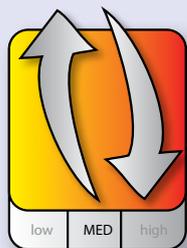


DEFINITION % of plastic in waste audits, including beach clean-ups

PURPOSE Determine trends in marine plastic pollution from land and at-sea sources

DESIRED OUTCOME Stable or declining trend in proportion of plastic in waste audits

**Status**

Fair to poor

**Trend**

Mixed

**Data confidence**

Medium



© Valentine Vaeoso

**PRESENT STATUS**

Pacific data are limited, but existing data show high proportions of plastic in the waste stream (Table 29.1), as marine litter, and as microplastics present throughout Pacific marine ecosystems, including in the guts of fish and their prey (SPREP 2016, Markic et al. 2018). In a 2011 study, plastics formed 12% of the waste stream in Honiara (SPREP 2017).

Globally, the incidence of plastic in waste and marine litter is high: this means there is a strong likelihood of plastic waste challenges even where plastics have not yet been assessed. We consider the present Pacific status *fair to poor* with *medium* data confidence and abundance.

The trend is *mixed*: within the region and around the world, legislation and consumer practice are changing to discourage single-use plastics and littering (Table 12.2). However, Pacific ecosystems will continue to receive plastic waste inputs for years to come even if plastic use were stopped today. This is because marine plastics are transported at sea into the Pacific region, and micro- and macro-plastics are regularly lost from landfills into the ocean.

Plastics have been found in every environment, including the sediments and guts of animals in the deep sea. Marine plastic and microplastic pollution from land- and sea-based sources are identified as priority concerns by the global environmental community due to their persistent natures and their impacts. Microplastic pollution has been proposed as a planetary boundary threat (Galloway et al. 2017).

In 2016, many Pacific island countries and territories had no current systematic management plan or system for marine litter prevention, measurement, management and clean up/recovery (SPREP 2016). The *Cleaner Pacific 2025* strategy sets a regional target of zero marine pollution incidents by 2020 and 2025. Pacific island countries have started to transition to integrated waste management practices.

**FISH ARE SWALLOWING MICROPLASTICS**

A single Pacific chub fish from a remote area of the ocean contained the level of plastics that would be expected to be found in fish from polluted harbours. The reason for this is that plastics are carried on ocean currents from all over the South Pacific and accumulated in the subtropical gyre, close to Rapa Nui. The plastics in this fish might be from all coastal countries of the South Pacific and the boats that traveled the South Pacific.

Of the 34 fish species studied by Markic et al. (2018), 33 contained plastics in their guts. A 2020 study near Suva, Fiji, found microplastic contamination in sediments, surface water, and fish, with sewage outfall contributing to sediment microplastic burden.

We still do not know the full impacts of plastics on marine life or on our own health.

Source: Markic et al. (2018), Ferreira et al. (2020)



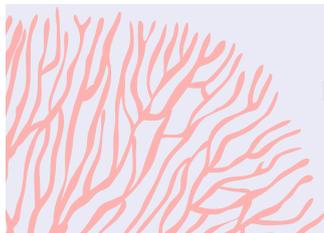
104 pieces of marine plastic retrieved from an individual Pacific chub (*Kyphosus sandwicensis*) fish from Rapa Nui, Easter Island. © Ana Markic

## CRITICAL CONNECTIONS

Quantifying and addressing marine plastic and microplastic pollution meets many overlapping national, regional, and global goals for social wellbeing, environmental protection, and economic benefits.

