



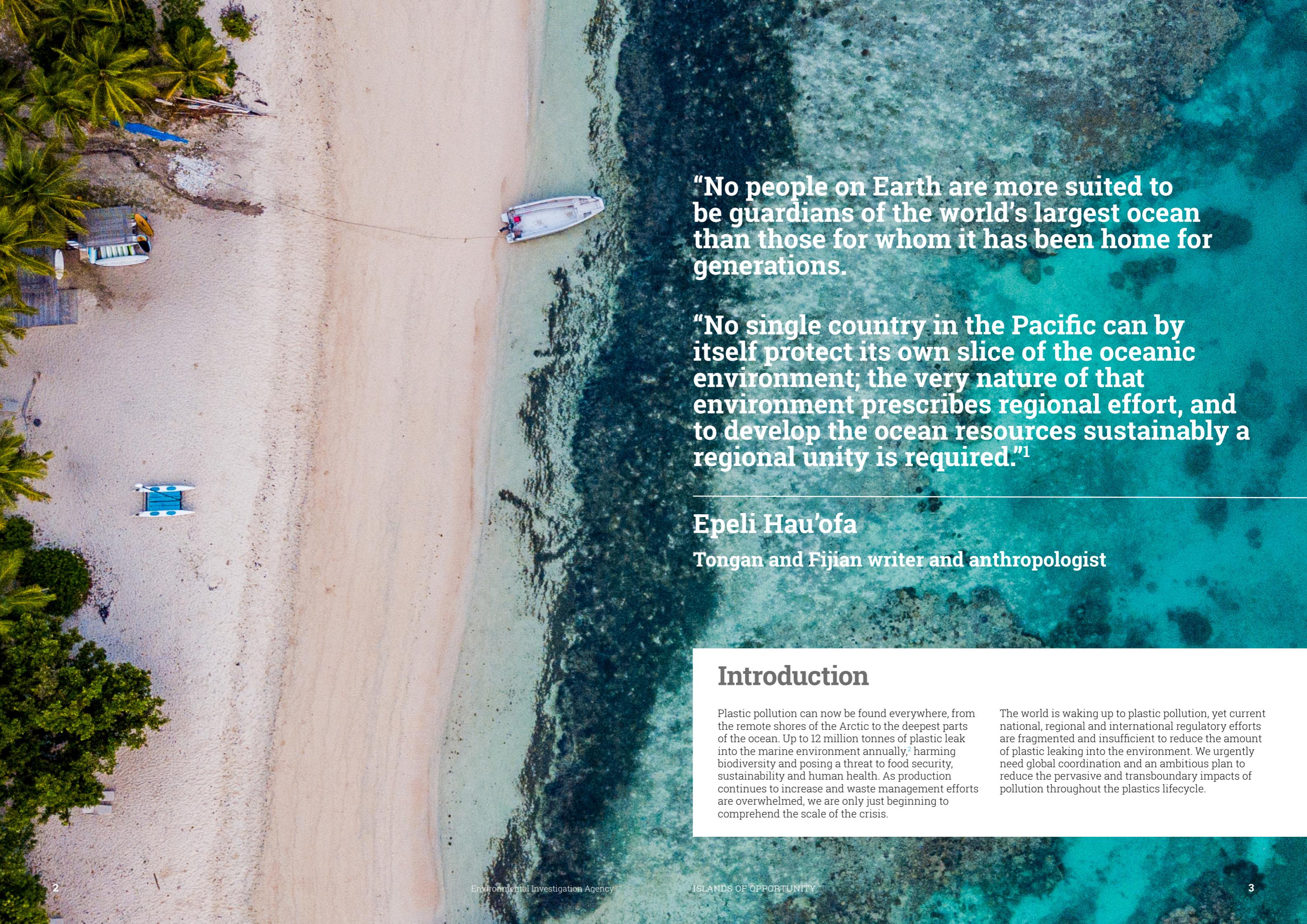
ENVIRONMENTAL
INVESTIGATION
AGENCY

Islands of Opportunity:

Toward a Global Agreement
on Plastic Pollution for Pacific
Island Countries and Territories

April 2020





"No people on Earth are more suited to be guardians of the world's largest ocean than those for whom it has been home for generations."

"No single country in the Pacific can by itself protect its own slice of the oceanic environment; the very nature of that environment prescribes regional effort, and to develop the ocean resources sustainably a regional unity is required."¹

Epeli Hau'ofa

Tongan and Fijian writer and anthropologist

Introduction

Plastic pollution can now be found everywhere, from the remote shores of the Arctic to the deepest parts of the ocean. Up to 12 million tonnes of plastic leak into the marine environment annually,² harming biodiversity and posing a threat to food security, sustainability and human health. As production continues to increase and waste management efforts are overwhelmed, we are only just beginning to comprehend the scale of the crisis.

The world is waking up to plastic pollution, yet current national, regional and international regulatory efforts are fragmented and insufficient to reduce the amount of plastic leaking into the environment. We urgently need global coordination and an ambitious plan to reduce the pervasive and transboundary impacts of pollution throughout the plastics lifecycle.



Plastic pollution in the Pacific

Pacific islanders have a deep connection to the marine environment, depending on its abundance for human and economic survival and wellbeing. Living at the very forefront of both climate change and marine pollution, Pacific islanders are uniquely positioned to recognise the connection between human activity and our surroundings, but, more importantly, to demonstrate leadership in pioneering the solutions that will avert an ever-worsening human and environmental health crisis.

