and developing plastic reuse solutions for locally-sourced products and services. Civil societies and churches will engage in cultural and religious research to uncover traditional solutions for single-use plastics. The Ministry of MEIDECC and NGOs will collaborate together to draft a reusable plastic policy for humanitarian aid to tackle future pandemic and natural disaster assistances that result in plastic pollution in Tonga.

3.4.6.4 Key Initiatives

Table 8: Initiatives to increase recycling and use of recycled products by all sectors

Target 5: Increase the use of Recycled and Reusable products across all sectors.																							
Objective: to increase the use of recycled and reusable plastic products in all sectors.																							
Target Areas: i) behavioural change; ii) alternatives for plastics; iii) community and capacity development																							
Role of lead Agencies: Ministry of MEIDECC, local business, NGOs, CSOs																							
Key Outputs	**Key Activities**	**ROLES Lead (L) Co-Lead (CL) Support (S)**								**TARGET DELIVERY DATE**													
		Government	**WAL**	**TRA**	**Private Sector**	**NGOs**	**Civil Societies**	**Communities**	**Churches**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**	**2032**	**2033**	**2034**	**2035**
1. Extended Producer Responsibility programme.	1.1 NGOs to offer eco-friendly seminars for local businesses to use recycling and recycled plastics.			S	CL	L	CL	S													
	1.2 Private sector to invest innovative re-fill station for their products - such as liquid detergent, body wash and snacks.	S		CL	L	CL	S														
	1.3 Private sector to invest in recycled plastic packaging for their products.	S		CL	L	CL	S														

	1.4 Government to review procurement policy and prioritize recycled products.	L	CL	S	CL	S																	
	1.5 Government to regulate, implement, monitor, and enforce Extended Producer Responsibility (EPR) programme.	L	CL	S		CL	S																
2. Local research, development and innovation	2.1 Education institutions and business to offer a research grant on local re-fill stations andlocal products.	CL		S	L	CL	S																
	2.2 NGOs and civil societies to lead Indigenous led-solution research to address plastic waste.	CL	S			L	CL	CL	S														
	2.3 Civil societies and churches to lead research on cultural and religious factors influencing plastic consumption and recycling.	CL	S			L	CL	CL	S														
3. Reusable plastic policy for humanitarian aids.	3.1 NGOs to lead study on best practice approach to reducing plastic waste during humanitarian aids.	CL	S	S	CL	L																	
	3.2 Government to develop and enforce non-plastic policy for humanitarian aids.	L	CL	S	S	CL																	

3.5 Timeline

The timeline of the entire Roadmap is presented below, providing a bird's-eye view of all the key deliverables and their respective timeframes contributing to the vision and goal of the Roadmap. The overview timeline displays the 10 key deliverables that are anticipated to be achieved. The timeline includes anticipated outcomes for each year to guide stakeholders in planning for their specific businesses, services, and obligations. The deliverables and outcomes may shift due to political changes, global events, natural disasters, or delays in resource mobilization. This Roadmap facilitates a practical and country-specific plan for key stakeholders to assess potential risks, implement mitigation measures, and ensure the overall goal is met within the scheduled timeframe.

Table 9: Initiatives to increase recycling and use of recycled products by all sectors

Key Outputs		2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
Target 1: Develop a robust and interconnected Institutional framework													
1. Waste sector institutional structure strengthened.													
2. Sustainable financial structure and fundraising.													
3. Updated data collection and database.													
4. Local capacity development enhanced.													
5. Successful Political Campaigns on Plastic Waste.													
Target 2: Ban the use of Problematic Single-Use Plastic by 2030													
1. National Action Plan on Single-use plastic developed.													
2. Legislation banning single-use plastics, packaging and medical waste developed and enforced.													