These benefits extend across the sectors and industries of:

- Local communities, where health and cultural practices can be rejuvenated by the use of local techniques and materials instead of plastic alternatives and the cost of clean-ups can be reduced;
- Health: environmental pollution is a major cause of mortality, particularly through contaminated air and water to which burning plastics contributes. The health impacts of microplastics are unknown, as is the level of contamination from unlined landfills via underground water to the ocean;
- Tourism, where partnerships can drastically reduce plastic waste production by tourism services (often outweighing local resident production) and sustainable practices attract ecotourism;
- Fishing and farming, where vessel and gear fouling is reduced and ecosystem health and species health are boosted by reduced pollution;
- Foundational ecosystem services, particularly essential for subsistence communities and countries dependent on natural resources;
- Invasive species management and protection of local biodiversity. Poor waste management can lead to the spread of invasive weeds and pests (such as fire ants), and plastic rafts can carry invasive species to Pacific coastlines.
- Reducing waste production reduces the carbon and energy cost of the consumption and management of plastic products/packaging and their alternatives, although the carbon emissions from energy generation, destruction of wetlands and forests, land-use change, and agricultural and industrial practices still outweigh household consumer product choices.
- Reducing local plastic consumption can create safer, healthier environments for coastal communities and marine ecosystems.



**Corals entangled in plastic are 20 times more likely to suffer disease.**

Lamb et al. 2018



**Plastics cause at least USD 13 billion in damages to ocean ecosystems every year.**

WEF 2016

**In fish nurseries in Hawai'i, plastics outnumbered baby fish by seven to one.**

Gove et al. 2019



A desktop gap analysis conducted in 2020 identified potential strengths and weaknesses in the national policy frameworks of 52 documents relevant to preventing plastic pollution in ten Pacific island countries. While a growing number of countries in the region are developing robust preventative measures such as import regulations, the study found considerable gaps and opportunities for strengthening plastic pollution policy frameworks. The gaps and recommendations include the faithful domestication of international and regional agreements into national legislation and policy; coherence across multiple levels of governance; specific reference to plastics in policy frameworks; a full life-cycle approach; enhanced science-policy interface with particular attention to the links between plastic pollution and human health impacts, climate change, and microplastics; the integration of indigenous sciences; sustainable public-private partnerships and financial mechanisms including return and repatriation schemes; expanded import regulations; and enforcement. Ultimately, a multilateral plastic pollution convention is needed to cap global virgin plastic production, establish global standards for the design of safe plastics, and provide scientific, financial, and technical assistance to develop tailored national plastic pollution prevention action plans and policy tools.

Source: Farrelly T, Borrelle S, Fuller S (August 2020) *Plastic Pollution Prevention in Pacific Island Countries: Gap analysis of current legislation, policies and plans*. London: Environmental Investigation Agency.

## PRESSURES AND OPPORTUNITIES

Plastics are now pervasive in both products and packaging. At the consumer level, public demand for packaging is changing. However, plastics provide light-weight packaging that reduces spoilage in tropical conditions, important for growing Pacific populations and economies reliant on imported goods. Simple replacement of plastics with glass (made from sand, increasingly over-harvested globally), wood, or other alternative materials can bring additional disadvantages of greater weight, carbon and energy costs of production and transport, or reduced shelf-life of products.

The 16 Pacific countries and territories with data produced an average 0.89 kilograms of household waste per person per day, about 15% of which was plastic, in the measured years between 2009 and 2014 (SPREP 2016, World Bank 2018). Pacific countries have been moving to ban single-use plastics (Table 29.2). Between 2016 and 2020, the Cook Islands, Federated States of Micronesia, Fiji, Guam, New Caledonia, Niue, Palau, Republic of the Marshall Islands, Samoa, Tuvalu, and Vanuatu introduced new laws addressing single-use plastics (Table 29.2; SPREP, forthcoming). Regional guidelines for regulating plastics were produced by SPREP in 2018 with the Environmental Defenders Office NSW (SPREP 2018).

However, Pacific islands are recipients of waste from overseas sources via ocean currents. Transport of marine plastic litter on ocean currents into the region is expected to be high (Lachmann et al. 2017). Land is limited for covered landfills. Pacific tips are very susceptible to direct loss to the ocean via wind or water.

