



WWF

REPORT

AUS

2020



PLASTIC REVOLUTION TO REALITY

A roadmap to halve Australia's
single-use plastic litter

Credits and acknowledgements

The report was written in association with Boston Consulting Group, and the team comprised Sarah Black, Kayne Harwood, Susanna Lees, Keet Kuhanandan, James Clements, Katherine Dickson, Paulien Mijer, Lucie Le Miere, Joyce Guo, Des Kheng, Vinisha Rathod and Kirsten Lees.

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WWF is one of the world's largest and most experienced independent conservation organisations, with over five million supporters and a global network active in more than 100 countries. WWF's mission is to stop the degradation of the planet's natural environment and to build a future in which humans live in harmony with nature, by conserving the world's biological diversity, ensuring that the use of renewable natural resources is sustainable, and promoting the reduction of pollution and wasteful consumption.

WWF-Australia acknowledges the Traditional Custodians of Country throughout Australia and their continuing connection to land, water and culture. We pay our respects to their Elders - past, present and emerging.

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INTRODUCTION

OBJECTIVE

WWF has a global mission to achieve no plastic in nature. In pursuit of this, WWF-Australia is seeking to prevent single-use plastics from entering our oceans and endangering our marine wildlife. This report has been developed in association with Boston Consulting Group, to address this issue.

The report recognises that the federal, state and territory governments have, or are in the process of, setting admirable goals to reduce plastic waste. We also recognise the complexity and urgency of the problem; comprehensive and coordinated regulations addressing all elements of the plastics value chain are required to create a sustainable solution. This report aims to contribute to this process by providing recommendations on the most problematic plastics leaking into the environment to enable government to confidently take regulatory action.

SCOPE

The report focuses exclusively on the six most problematic categories of consumer single-use plastics. These are:

1. plastic bottles,
2. soft 'scrunchable' plastics,
3. disposable foodware,
4. disposable packaging & containers,
5. cigarettes, and
6. microplastics.

For these six categories of single-use plastic, this report recommends a range of policy levers across product design, use and disposal to reduce consumption, increase rates of reuse and recycling and ultimately reduce leakage into the environment. This report does not consider the additional regulation, processes or infrastructure required after an item has been recovered, to treat, sort and/or repurpose plastics and to encourage demand for recyclates. Neither does it consider the broader, secondary benefits of addressing the plastics issue, such as job creation and reduction in greenhouse gas emission.

METHODOLOGY

The report examined global success stories and leading research for each of these priority plastics. The proposed solutions and regulatory actions presented have been developed for the Australian context. Note that all values calculated for the purpose of this report are assumption-based approximations.

TACKLING SINGLE-USE PLASTICS IN OUR OCEANS EXECUTIVE SUMMARY

To date, approximately 9.7 billion tonnes of plastics have been produced worldwide; more than one tonne of plastic for every person alive. Seventy five per cent of which has become waste, which is largely mismanaged.

Annual global plastic production reached 454 million tonnes in 2018 and it is estimated that **25 million tonnes of plastics leaks into the environment each year, of which more than eight million tonnes end up in the ocean.** This causes significant damage to marine species and ecosystems, as well imposing serious economic costs. In the Asia-Pacific region, marine debris costs economies at least US \$10.8bn per annum with the projected total cost reaching US \$216bn by 2050.

In Australia, we consume 3.5 million tonnes of plastic annually, of which 130,000 tonnes leaks into the marine environment. This represents five kilograms of plastic entering the ocean per person each year, more than three times the global average. We estimate that one million tonnes of Australia's annual plastic consumption is single-use plastics, which are beneficial for only a few hours to a few days, but if not recovered and recycled, last hundreds to thousands of years in the environment. For these single-use plastics consumed in Australia each year, we estimate that fewer than 180,000 tonnes (18%) are recovered through recycling, 710,000 tonnes (71%) go to landfill and 110,000 tonnes (11%) leak directly into the environment, much of which ends up in the ocean.

The plastics problem will not resolve without a revolution in the way we produce, consume and dispose of plastic. Government, industry and consumers all demonstrate an appetite for change and the solutions exist, however the problem persists and is compounding. By 2050, estimates indicate that plastic will outweigh the fish in the ocean.



By 2050, estimates indicate that plastic will outweigh fish in the ocean.