3. Strategic phase-out and banning of single-use plastics enforced.													
4. Nation-wide awareness programme.													
Target 3: Mandatory use of Alternatives to Problematic Single-Use Plastic by 2030													
1. National Action Plan on alternatives for single-use plastic developed and implemented.													
2. Legislation to encourage the use of alternative solutions to problematic single-use plastics developed and enforced.													
3. Strategic enforcement of alternatives to single-use plastics, packaging and medical waste.													
4. Sustainable financial support developed and implemented.													
Target 4: Reduce the total plastic waste generated per person by 10% by 2030.													
1. National Action Plan on reducing plastic waste generated by individuals developed and implemented.													
2. Improved plastic waste sorting and collection facilities.													
3. Behavioural driven programme developed and implemented													
Target 5: Recycle 25% of post-consumer single-use plastics by 2030													
1. Circular Economy pathway clearly identified.													
2. Upgraded recycling facilities standards.													
3. Extended Producer Responsibility programme developed and implemented.													
4. Research and development.													
Target 6: Increase the use of Recycled and Reusable products across all sectors.													
1. Extended Producer Responsibility programme.													

2. Local research, development and innovation.													
3. Reusable-plastic policy for humanitarian aids.													

4 WAY FORWARD

This section describes the management and administrative roles of the key stakeholders to guide the effective and efficient implementation of the Roadmap. Each phase of implementation will require interactive strategies for stakeholder engagement and monitoring and reporting progress to involve the wider Tongan communities to participate in the phase out activities.

4.1 The Coordination bodies

Multiple organizations have been identified to guide the Roadmap towards achieving its projected goals. These bodies will ensure effective implementation, monitoring and coordination of the Roadmap and work collaboratively to undertake the target activities. The main decision-making body is the Tonga Environment Committee (TEC) which wields political power and makes decisions on the funding and implementation of Roadmap. The TEC is comprised of cabinet ministers, parliament members religious leaders, and business leaders. The second body is the Roadmap Technical Committee (RTC) which serves as the implementation arm of the Roadmap, receiving guidance and direction from the TEC. The RTC includes stakeholder officials responsible for carrying out the Roadmap actions. The final body is the Roadmap Steering Committee (RSC) which reports on their progress. High-level representatives such as CEOs from different stakeholders oversee RTC's implementation, offering counsel, suggestions and problem-solving strategies. All reports from the RSC are presented to the TEC to make the necessary decision making.

4.1.1 Tonga Environment Committee

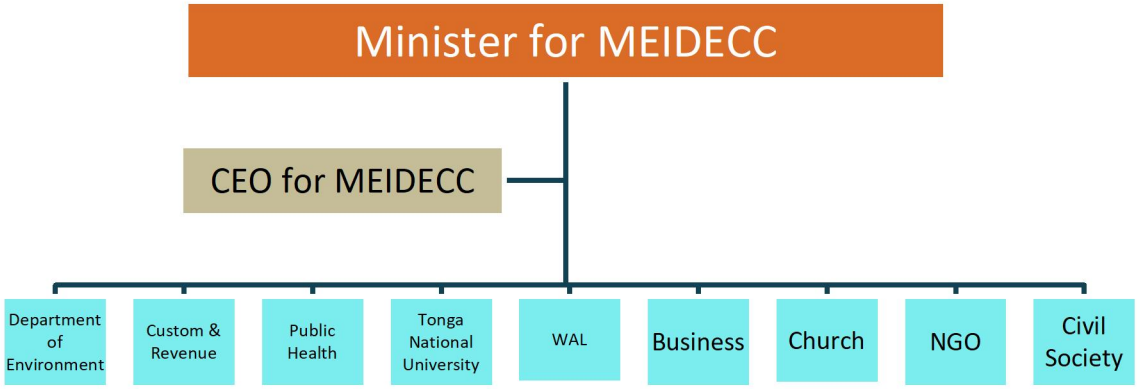
The Tonga Environment Committee will act as the authority for implementing the Roadmap. The committee holds significant political power in making Roadmap decisions. The composition of this proposed committee should have representatives from the following organizations:

i. Minister for MEIDECC,
ii. Minister of Public Enterprises,
iii. Minister of Custom and Revenue,
iv. Minister of Finance and Planning,
v. Minister of Tourism,
vi. Minister of Labour and Trade,
vii. Minister of Police,
viii. Crown Law
ix. 4 x People Representatives,
x. 2 x Noble of the Crown and
xi. 2 x Member from Church denomination.