High-temperature incineration is a solution accepted in some countries, but poorly maintained or managed incinerators can release dangerous persistent organic pollutants when burning plastics, just like household burning of rubbish and organic garden waste. These persistent organic pollutants have direct human health risks and can travel long distances in air and waterways. Backyard burning or accidental ignition of landfills are sources of carcinogens, or cancer-causing chemicals, in the Pacific.

Fishing also brings a waste burden. In addition to the plastic components of abandoned, lost, or derelict fishing gear, illegal dumping of non-biodegradable wastes at sea has been reported from the longline and purse seine fleets by shipboard observers, with plastics present in 37% of the reported pollution incidents (Richardson et al. 2017). As of 2012, less than 5% of longliners carried observers, weakening estimates of potential waste dumping across the fleet.

The IMO's Marine Environment Protection Committee adopted an action plan in 2018 to reduce marine pollution including the dumping of plastics at sea, already prohibited under MARPOL and the London Convention and Protocol. A Conservation and Management Measure on Marine Pollution was adopted by the Western & Central Pacific Fisheries Commission that entered into force in 2019, prohibiting the discharge of plastics (but not including fishing gear), encouraging marine pollution research, and encouraging pollution prevention measures.



Marine plastic pollution, Honiara harbour, Solomon Islands. © Bradley Nolan

Over 100,000 Fish Aggregation Devices (FADs) which often contain plastic have been abandoned floating throughout the region, with bycatch risks including entrapment of totem species. In 2018, the Western and Central Pacific Fisheries Commission (WCPFC) adopted some recommendations on non-entangling and biodegradable FADs for bigeye, yellowfin, and skipjack tuna fisheries (CMM2018-01) and are due to consider the issue again in 2020. Other regions have encouraged the avoidance of FAD fishing or the use of biodegradable materials in their construction; for detail, see the International Seafood Sustainability Foundation's *Non-Entangling and Biodegradable FADs Guide*.

The high cost of transport and low domestic demand for post-recycling reclaimed plastics hinders Pacific recycling. Safe removal that reduces resource consumption overall will benefit from partnerships to manage this cost, such as the Moana Taka partnership between SPREP and the China Navigation Company that takes advantage of empty cargo containers on return voyages.

There has been little standardised monitoring of impacts on marine species, especially in the Pacific islands region. In the Northeast Atlantic region, experts have developed a standardised assessment of marine plastics in guts of seabirds Northern Fulmar as an indicator of marine litter (see OSPAR Assessments and Provencher et al. 2019).

## REGIONAL RESPONSE RECOMMENDATIONS

International action is necessary for transboundary issues of marine plastic pollution. Very little research has been done on land- and sea-based sources, fate, and impacts of marine litter in the Pacific region, which can be used to inform regional and national strategies and policy-making. Of particular relevance is the need for modelling and monitoring; investigations into abandoned, lost, or discarded fishing gear, including Fish Aggregating Devices; and identification of major marine litter accumulation and hot-spot areas in the region to allow for targeted recovery and clean-up efforts.

Marine litter minimisation and management programmes and projects require financing for appropriate coverage and success. This is especially the case for projects that target extensions of plastic waste management infrastructure to decrease sources of marine plastic litter. There are currently no national budgets allocated specifically for marine litter management in the Pacific islands region (SPREP 2016).

Effective management is mandatory for safe, sustainable disposal of plastic waste. Burning plastic releases dangerous persistent organic pollutants, like dioxins and furan, which do not break down, can travel long distances, and have known human health impacts.