Despite contributing as little as 1.3 per cent of the mismanaged plastic in the world's oceans,³ Pacific Island Countries and Territories (PICTs) are one of its main recipients. As oceanic currents bring increasing volumes of plastic debris to shorelines, the situation on some Pacific islands has been described as a 'waste disaster'.⁴

At sea, the problem is no better. When plastic enters the marine environment, it is largely buoyant and drifts with prevailing currents and wind, accumulating in ocean gyres.⁵ The largest of these is the Great Pacific Garbage

Patch – a 1.6 million km², 79,000 tonne mass of plastic debris in the North Pacific.⁶ Comprised predominantly of fisheries-derived plastic,⁷ the problem will only increase as fishing efforts intensify.⁸

Even on the most remote island in the world – Henderson Island in the South Pacific – researchers found 17.6 tonnes of plastic and an estimated 2,000 pieces of microplastic per square metre.⁹ Other surveys have found hundreds of millions of pieces of microplastic on other Pacific islands, where they are killing off local wildlife.^{10,11}

Plastic is also polluting the very systems that uphold Pacific island economies: coral reefs. In a survey of 159 coral reefs in the Asia Pacific region, researchers estimated there to be 11.1 billion plastic items entangled in the corals, leading to abrasion, suffocation and, ultimately, mortality.¹² This number is projected to increase by a further 40 per cent by 2025.¹³

This accumulating plastic poses a serious threat to the integrity of regional ecosystems and resources and is now becoming ubiquitous in food chains. A recent study in the Pacific found plastic debris in 97 per cent of examined fish species and 25 per cent of all individuals.¹⁴ This is of extreme concern given how plastics bleach harmful toxic chemicals into the environment¹⁵ and that consumption of fish in the Pacific is three to six times higher per capita than the global average.¹⁶

Furthermore, the economic cost (i.e. revenue losses to fisheries, aquaculture and marine tourism industries) associated with ocean-based consumer plastic pollution is also severe, amounting to an estimated \$13 billion every year.¹⁷ With economies and livelihoods heavily dependent on marine resources,¹⁸ PICTs are disproportionately affected by the crisis.¹⁹

The same dynamics exist for PICTs concerning plastic pollution as they do for climate change – with Pacific

islanders contributing very little to the issue but being the first in line to suffer the consequences. Plastic production alone produces an estimated 400 million tonnes of greenhouse gases each year²⁰ and, despite contributing insignificantly to these emissions, PICTs are on the frontline of the crisis. Extreme and unpredictable weather patterns are destabilising fragile livelihoods and rising sea levels threaten to render some islands uninhabitable, with the lifecycle impacts of plastic representing a significant contributor to the problem.

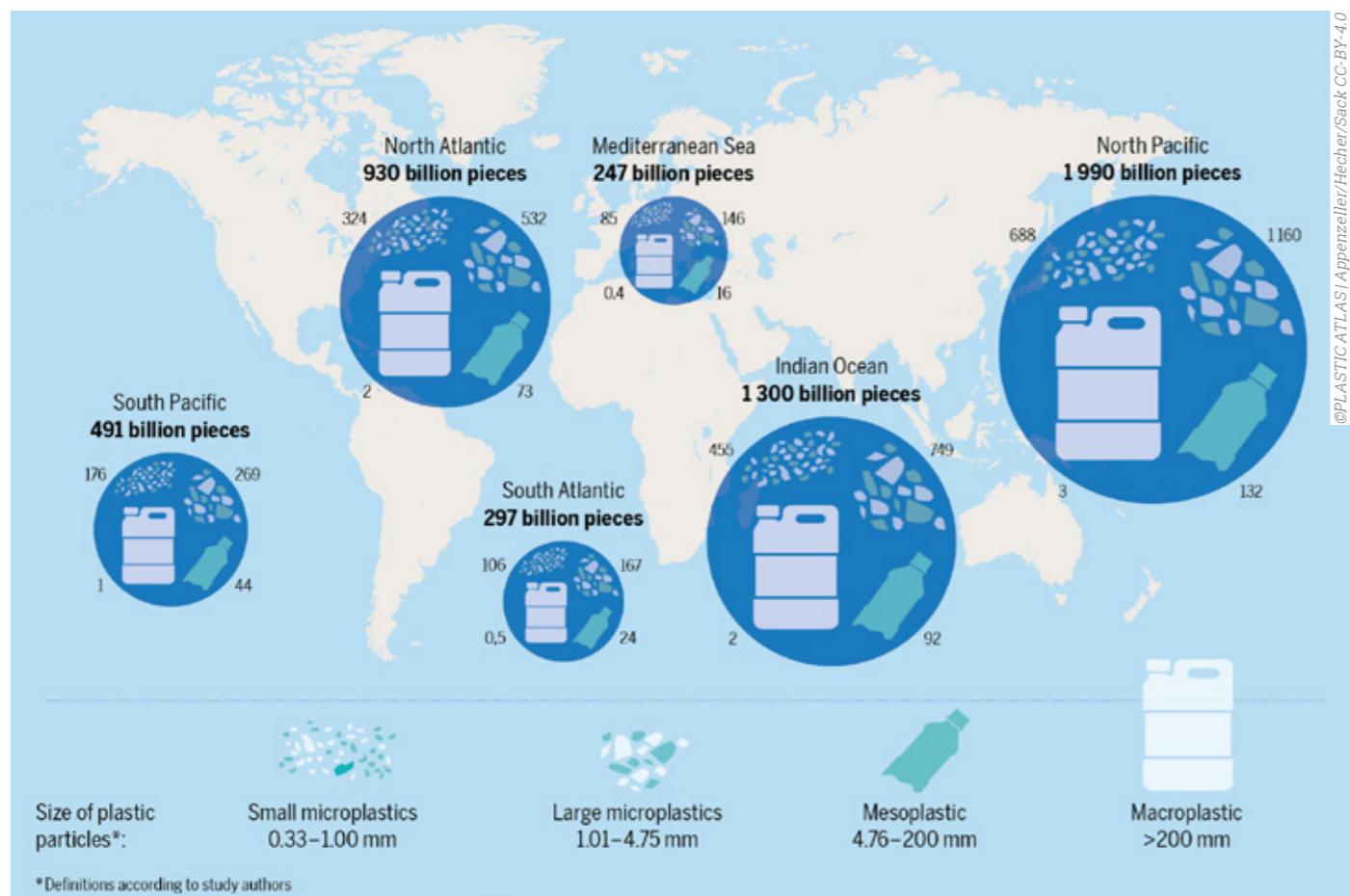
Although the situation is dire, momentum is building towards tangible global action to address plastic pollution and there is no region better placed to lead international efforts to protect the ocean and coastal communities than the Pacific.