A church president, who is a neutral figure, will serve as committee chairman, while the Minister of MEIDECC will function as deputy. The Department of Environment will manage the administrative tasks for the committee.

4.1.2 Roadmap Steering Committee

Efficient and timely execution of the Roadmap depends on a robust steering committee with defined roles for all stakeholders. The six stakeholders will be responsible for implementing the Roadmap. The Ministry of MEIDECC in conjunction with the Waste Authority Ltd and representatives from the private sector, churches, NGOs, and civil society will oversee the coordination of the Roadmap. The Steering Committee is responsible for ensuring the successful and timely implementation of the Roadmap by identifying and resolving any issues that may arise throughout the implementation period.



4.1.2.1 Leading Organisation: Ministry of MEIDECC

The Ministry of MEIDECC will lead the Steering Committee of the Roadmap. The role of the Ministry of MEIDECC is to call the coordination team together to discuss the implementation of the Roadmap. The Ministry of MEIDECC must ensure that the implementation of the Roadmap is on track, and if there are issues that need to be solved the Ministry of MEIDECC must discuss with the team and identify solutions.

4.1.2.2 Co-lead: Waste Authority Limited

The WAL will assist the Ministry of MEIDECC in leading the team. The WAL will offer MEIDECC comprehensive assistance, including guidance and technical input, to advance the Roadmap's implementation efficiently.

4.1.2.3 Supporting member: Business

Local businesses contribute significantly to the provision of plastic alternatives in the local market. The Ministry of MEIDECC will appoint the most suitable private sector representative to articulate the interests of local businesses. This private sector representative will serve a one-year term before being replaced by another business representative, unless decided by the team to continue.

4.1.2.4 Supporting member: NGO

The Tonga Recycle Association (TRA) and the No Pelesitiki Campaign are leading efforts among non-governmental organizations to tackle plastic waste issues. These NGOs will take the lead in implementing actions governments have been slow to adopt. The Ministry of MEIDECC will

appoint the most suitable NGO representative to take part in the Steering Committee. The NGO's role is to collaborate with the team and contribute their unique perspectives and aid in the execution of the Roadmap's tasks.

4.1.2.5 Supporting Role: Church

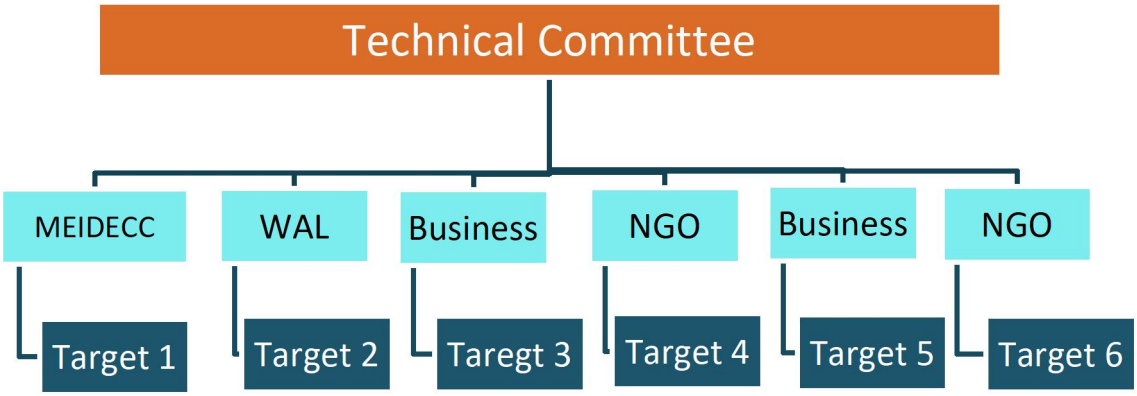
The church's contribution to national development has been previously overlooked. The significant impact of churches on Tongan society warrants special attention. To effectively implement the Roadmap, it's essential to involve church leaders and consider their perspectives for efficient and timely execution of the Roadmap.