**TABLE 12.1: Plastic in household waste in selected Pacific island countries and territories. Adapted from SPREP (2016 and forthcoming). The unweighted regional mean from 15 sites was 16.5% plastic in waste (SPREP 2016).**

COUNTRY/ TERRITORY	STATE OR MUNICIPALITY	YEAR	SHARE OF PLASTIC IN HOUSEHOLD WASTE COMPOSITION (%)
American Samoa	Tutuila island	2011	12.8
Federated States of Micronesia	Pohnpei	2017	15.8
	Yap	2017	9.2
	Chuuk	2011	22.5
	Kosrae	2017	29.5
Fiji	Nadi	2008	7.1
	Lautoka	2008	7.9
Kiribati		2016	13.0
Marshall Islands	Majuro and Ebeye	2017	15.8
Palau	Koror and Babeldaob	2017	8.0
Papua New Guinea	Port Moresby	2014	18.5
Samoa		2017	6.0
Solomon Islands	Honiara	2011	19.5
	Gizo	2011	25.2
Tonga	Vava'u	2012	13.4
Vanuatu	Shefa Province, Port Vila Municipal Council	2016-7	19.0

To mitigate marine plastic pollution, Pacific leaders can:

- Participate within the *Cleaner Pacific 2025* strategy and action plan;
- Identify sources and trends using waste audits, citizen science, and landfill management tools such as weigh bridges;
- Measure plastic wastes and spending on waste and marine pollution management, including landfill management, cost of clean-ups and habitat rehabilitation, and cost-savings due to waste diversion from landfills;
- Plan for resourced management of marine litter and its impacts, including preparedness such as disaster risk reduction and biosecurity;
- Partner for reduced plastic pollution, including with development partners and with vessels active in their national waters;
- Innovate for return, recycling, and alternatives, with the engagement of local communities and businesses;
- Advocate for international action, especially from Pacific-rim countries, to prevent plastic pollution; and
- Commit to engaging in a circular plastics economy and engaging with proponents driving upstream changes.

## UNDERSTANDING WASTE IN TUVALU

At of mid-2020, Tuvalu has the most comprehensive assessment of waste production by category in the Pacific islands region. Each category of waste, including types of plastic, was assessed, allowing Tuvalu to identify priority wastes and benefits of specific management actions.

In August 2019, Tuvalu joined several other Pacific islands that have banned single-use plastics (Table 29.2). Tuvalu's Waste Management (Prohibition on the Importation of Single-Use Plastic) regulation is designed to prohibit the importation, manufacture, sale or distribution of certain single-use plastic.

If there is no substitution of single-use bags and bottles with other waste, Tuvalu will avoid 421 cubic metres of waste, 6% of the present total waste by volume. The baseline assessment at the beginning of the ban estimated daily plastic waste generation of 35.3 kilograms per household.