Above: Aerial view of a rubbish dump north of Funafuti, Tuvalu. Capacity to manage landfill in the Pacific Islands is severely limited and poses a significant threat to the environment.



Figure 1 (left): Size of the Great Pacific Garbage Patch

Figure 2 (below): Estimated quantities of plastic in major marine areas, total and size, in billion pieces (rounded numbers)



Regional multilateral instruments

There are a range of national and regional instruments that address some aspect of plastic pollution in the Pacific. Broadly, regional instruments can be grouped into two categories: (i) the regional conventions that provide the legal basis for managing plastic pollution and (ii) regional strategies that aim to coordinate efforts across the region. As is the case with existing global conventions (see *Convention on Plastic Pollution –*

Toward a New Global Convention with a Multi-Layered Governance Approach to Address Plastic Pollution), despite providing a valuable foundation on which to build, regional instruments over-emphasise waste management and have little scope to regulate the overwhelming quantities of plastic produced and imported into the Pacific region.

Regional conventions

There are five binding multilateral agreements with a mandate to manage some aspect of plastic pollution in the Pacific: the Noumea Convention (1990) (also known as The Convention for the Protection of Natural Resources and Environment of the South Pacific Region' or 'SPREP Convention'); the Noumea Emergencies Protocol (1990); the Noumea Dumping Protocol (1990); the Waigani Convention (1995); and the Convention for

the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific Ocean (WCPF Convention, 2004), which in 2017 agreed upon a binding Conservation Management Measure (CMM) on Marine Pollution (CMM 2017-04). Alongside international conventions, they comprise the legal architecture that governs plastic waste and pollution in the region (see Table 1).

Bottom: Provided by the U.S. Fish and Wildlife Service, a black footed albatross chick with plastics in its stomach lies dead on Midway Atoll in the Northwestern Hawaiian Islands. Midway sits amid a collection of man-made debris called the Great Pacific Garbage Patch. Along the paths of Midway, there are piles of feathers with rings of plastic in the middle - remnants of birds that died with the plastic in their guts.

Table 1: Regional multilateral conventions in the Pacific with relation to the governance of plastic

Instrument	Noumea Convention	Noumea Convention – Dumping Protocol	Noumea Convention – Emergencies Protocol	Waigani Convention	Conservation Management Measure on Marine Pollution
Entry into Force	22nd August 1990	22 August 1990	22 August 1990	21 October 2001	1 January 2019
Description	A comprehensive umbrella agreement for the protection, management and development of the marine and coastal environment of the South Pacific Region. ²¹ It is the Pacific component of the UN Regional Seas Programme. ²²	An instrument intending to minimise and control the dumping of wastes in the region and through which contracting parties can meet the obligations of the Noumea and London Conventions. ²³	An instrument aiming to reduce and eradicate movements of hazardous, radioactive and toxic wastes in the Pacific region. ²⁴	An instrument seeking to protect marine ecosystems and fisheries productivity from degradation by addressing marine (including plastic) pollution from fishing vessels. ²⁵	A binding measure adopted by the WCPF Commission seeking to protect marine ecosystems and fisheries productivity from degradation by addressing marine (including plastic) pollution from fishing vessels. ²⁶
Focus	Marine pollution from ships	Dumping of wastes	Disaster waste	Import of wastes into and between PICTs	Marine pollution from ships
No. Ratifications	15/21	15/21	14/21	12/21	21/21



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Regional strategies

Pacific Regional Waste and Pollution Management Strategy 2016-2025 (Cleaner Pacific 2025)

Cleaner Pacific 2025 is the comprehensive regional framework for sustainable waste management and pollution prevention in the Pacific region up until 2025.²⁷ It was developed and endorsed by all 21 Secretariat of the Pacific Regional Environment Programme (SPREP) member PICTs in 2016, integrating strategic actions and past learnings to address all forms of waste and pollution in the region, including marine plastic pollution. The framework is guided by four strategic goals:

- to prevent the generation of waste and pollution;
- to recover resources from waste and pollutants;
- to improve management of residuals;
- to improve monitoring of the receiving environment.

These goals are being implemented through operationalising 15 strategic actions aimed at:

- strengthening institutional capacity;
- promoting public-private partnerships;
- promoting sustainable best practices in waste, chemicals and pollution management;
- developing human capacity;
- improving dissemination of outcomes and experiences;
- promoting regional and national cooperation.

Under its first strategic goal, Cleaner Pacific 2025 strives to prevent the generation of wastes yet holds limited scope for reducing the quantities of plastic entering the Pacific. Instead, the strategy is limited to tackling certain single-use plastics, addressing the data gap, national policies and material recovery. The mid-term review is due later this year.