This report brings our collective ambition for action closer to reality by presenting the first comprehensive set of recommendations for the six most problematic categories of consumer single-use plastic.



PLASTIC BOTTLES



SOFT 'SCRUNCHABLE' PLASTICS



DISPOSABLE FOODWARE



DISPOSABLE PACKAGING & CONTAINERS



CIGARETTES



MICROPLASTICS

We estimate these six categories account for 70% of the annual single-use plastics consumption in Australia and contribute to 75,000 tonnes of the 130,000 tonnes leaked into the environment each year.

If adopted, this report's recommendations have the potential to:

- 1. Reduce our consumption of the most problematic single-use plastics by a quarter;**
- 2. More than double the rate of recovery of these plastics for recycling;**
- 3. More than halve leakage of these plastics into the environment.**

Industries and individuals cannot solve the plastics problem alone nor at the pace required. Only government has the levers to catalyse a transition that sufficiently addresses the problem at scale and in a timely, cost-effective manner:

- **Regulation of plastics is increasing rapidly** around the globe, however has so far been narrowly targeted and fragmented, e.g. only dealing with easier categories to phase out like plastic bags.
- **Australian federal, state and territory governments are setting ambitious targets**, and there is significant work still required to detail how targets will be reached and to coordinate and unify regulations.
- **COVID-19 has reinforced the critical role governments play** in coordinating responses to crises and catalysing rapid change.
- **International coordination is needed to save Australia's marine environments.** Plastic waste travels the globe and some of the countries with the largest contribution to marine plastic pollution are in our region.

Three actions are proposed for the Australian federal, state and territory governments to reduce consumption and disposal of the six most problematic plastic categories and ultimately prevent plastic leakage into the ocean:

- 1. Develop a road map with clear milestones to phase out** most types of disposable foodware, packaging and containers, as well as cigarette filters and microbeads in the near future, reducing annual consumption of single-use plastics by 85,000 tonnes and leakage by 9,000 tonnes.
- 2. Enact regulation to manage single-use plastics** that can't be phased-out through product standards (e.g. designing for recyclability), policies to capture the full lifecycle costs (e.g. extended producer responsibility) and measures to improve collection (e.g. container deposit schemes), decreasing annual consumption by 100,000 tonnes, increasing recovery by 160,000 tonnes per year and reducing leakage by 35,000 tonnes per year.
- 3. Incentivise development and broadscale adoption of sustainable alternatives and systems** to assist the transition away from single-use plastics.

It is critically important to get the design and implementation of regulations right in order to avoid negative impacts on vulnerable populations and excessive burden on industry, as well as to maximise the positive economic potential for local industry. All actions also need to be complemented by public education/awareness campaigns and industry and community engagement to be effective.

1. THE CASE FOR CHANGE



CURRENT STATE OF PLASTICS AND CASE FOR CHANGE

Global plastic production has increased exponentially, from two million tonnes in 1950 to more than 454 million tonnes in 2018.¹

To date, approximately 9.7 billion tonnes of plastics have been produced, more than one

tonne of plastic for every person alive.² If we don't make a concerted effort to change consumption patterns, production is expected to triple by 2050.³ To date, seventy five per cent of all plastic ever produced has become waste,⁴ which is largely mismanaged.⁵ **An estimated 25m tonnes of plastics leaks into the environment each year,⁶ of which more than eight million tonnes end up in the ocean.⁷** If this continues, by 2050 plastic will outweigh fish in the ocean.⁸



WE ESTIMATE THAT **ONE MILLION TONNES** OF AUSTRALIA'S ANNUAL PLASTIC CONSUMPTION IS SINGLE-USE PLASTICS

Plastic pollution is having devastating effects on wildlife and ecosystems. Animals get entangled in large plastic debris, leading to acute and chronic injury or death. Wildlife entanglement or ingestions affects approximately 415 different species, including mammals, reptiles, birds and fish.⁹ Animals also ingest large quantities of plastic and are unable to pass the plastic through their digestive systems, resulting in internal abrasions, digestive blockages, and death. Every year humans and animals continue to ingest plastics from food and drinking water, with the full effects still unknown. There are also serious economic costs. In the Asia-Pacific region marine debris costs economies at least US \$10.8bn per annum and the total cost could reach US \$216bn by 2050.¹⁰