4.1.2.6 Supporting Role: Civil Society

Civil society has been overlooked in most national development. The community's perspective and first-hand experience are often overlooked in meetings, leading to developments that may not accurately address ground realities. The Ministry of MEIDECC will appoint a civil society representative to the Steering Committee.

4.1.3 Roadmap Technical Committee

To effectively implement the Roadmap's objectives in Tonga, a National Environmental Steering Committee is essential for overseeing the progress of the Roadmap. This Roadmap's progress will be undertaken by the National Steering Committee who will monitor and track the progress of achieving the targets of the Roadmap. The committee's membership and tasks will be determined through consultations between MEIDECC and WAL. The committee must make decisions independently, free from political pressure, to meet the objectives of the Roadmap effectively.



This committee will discuss technical issues, challenges and benefits that may arise during the implementation of the Roadmap. The committee members, all independent, bring expertise from the private sector, community, research institutions, and other relevant areas. The Steering Committee will review and approve the technical committee's findings.

4.2 Financing

Substantial financing is necessary to execute all the Roadmap activities effectively. All stakeholders are required to work together to secure funding for the Roadmap.

4.2.1 Singe Use Plastic Roadmap Investment Plan

Investing in the Single-Use Plastic Roadmap requires the development of its Investment Plan. The investment plan is designed to finance the initiatives outlined in the roadmap. The plan includes a fundraising strategy for the Roadmap, offering financing and de-risking support to both local businesses and foreign investors in Tonga's waste sector. The Ministry of MEIDECC needs to create a sustainable plastic investment plan as part of its Roadmap to boost growth in local businesses and NGOs while contributing to the national economy and hitting Roadmap targets.

4.2.2 Bi-annual Donor Roundtable

The Donor Roundtable Strategy is an avenue that effectively maximizes funding for Tonga. This approach will facilitate financial investment talks between development partners and foreign investors in the waste sector to discuss strategies to support technology around circular economy, waste to energy and alternatives for single-use plastics etc.

Tonga will hold a bi-annual Roundtable for development partners to discuss strategies for tackling plastic pollution. This will provide the platform to present the Roadmap targets and activities to seek opportunities for collaboration with development partners towards financing and support for meeting the objectives of the Roadmap.

4.3 Reporting

The Roadmap must publicly disclose its progress and status, ensuring transparency around all stakeholders' roles, the status of all activities, and any challenges with proposed solutions discussed. To maintain transparency and accountability and discourage false information, the Ministry of MEIDECC and WAL are responsible for supervising and providing update reports on the Roadmap progress and the need to revise and update activities as more information becomes available.

4.3.1 Robust and up to date Waste Database

It is important to establish a reliable database system for identifying, collecting and analysing waste and plastics data. The data capacity of current waste databases in Tonga is insufficient for reliable data. An outdated database system and limited data resources hinder accurate data evaluation and tracking of the Roadmap progress. Hence, collaboration with the Department of Statistics of Tonga, Ministry of Customs and Revenue, and other data management and collection stakeholders is vital to support accurate reporting of the targets. To enhance public trust, Ministry of MEIDECC and WAL should collaborate with a data scientist to modernize the database and refine data collection and analysis techniques.

MEIDECC and WAL will transition to an online platform for data collection and sharing with key stakeholders, enhancing data access and efficiency. This will improve data organisation and security with encrypted servers, and facilitate effective communication with partners. Moreover, online platforms can safeguard sensitive data and allow users to be kept informed on cyber threats, and prevent computer damage.

4.3.2 Consistent Reporting System

To maintain transparency and ensure information accessibility for tracking the progress of the target activities, effective communication channels and coordination of regular meeting must be established. It is recommended that MEIDECC coordinate monthly meeting updates as needed with all stakeholders or weekly update on urgent matters to ensure effective tracking and resolution of issues of ongoing projects. These meetings must be documented and reports must be developed. These reports must also consist of meeting minutes of all steering committee meetings, technical committee meetings etc as well as *Annual Progress Reports* by MEIDECC and WAL and *2030 Mid-Term Review Report* to ensure accountability and transparency.