Pacific Marine Litter Action Plan 2018 – 2025 (MLAP)

The Pacific Marine Litter Action Plan 2018-2025 (MLAP) is the primary means through which the region is collaborating to address the plastic pollution crisis and sets out the key actions to minimise marine pollution across PICTs.²⁸ It is a subset of both Cleaner Pacific 2025 and the pollution component of the Noumea Convention – the Pacific Oceans Pollution Prevention Programme (PACPOL) – which were developed in the context of the ‘Blue Pacific’ identity²⁹ under the ‘Framework for Pacific Regionalism’³⁰ and the ‘Pacific Oceanscape Framework’.³¹ The action plan forms part of the United Nations Regional Seas Programme and the Global Partnership on Marine Litter (GPML), for which SPREP is the Pacific Regional Node.

There can be no doubt that SPREP and other national and regional bodies have done exceptional work in recent years to tackle the issue of marine plastic pollution through both the MLAP and other strategies. Funded partially through the Pacific Ocean Litter Project, the MLAP rightly intends to reduce the sources of certain single-use plastics such as straws and food containers.

Under Activity 1.1, the MLAP boldly commits to support the development of a global legal framework to address marine plastic pollution and microplastics. However, despite significant evidence that marine plastic pollution is mostly derived from land-based activities,³² the MLAP focuses primarily on sea-based sources and, like Cleaner Pacific 2025, holds limited scope for regulating the quantities of plastic entering the Pacific region.

Above: East Timorese workers sort mineral bottles at a used plastic processing factory in Manluena East Timor. Many countries have placed restrictions on Single Use Plastics, but in the Pacific there is a need to build capacity for collection, sorting and recycling of items such as plastic bottles, as well as providing infrastructure to facilitate re-use and refill in order to reduce the impacts of plastic pollution.



The case for global governance - a Pacific perspective

Recent developments

In recent years, momentum has been building to address the threat of plastic pollution at the global level. As part of the United Nations Agenda for Sustainable Development, SDG 14.1 states the aim: "by 2025, [to] prevent and significantly reduce marine pollution of all kinds, in particular from land-based activities, including marine debris and nutrient pollution", placing the issue of marine plastic pollution directly on the international agenda.³³

Several international agreements, regional seas conventions and intergovernmental organisations have prioritised measures to achieve these ambitions. For example, the recent amendment to the Basel Convention restricting certain plastic waste exports, the International Maritime Organisation's (IMO) adoption of the 'Action Plan to Address Marine Plastic Litter from Ships'³⁴ and the Food and Agricultural Organisation's (FAO) endorsement of the 'Voluntary Guidelines for the Marking of Fishing Gear' to mitigate and prevent

the problem of abandoned, lost or otherwise discarded fishing gear (ALDFG).³⁵

Furthermore, the United Nations Environment Assembly (UNEA) has mandated an Ad-Hoc Open Ended Expert Working Group on Marine Litter and Microplastics (AHOEEG)³⁶ to review national, regional and international efforts to combat plastic, financial and technical resources and to recommend potential policy options to accelerate action towards achieving SDG 14.1.

These efforts are in addition to numerous regional seas conventions, national and regional action plans and policies, and industry and civil society initiatives to combat plastic pollution.

Top: Pacific Island countries have long been active advocates for the oceans and climate change at the United Nations. Peter Thomson, in his role as Fijian Ambassador to the United Nations and now United Nations Secretary-General's Special Envoy for the Ocean, has helped elevate the needs of the Pacific Islands in global fora.

Why does the Pacific need a global agreement?

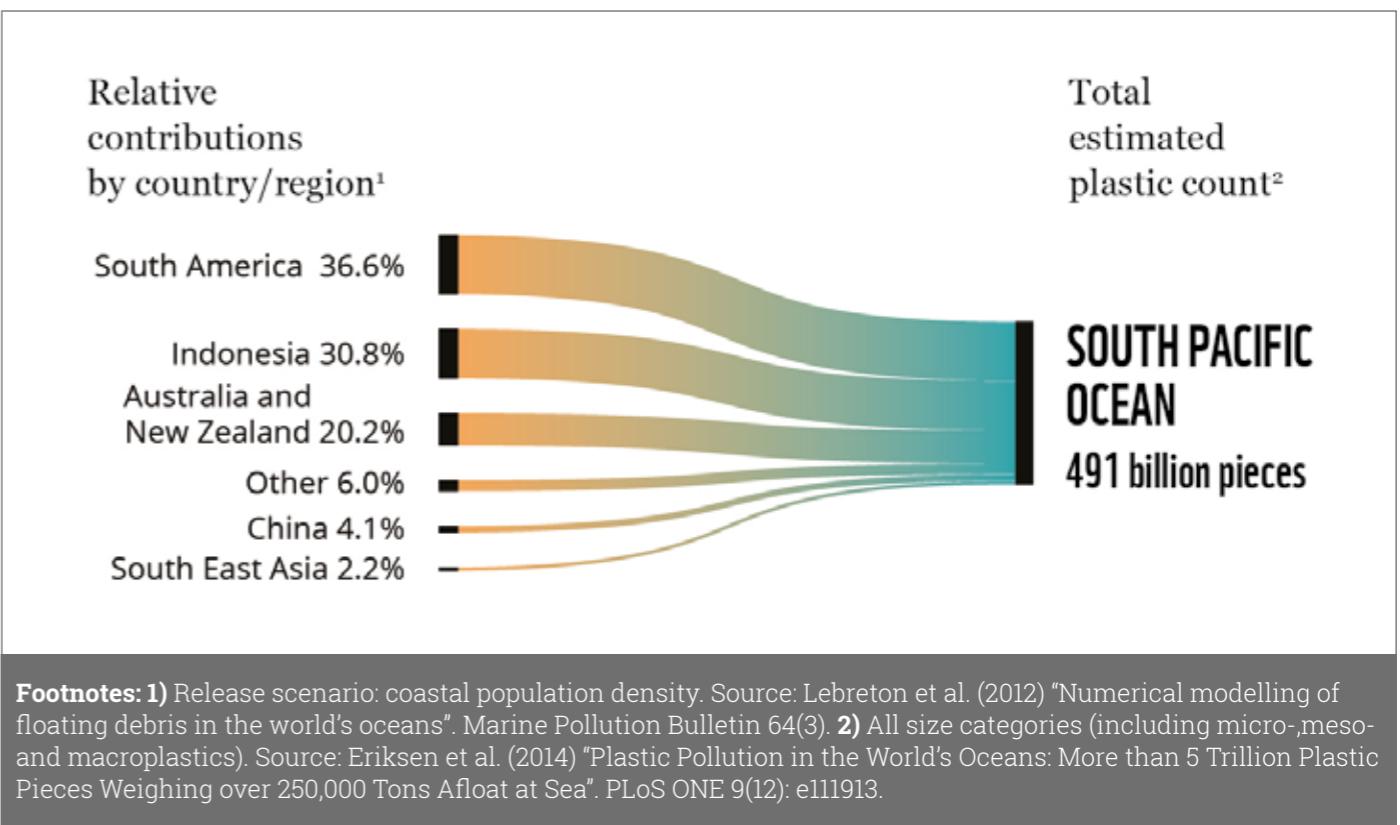
Plastic pollution is a global problem requiring a global solution. Given its transboundary nature, the Pacific region, despite producing and consuming very little of overall plastic waste, has shorelines littered with plastic carried by prevailing winds and oceanic currents (see Figure 3). Unwittingly, Pacific islanders find themselves on the frontline of the plastic pollution crisis and, while national and regional cooperation should continue, there is an opportunity for PICTs to lead the call for a global agreement on plastic pollution, ensuring its elements and design are responsive to the needs of the region and its measures effectively implemented.