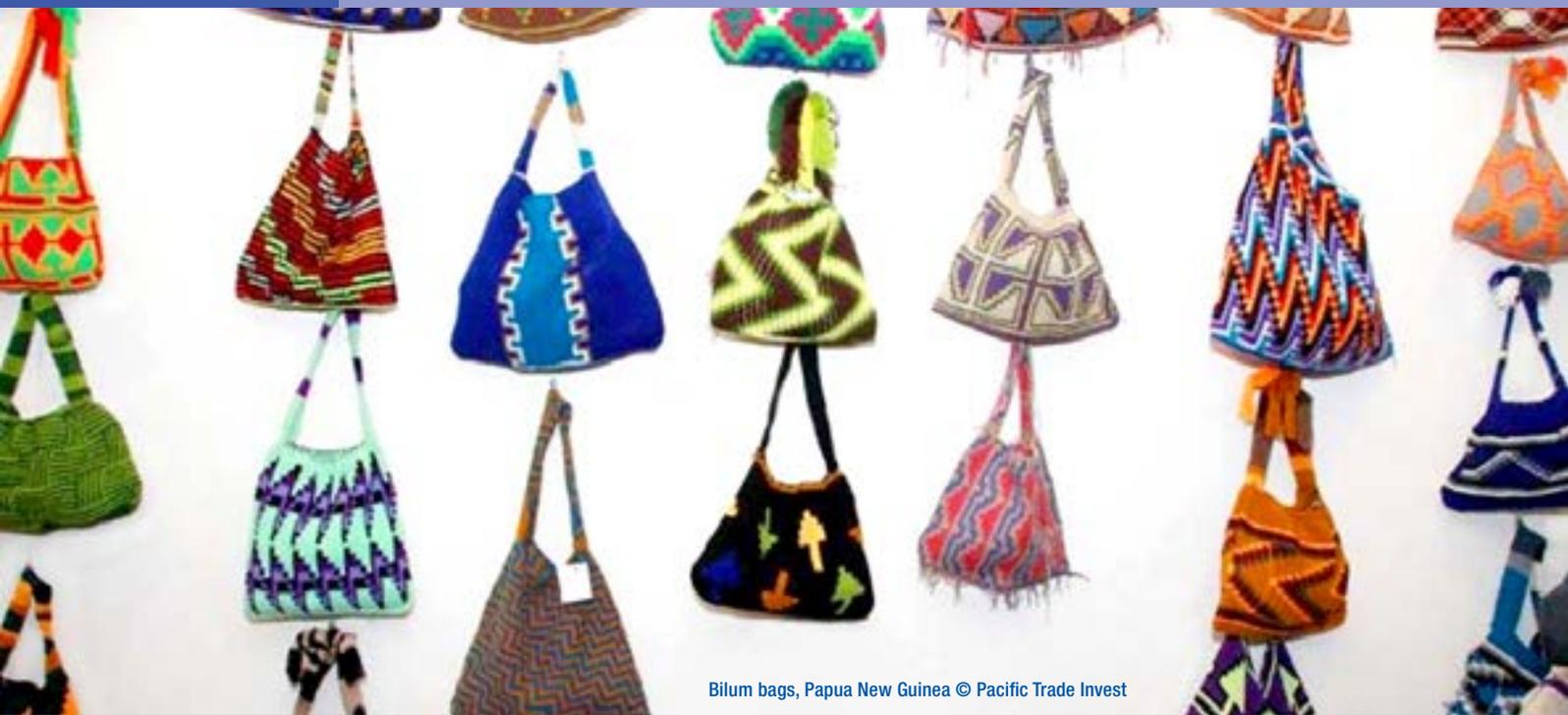
The approach used in Tuvalu will be the new standard for the region to provide the basic knowledge needed for effective and informed waste management. The PacWaste Plus project is conducting waste audits for all Pacific island countries by 2023, with data for other countries emerging in 2020.

Source: Sagapolutele et al. (2019)

**TABLE 12.2:** Existing single-use plastic management measures in Pacific island countries and territories. As of August 2020, there are bans or levies on selected types of single-use plastics in 11 of 14 countries and 6 of 7 territories.