THE AMOUNT OF SINGLE-USE PLASTIC ENTERING THE AUSTRALIAN ENVIRONMENT EACH YEAR IS HEAVIER THAN TWO TITANICS

In Australia, we consume 3.5m tonnes of plastic annually,¹¹ of which 130,000 tonnes leaks into the marine environment.¹² This represents five kilograms of plastic entering the ocean per person each year, more than three times the global average.¹³ We estimate that one million tonnes of Australia's annual plastic consumption is single-use plastics, which are beneficial for only a few hours to a few days, but if not recovered and recycled last hundreds to thousands of years in the environment. For these single-use plastics consumed in Australia each year, we estimate that fewer than 180,000 tonnes (18%) are recovered through recycling, 710,000 tonnes (71%) go to landfill and 110,000 tonnes (11%) leak directly into the environment, much of which ends up in the ocean.¹⁴

**WEIGHT OF PLASTIC LEAKED
INTO THE AUSTRALIAN
ENVIRONMENT IS EQUIVALENT TO**



600m
PLASTIC BOTTLES



7bn
SOFT PLASTICS



8bn
CIGARETTES



275m
DISPOSABLE FOODWARE



166m
DISPOSABLE PACKAGING

This report focuses on the six most problematic categories of single-use plastics according to prevalence in debris clean-ups

Six categories of consumer single-use plastics make up the majority of litter collected from the environment and pose the greatest threat to the marine environment: 1) plastic bottles, 2) soft 'scrunchable' plastics, 3) disposable foodware, 4) disposable packaging & containers, 5) cigarettes and 6) microplastics. We estimate these categories account for 700,000 tonnes (70%) of the single-use plastics consumed each year and contribute 75,000 tonnes of the 130,000 tonnes leaked into the marine environment annually.¹⁵

Number of plastic items collected in clean-ups (2018-2019)

Plastic items	Tangaroa Blue	Clean Up Australia	Keep Australia Beautiful	Total	% of debris
Cigarette litter ^a	232,392	491,995	24,042	748,429	21%
Bottle litter ^b	266,232	190,934	2,479	459,645	13%
Soft 'scrunchable' plastics ^c	255,571	142,317	2,539	400,427	11%
Non-food packaging ^d	178,548	148,481	283	327,321	9%
Foodware ^e	85,511	129,266	2,964	217,741	6%
Food packaging	62,359	35,737	40	98,135	3%
Unidentifiable plastic bits	850,439	124,122	5,169	979,730	28%
Other plastic ^f	227,873	31,443	652	259,968	9%
Total	2,158,924	1,294,296	38,168	3,491,388	100%