As recognised by the United Nations Environment Programme (UNEP), existing governance frameworks which attempt to regulate plastic contain consistent regulatory and knowledge gaps.³⁷

Figure 3: Sources of Land-Based Plastic Debris in the South Pacific Ocean (Source: WWF)

These gaps include:

- the mandate to manage upstream production;
- geographic scope;
- lack of recognition of risks to human health;
- solid waste management;
- dumping;
- management of microplastics;
- regulation of industry pollution and emissions into water bodies;
- due diligence within the plastics industry;
- differences in capacity.³⁸



Footnotes: 1) Release scenario: coastal population density. Source: Lebreton et al. (2012) "Numerical modelling of floating debris in the world's oceans". Marine Pollution Bulletin 64(3). 2) All size categories (including micro-, meso- and macroplastics). Source: Eriksen et al. (2014) "Plastic Pollution in the World's Oceans: More than 5 Trillion Plastic Pieces Weighing over 250,000 Tons Afloat at Sea". PLoS ONE 9(12): e111913.

Moreover, despite marine plastic pollution originating largely from land-based activities,³⁹ these sources are largely unregulated by regional treaties, Cleaner Pacific 2025 and MLAP, which focus largely on sea-based sources.

Several voluntary, non-binding commitments to combat marine plastic pollution have also been formulated in the recent past, but limited evidence is available to evaluate their impact. These include the United Nations Clean Seas Initiative, the Global Partnership on Marine Litter (GPML), the Global Programme of Action for the Protection of the Marine Environment from Land-Based

Activities (GPA) and pledges at Our Ocean Conferences and the 2017 United Nations Ocean Conference. Fundamentally, voluntary agreements alone cannot address the root of the problem, which is increasing volumes of virgin plastic production.

The MLAP supports the development of a global legal framework. In fact, a global legal framework would represent the only effective way for the region to regulate production and industry due diligence – the most essential aspects of reducing plastic pollution. In relation to this, the first strategic goal of Cleaner Pacific 2025 is to prevent the generation of wastes and

pollution. However, with the petrochemical industry planning mass expansion,⁴⁰ largely out of reach of PICT jurisdictions, there is little chance production (and thus the flow of plastic into the Pacific) can decrease without a global legal mechanism.

A global agreement on plastic and plastic pollution would provide a level of global coordination and accountability currently missing. It would provide a legal basis for technical resource and knowledge exchange, as well as access to sustainable finance mechanisms to develop and implement tailored PICT national action plans. Such an agreement could also mandate the elimination of toxic substances in plastics, set binding global reduction targets, ensure best-practice management for all stages of the plastics lifecycle and mandate the Polluter Pays Principle⁴¹ (guiding principle 3 of Cleaner Pacific 2025) by requiring producers to pay for the full lifecycle costs of plastic.

Furthermore, as both Cleaner Pacific 2025 and MLAP recognise, plastic waste management and climate change are inextricably linked. The petrochemicals used to produce plastics are set to become the world's biggest

driver of oil and natural gas demand,⁴² further fuelling the climate crisis. Management of wastes will likely become yet more challenging as sea levels rise, landfill sites become inoperable, harmful plastic chemicals leach into the environment, ecosystems degrade and disaster resilience is compromised. The Boe Declaration on Regional Security and the Kainaki II Declaration for Urgent Climate Change Action announced to the world that the Pacific will not stand for inaction. Indeed, during the 2018 Pacific Island Forum Leaders' Meeting, it was observed that waste and pollution, particularly plastic, is now of equal importance to the region as climate change.

A new global agreement is the only tangible and effective means to introduce the restrictions on production necessary to 'turn off the tap', develop and implement national action plans, ensure best-practice management throughout the plastic lifecycle and ensure a reduction of plastic being produced and entering the Pacific environment.

Below: Despite the pressure on waste management infrastructure and bans on certain plastic products, the expansion of plastic production facilities is rapidly advancing around the world. This is part of a petrochemical plant being built on the Ohio River in Monaca, Pa., for the Royal Dutch Shell company. The plant, which is capable of producing 1.6 million tons of raw plastic annually, is expected to begin operations by 2021.