COUNTRY/ TERRITORY	BAN/LEVY	MATERIALS CONTROLLED	YEAR ENFORCED	LEGISLATION OR SOURCE
Cook Islands	Ban	8 types of single-use plastics, including bags	2019	Cabinet approved policy 2018-2023
Fiji	Levy	single-use plastic shopping bags	2017	Environment and Climate Change Levy [Plastic Bags] Regulation 2017
Federated States of Micronesia <sup>a</sup>	Ban	single-use Styrofoam and plastic food service items	2020	Public Law 21-76
Nauru	–	–	–	–
Niue	Ban	single-use plastic shopping bags	2020	Customs Import Prohibition (Plastic Shopping Bags) Order
Kiribati	–	–	–	–
Palau	Ban	single-use plastic shopping bags	2019	Plastic Bag Use Reduction Act (RPPL No.10-14) Executive Order No. 417 : zero disposable plastic policy for government buildings
Papua New Guinea	Ban	single-use plastic shopping bags	2014, renewed 2018	Environment (Ban on Non-Biodegradable Plastic Shopping Bags) Policy 2009; Environment (Control of Biodegradable Plastic Shopping Bag) Regulation 2011 implemented by Conservation and Environment Protection Authority since 2014
Republic of the Marshall Islands	Ban	single-use plastic shopping bags & Styrofoam food service	2017	Styrofoam and Plastic Products Prohibition Act 2016, Bill 28
Samoa	Ban	single-use plastic shopping bags	2019	Waste (Plastic Bag) Management Regulation 2018
Solomon Islands	Target: Ban in 2020	plastic straws, single-use shopping bags, PET bottles, Styrofoam plates and cups	Target: 2020	Consultation undertaken in November 2019. (MECDM; see also SPREP 2017)
Tonga	Levy	single-use plastic shopping bags	2013	Waste Management (Plastic Levy) Regulations 2013
Tuvalu	Levy	single-use plastic bottles under 1.5 litres, plastic plates, cutlery, food wrap, straws, cups and bags	2019	Waste Management [Prohibition on the Importation of Single-Use Plastic] Regulation 2019 and the Waste Management [Levy Deposit] Regulation 2019
Vanuatu	Ban	plastic straws, single use plastic shopping bags and polystyrene takeaway boxes	2018	Waste Management Act No. 24 of 2014
American Samoa	Ban	single-use plastic shopping bags	2011	Plastic Bag Ban Legislation A.S.C.A 25.2034
Commonwealth of the Northern Mariana Islands	Ban	single-use plastic shopping bags	2019	Senate Bill 21-37
French Polynesia	Ban	single-use plastic shopping bags (lightweight bags: 2020; all plastic bags: 2022)	2020	Rapport NO 13-2020, 14 May 2020 Session Administrative
Guam	Ban	single-use plastic shopping bags	2021	Choose to Reuse: Mungnga Ma Ayek I Plastek Act of 2018
New Caledonia		2019: single-use plastic shopping bags cups, glasses, cups, plates, cutlery, straws and cotton swabs 2020: food trays at point of sale 2022: food trays	2019	Loi du pays 2019-2; Gouvernement de la Nouvelle-Calédonie, “La fin des pochons en plastique”, 5 August 2019
Tokelau	–	–	–	–
Wallis & Futuna	Ban	single-use plastic shopping bags	2017	Article E 422-9 (2015); source

a The states of Yap (2014) and Pohnpei (2012) had existing bans on single-use plastic bags.



Bilum bags, Papua New Guinea © Pacific Trade Invest

## INDICATOR IN ACTION

SDGs 3.9, 6.1, 6.2, 6.9, 12 · Basel Convention · SAMOA Pathway (58d, 68, 70-71) ·  
 Noumea Convention (Articles 5, 6, 7, 10) · Waigani Convention · Pacific Regional Environment Objective 3.1 ·  
 Pacific Islands Framework for Nature Conservation Objective 5

## FOR MORE INFORMATION

Persistent organic pollutants: see Pacific Stop the POPs video and information.

The Inform Project hosts national and regional data portals for environmental information from Pacific island countries.

OSPAR Assessments: see <https://oap.ospar.org/en/ospar-assessments/> OSPAR uses 'beach litter abundance, composition and trends', 'composition and spatial distribution of litter on the seafloor', and 'plastic particles in fulmar stomachs in the North Sea' as the three Marine Litter indicators within the 'Pressures from Human Activities' set.

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The Secretariat of the Pacific Regional Environment Programme (SPREP) supports 14 countries and 7 territories in the Pacific to better manage the environment. SPREP member countries and members of the Pacific Roundtable on Nature Conservation (PIRT) have contributed valuable input to the production of this indicator. [www.sprep.org](http://www.sprep.org)

National and regional environment datasets supporting the analysis above can be accessed through the Pacific Environment Portal. [pacific-data.sprep.org](http://pacific-data.sprep.org)

For protected areas information, please see the Pacific Islands Protected Area Portal. [pipap.sprep.org](http://pipap.sprep.org)