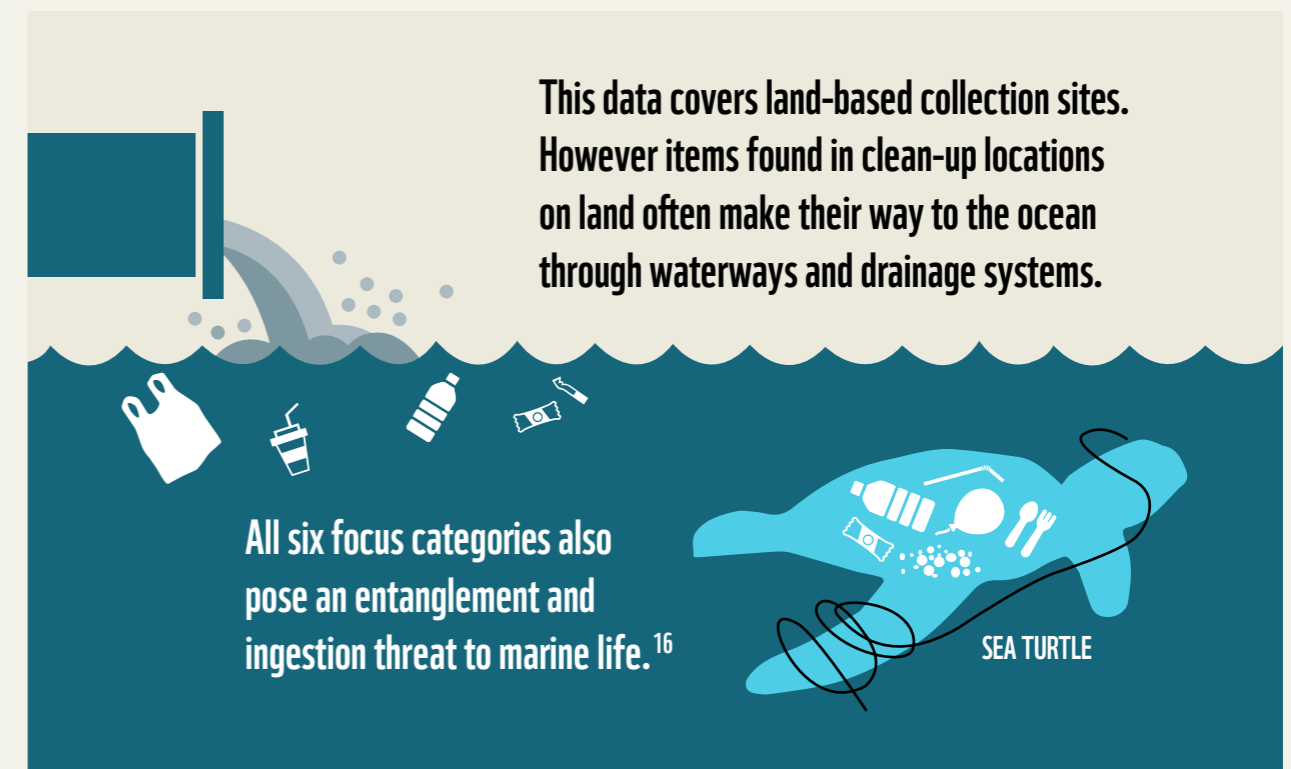
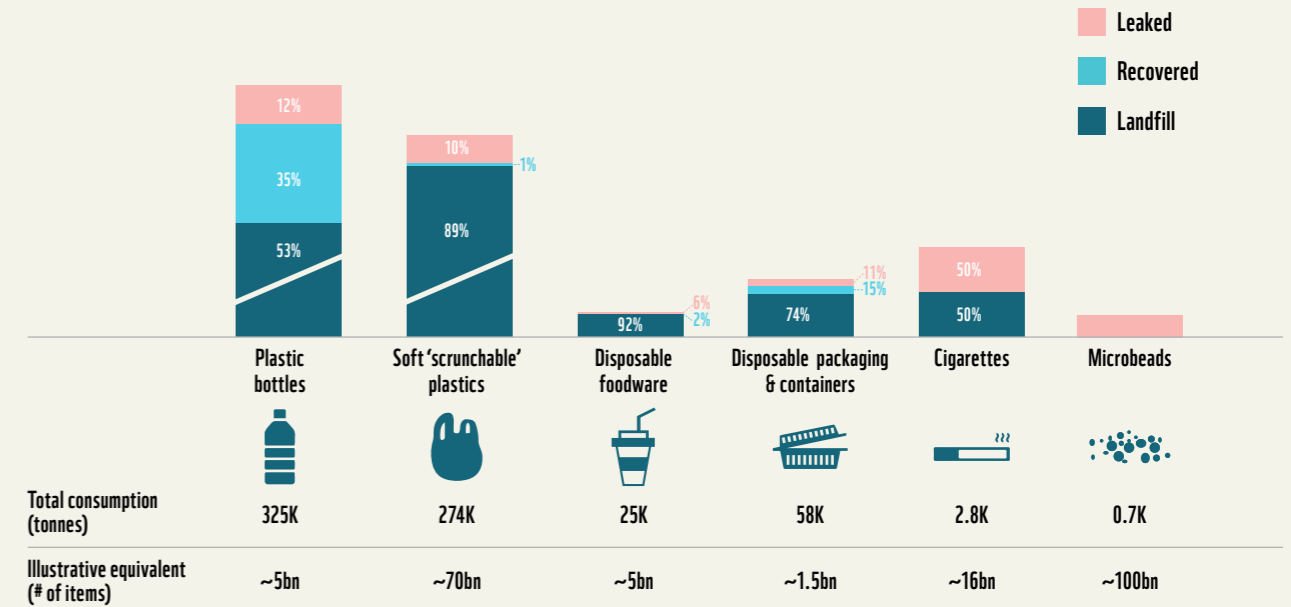
FOCUS OF THIS REPORT

Note: This is not an exhaustive count of plastic litter as clean-ups do not cover the entire geography of Australia. For our recommendations, we combine food and non-food packaging and also look at microplastics (which are too small to feature in debris collection data)

- a. Includes filters, packaging, lighters
- b. Includes beverage and non-beverage bottles, lids, six-pack rings
- c. Includes plastic bags, packets, liners, film remnants, balloons and cling film
- d. Includes consumer packaging and containers, expanded polystyrene containers and insulation
- e. Includes plastic straws (55%), plastic plates, utensils, cups, confectionary sticks
- f. Includes fishing ropes and nets, toys, sanitary items.