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Opportunities for Pacific engagement

This year has been dubbed 'the year of ocean action,' during which we must 'rise up' to protect our marine environment. As we gather together to write the new story of our oceans, we recall the statement from Ambassadors Ngedikes Olai Uludong of Palau and Martin Hermann of Denmark, during the UN Ocean Conference preparatory meeting in New York: "2020 is a huge opportunity for the global community to come together and raise the level of ambition".⁴³

History has proven that PICTs are instrumental in steering tangible progress on environmental matters at the global level. They were highly influential in the formulation of securing a standalone Sustainable Development Goal for the ocean, SDG 14, as well as guiding the global narrative on climate change towards progressive action. As with climate change, addressing plastic pollution requires an urgent and concerted global response.

As some of the most severely impacted by plastic pollution and with such close cultural, economic and social ties to the ocean, PICTs are uniquely placed to build on the success of historic interventions by engaging in the United Nations Environment Assembly Ad Hoc Open Ended Expert Group process on Marine Litter and Microplastics. This would position the Pacific to be leaders in this space, working with other like-minded parties to build a critical mass of support to secure a negotiating mandate for a global agreement at UNEA-5 in 2021.

As we focus on creating momentum and accelerating concrete action towards combating plastic pollution, despite the overshadowing of events by the global coronavirus (aka COVID-19) pandemic, we must nevertheless press for more ambitious action in this critical year of ocean protection. This includes engaging at key events such as the UN Ocean Conference, the Pacific Islands Leaders' Meeting and Our Oceans Conference, where the Pacific region will take centre stage with Palau as host. Whether these events take place online, via correspondence or in-person remains to be seen and comes second to prioritising the health and wellbeing of the world's citizens. Regardless, it is imperative to remain engaged in the broader issues affecting our marine environment and committed to their solutions.

In the margins of these events, in whatever format they take, there will be opportunities to engage in high-level dialogues and ensure the language of ambitious action is embedded throughout the outcome statements and commitments that will become the roadmap we use to protect the Pacific islands and Ocean for future generations.

Top: Kuata Island, Republic of Fiji. The Pacific islands are world-renowned for their picture-perfect image and outstanding natural beauty. Yet, with the petrochemical industry planning vast expansion in plastic production and waste management systems already overwhelmed, the threat to the Pacific paradise has never been greater.

Recommendations

To support the process of engagement leading to UNEA-5, there are multiple opportunities to establish Pacific island leadership and engagement on the issue of plastic pollution. While many events are currently facing postponement and cancellation due to the recent global outbreak of COVID-19, the below recommendations highlight potential opportunities for the sharing of ideas and leadership for the region, whether they happen online or in-person:

- Demonstrate Pacific island leadership on the issue of plastic pollution through a **regional declaration of support for a global agreement** at key strategic events, such as the United Nations Oceans Conference, Our Oceans Conference and Pacific Island Leaders' Forum
 - **Ratification of existing regional instruments** to strengthen and coordinate existing coverage of regional measures to address plastic pollution. Most importantly, as outlined in the MLAP, this includes the Noumea Convention, the Noumea Emergencies Protocol, the Noumea Dumping Protocol and the Waigani Convention
 - **Ratification of existing global instruments** to strengthen and coordinate existing coverage of international measures to address plastic pollution. These include ratifying the London Convention and its Protocol under the International Maritime Organisation, MARPOL, and the Basel Convention
 - Building on national and regional consultation around the Ad Hoc Open Ended Expert Group and other regional meetings, **identify Pacific needs and priorities within a global agreement** addressing the full life cycle of plastics
 - Strategic and **active engagement at AHOEEG-4, AHOEEG-5 and UNEA-5** in order to secure a negotiating mandate at UNEA-5



References:

- Hau'Ofa, E. (2008). We are the ocean: Selected works (p. 27). Honolulu: University of Hawaii Press. Available at: https://upress.hawaii.edu/product/we-are-the-ocean-selected-works/?woocommerce_wishlist_id=9161&woocommerce_wishlist_action=join

Jambeck, J. R., Geyer, R., Wilcox, C., Siegler, T. R., Perryman, M., Andrade, A., and Law, K. L. (2015). Plastic waste inputs from land into the ocean. *Science*, 347 (6223), pp.768-771. Available at: <https://science.sciencemag.org/content/347/6223/768>

Asari, M., Tsuchimura, M., Sakai, S. I., Tsukiji, M., & Sagapolutele, F. (2019). Analysis of mismanaged plastic waste in Samoa to suggest proper waste management in Pacific island countries. *Waste Management and research*, 37 (12), pp.1207-1216. Available at: <https://journals.sagepub.com/doi/abs/10.1177/0734242X1986739>

Veitayaki, J. (2010). Pacific Islands drowning in their waste: waste management issues that threaten sustainability. [Conference Proceedings]. Available at: <http://repository.usp.ac.fj/215/>

Jambeck, J. R., Geyer, R., Wilcox, C., Siegler, T. R., Perryman, M., Andrade, A., and Law, K. L. (2015). Plastic waste inputs from land into the ocean. *Science*, 347 (6223), pp.768-771. Available at: <https://science.sciencemag.org/content/347/6223/768>

Van Sebille, E., England, M. H., and Froyland, G. (2012). Origin, dynamics and evolution of ocean garbage patches from observed surface drifters. *Environmental Research Letters*, 7 (4), pp.044040. Available at: <https://iopscience.iop.org/article/10.1088/1748-9326/7/4/044040/pdf>