5 SUMMARY

Tonga encounters significant obstacles in re-imagining the import, use and disposal of plastics. Some global challenges present opportunities for learning and adapting from other countries' experiences in phasing out single-use plastics. Tonga's unique circumstances necessitate culturally appropriate solutions due to its reliance on single-use plastics . This Roadmap outlines plastic themed initiatives and innovations to inspire investments to reduce plastic reliance in Tonga. The six targets proposed involve activities to facilitate banning of problematic plastic imports, advance circular economy and improve environmental protection, social, cultural and health conditions in Tonga to support a plastic-free future.

In the short term, the Roadmap is to comprehensively examine the various plastics imported, their consumption, disposal methods, and their resulting environmental and health consequences. Effective measures are set in place to swiftly enhance plastic management capabilities and phase out problematic plastics that are polluting the environment. Reducing plastic consumption to a manageable level will pose a great challenge but is required in the short-term to ensure the swift transition to alternatives to single-use plastics.

In the medium term, priority shifts are anticipated due to less problematic plastics, alternative solutions, clearer understanding, improved consumer behaviour, redesigned products, and removed barriers during the initial phase of the Roadmap. MEIDECC and WAL will establish financial structures for financing circular economy initiatives that are set out in the Roadmap. This will enable the private sector to generate reliable income from eco-friendly innovations, funding a sustainable approach in the country. In the long term, Tonga's future plastic usage will be fuel-free, relying on local biodegradable plastic alternatives instead. Adhering to its cultural and social identity in the utilization of its own resources will secure a future for sustainable plastic practices that is independent of global changes.

REFERENCES

1) Center for International Environmental Law (ed.). 2019. Plastics and health: The hidden cost of a plastic planet. Washington DC: Center for International Environmental Law.
2) Croft F and Farrelly T. 2021. Tackling the problem of marine plastic pollution in New Zealand's fin fish industry. Case Study: Moana NZ. London: Association of Commonwealth Universities (ACU).
3) Commonwealth Universities (ACU), Commonwealth Scientific and Industrial Research Organisation. 2021. National circular economy Roadmap for plastics, tyres, glass and paper. Canberra: Commonwealth Scientific and Industrial Research Organisation.
4) Ellen Macarthur Foundation. Plastics overview. Retrieved from https://ellenmacarthurfoundation.org/topics/plastics/overview (15 August 2021).
5) Environmental Science and Research. 2018-2023. Aotearoa impacts and mitigation of microplastics national research programme.
6) Ministry for Primary Industries. 2019. Risk profile: Microplastics in the diet. Wellington: Ministry for Primary Industries.
7) Ministry for the Environment. 2021. Phasing out hard-to-recycle and single-use plastics. Retrieved from https://environment.govt.nz/what-government-is-doing/areas-of-work/waste/plastic-phase-out/ (30 August 2021).
8) Ministry for the Environment. 2021. National plastics action plan. Wellington: Ministry for the Environment.
9) Ministry for the Environment. 2018. National resources recovery project situational report. Wellington: Ministry for the Environment.
10) Muncke J, Andersson AM, Backhaus T, et al. 2020. Impacts of food contact chemicals on human health: A consensus statement. Environmental Health 19(25). doi: 10.1186/s12940-020-0572-5.
11) Office of the Prime Minister's Chief Science Advisor. 2019. Rethinking plastics in Aotearoa New Zealand. Wellington: Office of the Prime Minister's Chief Science Advisor.
12) Royal Society Te Apārangi. 2019. Plastics in the environment: Te ao hurihuri – The changing world. Wellington, Royal Society Te Apārangi.
13) Simon N, Raubenheimer K, Urho N, Unger S, Azoulay D, Farrelly T, Sousa J, van Asselt H, Carlini G, Sekomo C, Schulte ML, Busch PO, Wienrich N, Weiand L. 2021. A binding global agreement to address the life cycle of plastics. Science 373(6550): 43–47.
14) Takada, H. 2020. Long-range transport of UV-328 through marine plastics and bioaccumulation of UV-328 in seabirds on remote islands. Premeeting Presentation at the Sixteenth Meeting of the Persistent Organic Pollutants Review Committee (POPRC.16).