We estimate these six categories account for 700K tonnes of consumption and contribute 75K of the 130K tonnes leaked into the marine environment annually

Baseline view of the volume of single-use plastic entering the Australian environment (2017-18, K tonnes)¹⁷



2. ROLE OF GOVERNMENT



ROLE OF GOVERNMENT

The plastics problem will not resolve without a systems shift in the way we produce, consume and dispose of plastic.

This requires a concerted effort between individuals, industry and governments, all of which have demonstrated an appetite for change:



PLASTIC POLLUTION IS ONE OF THE TOP THREE CONCERNS FOR INDIVIDUALS GLOBALLY

- Recent global surveys indicate that plastic pollution is one the top three concerns for individuals globally,¹⁸ with 80% of respondees actively reducing unsustainable waste in their personal consumption.¹⁹
- There has been a recent proliferation of industry commitments, voluntary standards and engagement activities targeted at addressing plastic waste and pollution (although a long-tail of plastic producers have yet to take any major initiatives to address the issue).
- Government regulation on plastics is increasing rapidly, with the number of countries implementing plastic regulations doubling in the last five years. Regulations to date however, have disproportionately focussed on banning and taxing single-use plastic bags.

Despite solutions existing and positive trends in activity, the problem persists and is compounding. Only governments have the levers at their disposal to catalyse effective action at scale. These are:

- **Prescriptive levers** – regulation that mandates certain behaviours/ actions are done or not done.
- **Economic levers** – regulation that seeks to influence behaviour by incentivising or punishing certain actions (e.g. levies and incentives).
- **Informative levers** – regulation that seeks to influence the information consumers have available to them to make decisions.²⁰

COVID-19 has reinforced the critical role governments play in coordinating responses to crises and in catalysing rapid change. It has also provided an opportunity to collectively assess and create a plan of action.



IN AUSTRALIA, AMBITIOUS TARGETS ARE BEING SET BY FEDERAL, STATE AND TERRITORY GOVERNMENTS

In Australia, ambitious targets are being set by federal, state and territory governments:

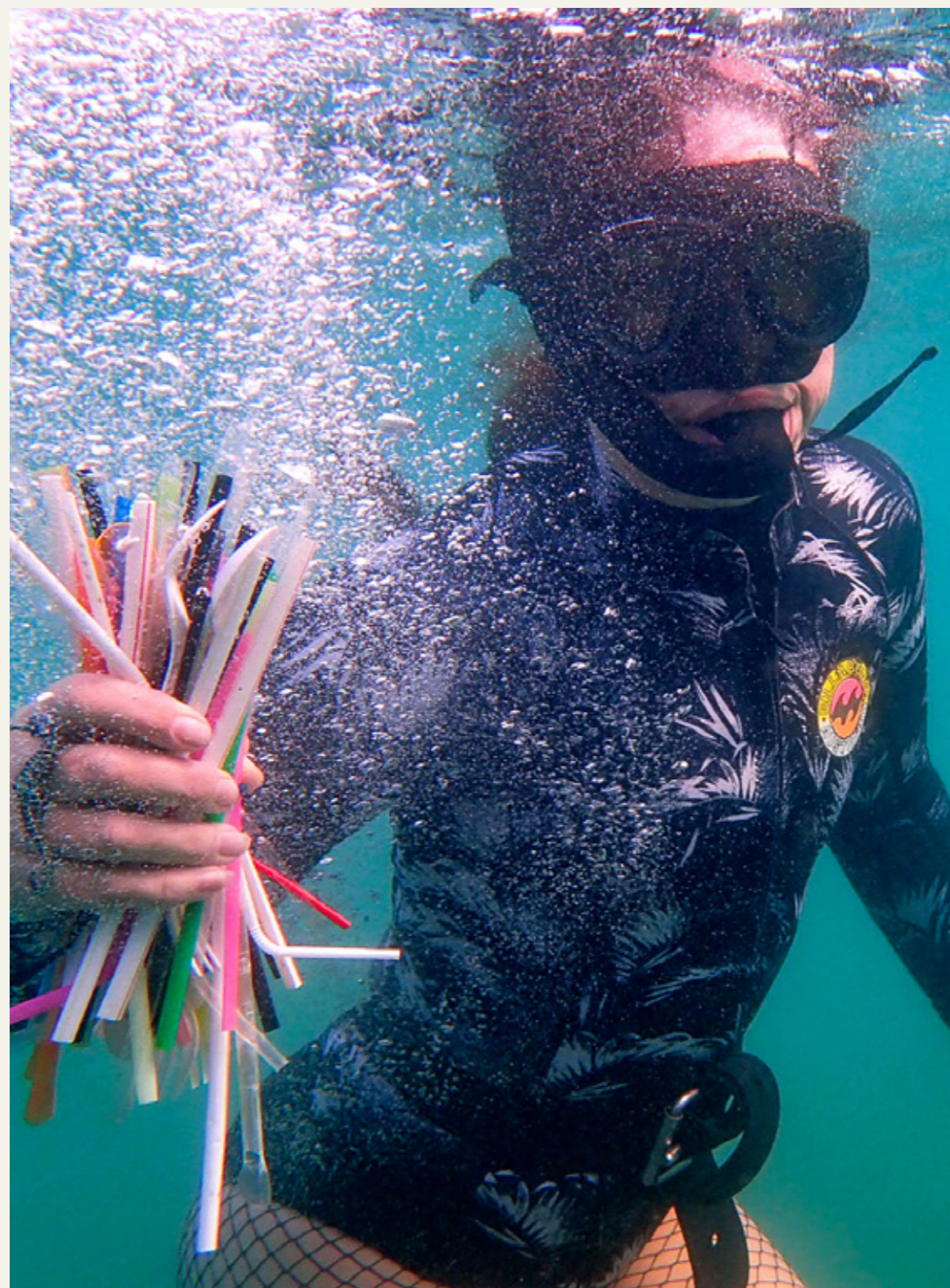
- The 2019 National Waste Policy Action Plan aims to phase out problematic and unnecessary plastics by 2025.
- The Australian Packaging Covenant Organisation (APCO) is working with industry and government to achieve the voluntary 2025 National Packaging Targets for sustainable packaging management.
- State and territory governments are setting bold visions for addressing plastic waste (e.g. Queensland's Plastic Pollution Reduction Plan, NSW 20-Year Waste Strategy, etc.), with Queensland, South Australia and the Australian Capital Territory the most progressive in commitments to ban many single-use plastic items.

While regulators are taking steps in the right direction, significant work is still required to detail how targets will be reached and to coordinate and unify regulations:

- Policies for single-use plastics are currently disparate across states and territories, both in terms of requirements and implementation timelines, making it difficult for industry to know how best to respond.
- Action to date has focussed on banning plastic bags and designing container deposit schemes, failing to address other plastic items commonly littered in the environment.
- While beyond the scope of this report, ultimately international coordination is needed to save Australia's marine environments. Plastic travels around the globe and some of the countries with the largest contribution to marine plastic pollution are in our region.²¹



© CLEAN UP AUSTRALIA



© JOSIE JONES & CHRISTIAN GUNDESEN

Over the past five years, Josie Jones - Australian of the year - has picked up more than 5.6 tonnes of rubbish from Victoria's beaches.

Despite positive commitments and actions by state and territory governments, there is a long way to go to address single-use plastic

The current state of regulation for the most problematic single-use consumer plastics is fragmented with significant gaps

Status of regulation in Australia on the use and disposal of the most problematic single-use consumer plastics

Problematic plastics	Sub-categories	NSW	VIC ^e	ACT	QLD	WA	TAS	NT	SA
Plastic bottles	Single-use drink bottles ^a	♻️	♻️	♻️	♻️	♻️	♻️	♻️	♻️
Soft 'scrunchable' plastics	Food wrappers								
	Thick plastic bags								
	Balloons ^b	♻️		♻️	♻️				
Disposable foodware	Utensils, straws and stirrers								
	Cups, lids, bowls and plates ^c								
Disposable packaging / containers	Food containers (clear plastic)								
	Food containers (expanded-polystyrene)								
	Expanded polystyrene goods packaging								
Cigarettes	Cigarette filters								
	E-cigarettes								
Microplastics	Microbeads ^d								
	Microfibrils								