Lebreton, L., Slat, B., Ferrari, F., Sainte-Rose, B., Aitken, J., Marthouse, R., and Noble, K. (2018). Evidence that the Great Pacific Garbage Patch is rapidly accumulating plastic. *Scientific reports*, 8 (1), pp.1-15. Available at: <https://www.nature.com/articles/s41598-018-22939-w>

Lebreton, L., Slat, B., Ferrari, F., Sainte-Rose, B., Aitken, J., Marthouse, R., & Noble, K. (2018). Evidence that the Great Pacific Garbage Patch is rapidly accumulating plastic. *Scientific reports*, 8 (1), pp.1-15. Available at: <https://www.nature.com/articles/s41598-018-22939-w>

Lavers, J. L., and Bond, A. L. (2017). Exceptional and rapid accumulation of anthropogenic debris on one of the world's most remote and pristine islands. *Proceedings of the National Academy of Sciences*, 114 (23), p.6052-6055. Available at: <https://www.pnas.org/content/114/23/6052>

O. Leal Filho, W., Havea, P. H., Balogun, A. L., Boenecke, J., Maharaj, A. A., Ha'apio, M., and Hemstock, S. L. (2019). Plastic debris on Pacific Islands: Ecological and health implications. *Science of the total environment*, 70, pp.181-187. Available at: <https://www.sciencedirect.com/science/article/pii/S0048969719311672>

1. Lavers, J.L., Sharp, P.B., Stuckenbrock, S. and Bond, A.L. (2020). Entrapment in plastic debris endangers hermit crabs. *Journal of Hazardous Materials*, 387, p.121703. Available at: <https://www.sciencedirect.com/science/article/pii/S0304388419316577?via%3Dihub>

2. Richards, Z.T. and Beger, M., (2011). A quantification of the standing stock of macro-debris in Majuro lagoon and its effect on hard coral communities. *Marine pollution bulletin*, 62 (8), pp.1693-1701. Available at: <https://www.sciencedirect.com/science/article/abs/pii/S0025326X1003158>

3. Lamb, J. B., Willis, B. L., Fiorenza, E. A., Couch, C. S., Howard, R., Rader, D. N., and Harvell, C. D. (2018). Plastic waste associated with disease on coral reefs. *Science*, 359 (6374), pp.460-462. Available at: <https://science.sciencemag.org/content/359/6374/460>

4. Markic, A., Niemand, C., Bridson, J. H., Mazouni-Gaertner, N., Gaertner, J. C., Eriksen, M., and Bowen, M. (2018). Double trouble in the South Pacific subtropical gyre: Increased plastic ingestion by fish in the oceanic accumulation zone. *Marine pollution bulletin*, 136, pp.547-564. Available at: <https://www.sciencedirect.com/science/article/abs/pii/S0025326X18306702>

5. Gallo, F., Fossi, C., Weber, R., Santillo, D., Sousa, J., Ingram, I., and Romano, D. (2018). Marine litter plastics and microplastics and their toxic chemicals components: the need for urgent preventive measures. *Environmental Sciences Europe*, 30 (1), p.13. Available at: <https://www.ncbi.nlm.nih.gov/pmc/articles/MC5918521/>

6. Charlton, K. E., Russell, J., Gorman, E., Hanich, Q., Delisle, A., Campbell, B., and Bell, J. (2016). Fish, food security and health in Pacific Island countries and territories: a systematic literature review. *BMC Public Health*, 16 (1), pp.285. Available at: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4806432/>

7. UNEP (2014) Valuing Plastics: The Business Case for Measuring, Managing and Disclosing Plastic Use in the Consumer Goods Industry. Available at: http://wedocs.unep.org/bitstream/handle/20.500.11822/9238/-valuing%20plastic%3a%20the%20business%20case%20for%20measuring%2c%20managing%20and%20disclosing%20plastic%20use%20in%20the%20consumer%20goods%20industry-2014Valuing%20plastics_E.pdf?sequence=8&isAllowed=y

8. Seidel, H., and Lal, P.N., Economic value of the Pacific Ocean to the Pacific Island Countries and Territories. (2010). Gland, Switzerland: IUCN. pp.74. Available at: https://www.iucn.org/sites/dev/files/import/downloads/economic_value_of_the_pacific_ocean_to_the_pacific_island_countries_and_territories.pdf

9. McLigorm, A., Campbell, H. F., Rule, M. J., (2011). The Economic Cost and Control of Marine Debris Damage to the Asia-Pacific Region. *Ocean & Coastal Management*, 54, pp. 643–651. Available at: <https://www.sciencedirect.com/science/article/abs/pii/S0964569111000688>

10. Williams, M., Gower, R., Green, J., Whitebread, E., Lenkiewicz, Z., and Schröder, P. (2019) No Time to Waste: Tackling the Plastic Pollution Crisis Before it's Too Late, Teddington: Tearfund. Available at: https://tearfund.org/~media/files/tliz/circular_economy/2019-tearfund-consortium-no-time-to-waste-en.pdf?la=en

11. Secretariat for the Pacific Regional Environment Programme (2020). The Noumea Convention. Secretariat for the Pacific Regional Environment Programme's official website. Accessed 11 March 2020. Available at: <https://www.sprep.org/convention-secretariat/noumea-convention>

12. Secretariat for the Pacific Regional Environment Programme (2018). Pacific Action Plan: Marine Litter 2018–2025. Apia, Samoa. Available at: <https://www.sprep.org/sites/default/files/documents/publications/MAP-Digital-small.pdf>

13. Secretariat for the Pacific Regional Environment Programme (2020). The Noumea Convention. Secretariat for the Pacific Regional Environment Programme's official website. Accessed 11 March 2020. Available at: <https://www.sprep.org/convention-secretariat/noumea-convention>

14. Secretariat for the Pacific Regional Environment Programme (2020). The Noumea Convention. Secretariat for the Pacific Regional Environment Programme's official website. Accessed 11 March 2020. Available at: <https://www.sprep.org/convention-secretariat/noumea-convention>

15. Secretariat for the Pacific Regional Environment Programme (2020). The Waigani Convention. Secretariat for the Pacific Regional Environment Programme's official website. Accessed 11 March 2020. Available at: <https://www.sprep.org/convention-secretariat/waigani-convention>

16. Siwatibau and Sloan (2018). Marine Pollution from fishing vessels in the Pacific Ocean - what is the Western and Central Pacific Fisheries Commission doing about it? Siwatibau and Sloan official website. Accessed 1 March 2020. Available at: <http://www.sas.com.fj/ocean-law-bulletins/marine-pollution-from-fishing-vessels-in-the-pacific-ocean-what-is-the-western-and-central-pacific-fisheries-commission-doing-about-it>

17. Secretariat for the Pacific Regional Environment Programme (2016). Pacific Regional Waste and Pollution Management Strategy: 2016–2025. Apia, Samoa. Available at: <https://www.sprep.org/attachments/Publications/WMPC/cleaner-pacific-strategy-2025.pdf>

18. Secretariat for the Pacific Regional Environment Programme (2018). Pacific Action Plan: Marine Litter 2018–2025. Apia, Samoa. Available at: <https://www.sprep.org/sites/default/files/documents/publications/MAP-Digital-small.pdf>

19. Pacific Islands Forum Secretariat (n.d). Pacific Regionalism and the Blue Pacific. Pacific Islands Forum Official Website. Accessed 25 February 2020. Available at: <https://www.forumsec.org/pacific-regionalism/>

20. Pacific Islands Forum Secretariat (2014). The Framework for Pacific Regionalism. Accessed 26 February 2020. Available at: <http://www.adb.org/sites/default/files/linkeddocuments/pacific-robp-2015-2017-sd.pdf>

21. Pratt, C., and Govan, H. (2010). Framework for a Pacific Oceanscape: a catalyst for implementation of ocean policy. Taholo Kami at the 2nd Marine Sector Working Group Meeting held in Apia, Samoa, Part two, Annex III pp.95. Available at: <https://www.forumsec.org/wp-content/uploads/2018/03/Framework-for-a-Pacific-Oceanscape-2010.pdf>

22. Jambeck, J. R., Geyer, R., Wilcox, C., Siegler, T. R., Perryman, M., Andrade, A., and Law, K. L. (2015). Plastic waste inputs from land into the ocean. *Science*, 347 (6223), pp.768-771. Available at: <https://science.sciencemag.org/content/347/6223/768>

23. United Nations General Assembly (2015). Transforming our world: The 2030 agenda for sustainable development. Available at: http://www.un.org/ga/search/view_doc.asp?symbol=A/RES/70/1&Lang=E

24. Marine Environmental Protection Committee resolution 73/19, Action plan to address plastic pollution from ships, MEPC 73/19/Add.1 (26th October 2018). Available at: <http://www.imo.org/en/MediaCentre/HotTopics/marinelitter/Documents/IMO%20marine%20litter%20action%20plan%20plan%20MEPC%2073-19-Add-1.pdf>

25. Food and Agricultural Organisation (2019). Voluntary Guidelines on the Marking of Fishing Gear. Rome. pp.88. Licence: CC BY-NC-SA 3.0 IGO. Available at: <http://www.fao.org/3/ca3546f/ca3546f.pdf>

26. United Nations Environment Programme resolution 3/7. Marine Litter and Microplastics. UNEP/EA.3/Res.7. (30th January 2018). Available at: https://papersmart.unon.org/resolution/uploads/k1800210_english.pdf

27. United Nations Environment Programme resolution 2/11: Marine Plastic Litter and Microplastics. UNEP/EA.2/Res.11 (May 2016) – leading to United Nations Environment Programme (2017). Combating marine plastic litter and microplastics: An assessment of the effectiveness of relevant international, regional and subregional governance strategies and approaches. Available at: https://papersmart.unon.org/resolution/uploads/unep_aheg_2018_inf3_full_assessment_en.pdf

28. United Nations Environment Programme (2018). Combating Marine Plastic Litter and Microplastics Summary for Policymakers: An Assessment of the Effectiveness of Relevant International, Regional and Subregional Governance Strategies and Approaches. Nairobi, (8 May 2018) Available at: https://papersmart.unon.org/resolution/uploads/unep_aheg_2018_inf3_full_assessment_en.pdf

29. Geyer, R., Jambeck, J. R., and Law, K. L. (2017). Production, use, and fate of all plastics ever made. *Science advances*, 3 (7). Available at: <https://advances.sciencemag.org/content/3/7/e1700782>

30. International Energy Agency (2018). The Future of Petrochemicals - Towards a more sustainable chemical industry. Available at: <https://www.iea.org/reports/the-future-of-petrochemicals>

31. Rio Declaration. (1992). Rio declaration on environment and development. Report of the United Nations conference on environment and development, Rio de Janeiro, (3-14 June 1992). Available at: <http://www.unep.org/Documents.multilingual/Default.asp?DocumentID=78&ArticleID=1163>

32. International Energy Agency (2018). Petrochemicals set to be the largest driver of world oil demand, latest IEA analysis finds. International Energy Agency official website. Accessed 25 February 2020. Available at: <https://www.iea.org/news/petrochemicals-set-to-be-the-largest-driver-of-world-oil-demand-latest-iea-analysis-finds>

33. United Nations (2020). 2020: the year for action, to 'rise up' and safeguard ocean life. United Nations Official Website. Accessed 29 February 2020. Available at: <https://news.un.org/en/story/2020/02/1056792>



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