■ Ban or phase out in place or committed to
 ■ Ban or phase out under consideration
 ■ No announcement or consideration of a ban or phase out
 ♻️ Regulation of disposal/use
 ⚙️ Regulation for product design, production or purchase

- a. Container deposit schemes have been implemented or announced in all states/territories
- b. Qld has banned the release of balloons, while NSW and ACT have banned the release of 20 or more balloons
- c. Qld has committed to ban plastic bowls and plates and is considering banning plastic coffee cups
- d. Voluntary phase out implemented in 2016 – a 2018 Department of the Environment and Energy assessment found that 6% of products still contain microbeads
- e. Victoria recently announced a circular economy policy with further action on plastic pollution to be announced shortly; Vic.gov.au, 2020, Transforming recycling in Victoria

PROGRESS TO DATE ACROSS AUSTRALIA

PLASTIC BOTTLES



PLASTIC BOTTLES:

Container deposit schemes (CDS) are either in place or planned in all states and territories, with varying degrees of effectiveness:

- Launch date and return rate: NT (2012, 84%²²), SA (1977, 77%²³), NSW (2017, 64%²⁴), ACT (2018), Qld (2018, 56%²⁵).
- Planned launch dates: WA (Oct, 2020), Tas (2022), Vic (2022/2023).
- Not all plastic bottles are currently eligible for return to CDS.
- There are currently no laws in place to tether plastic bottle lids to bottles.

DISPOSABLE FOODWARE



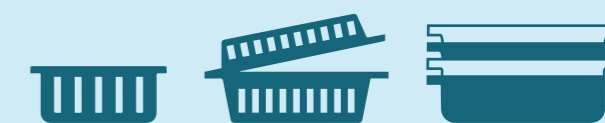
UTENSILS, STRAWS AND STIRRERS:

Qld, SA and ACT have all committed to ban utensils, straws and stirrers. NSW and WA are considering a ban.

CUPS, LIDS AND BOWLS:

- Qld has committed to ban plastic plates and bowls and is considering banning plastic cups and coffee cups.
- SA and ACT have committed to ban expanded polystyrene (EPS) cups, bowls and plates.
- NSW, WA, ACT & SA are considering a ban. No action has yet been taken in Vic, Tas & NT.

DISPOSABLE PACKAGING & CONTAINERS



FOOD CONTAINERS:

- SA and ACT have committed to phase out EPS food containers. SA's legislation bans EPS cups, bowls, plates and containers, while ACT's legislation would ban EPS takeaway food and beverage containers. NSW, Qld and WA are also considering a ban on EPS food containers.
- WA is considering action for clear plastic food containers.

EXPANDED POLYSTYRENE NON-FOOD PACKAGING:

There are currently no laws in place to phase out EPS in non-food packaging.

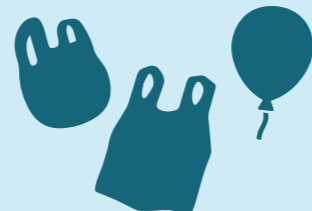
SOFT 'SCRUNCHABLE' PLASTICS



FOOD WRAPPERS:

APCO is working with governments and industry towards four voluntary 2025 National Packaging Targets which would address the recyclability of food wrappers. The four targets are:

- 100% reusable, recyclable or compostable packaging.
- 70% of plastic packaging being recycled or composted.
- 50% of average recycled content included in packaging.
- The phase out of problematic and unnecessary single-use plastics packaging.



THICK PLASTIC BAGS:

- While some states and territories are considering a ban on thick plastic bags, no action has been taken.
- ACT has committed to phase out produce bags.

BALLOONS:

- Balloon releases are prohibited in Queensland under the Waste Reduction and Recycling Act 2011.
- NSW and ACT have banned the release of 20 or more balloons.
- No action has been taken in other states and territories.

CIGARETTES



CIGARETTE FILTERS:

There are currently no laws in place to phase out single-use cigarette filters in Australia, however most states have legislation imposing fines for littering of cigarette filters.

E-CIGARETTES:

There are currently no laws in place to phase out single-use e-cigarettes in Australia.

MICROPLASTICS



MICROBEADS:

A Federal Government voluntary industry phase-out was implemented in 2016. A 2018 assessment found that 94% of products no longer contained microbeads.²⁶

MICROFIBRES:

There are currently no laws in place to phase out microfibres in Australia.

3. ACTION PLAN



RECOMMENDED FUTURE STATE AND ROADMAP

This report provides the first comprehensive set of recommendations to manage the use and disposal of the six most problematic categories of single-use plastics.

The six most problematic categories of single-use plastics in terms of prevalence in litter and threat to marine ecosystems are: 1) plastic bottles, 2) soft 'scrunchable' plastics, 3) disposable foodware, 4) disposable packaging & containers, 5) cigarettes and 6) microplastics.

Three key actions are proposed for federal, state and territory governments to reduce consumption and improve disposal of these six plastic categories and ultimately prevent plastic leakage into the ocean:

- 1. Develop a road map with clear milestones to phase out** most types of disposable foodware, packaging and containers, as well as cigarette filters and microbeads in the near future, reducing consumption of single-use plastics by 85,000 tonnes and leakage by 9,000 tonnes.
- 2. Enact regulation to manage single-use plastics** that can't be phased-out through product standards (e.g. designing for recyclability), policies to capture the full lifecycle costs (e.g. extended producer responsibility) and measures to improve collection (e.g. container deposit schemes), decreasing annual consumption by 100,000 tonnes, increasing recovery by 160,000 tonnes per year and reducing leakage by 35,000 tonnes per year.
- 3. Incentivise growth of proven sustainable alternatives and systems** that are readily available or becoming available, to assist the transition away from single-use plastics.

It is critically important that the recommended actions are **carefully designed and implemented in order to maximise their effectiveness and avoid unintended consequences**. It is also important to minimise the potential for negative impact on industry and the community in general, while maximising the potential benefits to local industry. International and local best-practices should be considered, as featured in a number of case studies accompanying the recommendations.

In particular, regulation should always be accompanied by education and awareness campaigns to assist businesses and consumers to understand the problem and how their cooperation will help to solve it.

Collectively, these recommendations have the potential to deliver significant impact in solving our single-use plastics problem:

- 1. Reduce our consumption of the most problematic single-use plastics by a quarter;**
- 2. More than double the rate of recovery of these plastics for recycling;**
- 3. More than halve leakage of these plastics into the environment.**

See Appendix for more on implementation and education considerations.




The recommendations in this report require a change in the regulatory landscape for single-use plastics in all states and territories

Problematic plastics	Sub-categories	Current status of regulation								Recommendations				
		NSW	VIC	ACT	QLD	WA	TAS	NT	SA	Interim	Future state			
Plastic bottles	Single-use drink bottles													
Soft 'scrunchable' plastics	Food wrappers													
	Thick plastic bags													
	Balloons													
Disposable foodware	Utensils, straws and stirrers													
	Cups, lids, bowls and plates													
Disposable packaging / containers	Food containers (clear plastic)													
	Food containers (EPS)													
	EPS goods packaging													
Cigarettes	Cigarette filters													
	E-cigarettes													
Microplastics	Microbeads													
	Microfibres													

Ban or phase out in place or committed to
 Ban or phase out under consideration
 No announcement or consideration of a ban or phase out
 Regulation of disposal /use (incl. EPR)
 Regulation for product design, production or purchase (incl. levies)

a. EPS packaging banned for consumer uses and regulated for B2B




SUMMARY OF RECOMMENDED ACTIONS AND IMPACT

Category (weight use)	Sub-category (weight use)	Target state
 <p>Plastic bottles 325K tonnes</p>	Single-use drink bottles	<ul style="list-style-type: none"> • Most people carry a reusable drink bottle. • Bottles made of 100% recycled content and designed to minimise litter. • Vast majority of bottles are recovered through CDS.
 <p>Soft 'scrunchable' plastics 275K tonnes</p>	Food wrappers 275K tonnes	<ul style="list-style-type: none"> • No unnecessary food wrap plastic. • Food wrappers are 100% recyclable plastic or non-plastic alternatives. • Most recovered through soft-plastic collection schemes.
	Thick plastic bags and balloons	<ul style="list-style-type: none"> • Consumers carry their own reusable bags. • Single-use bags and balloons are replaced with less harmful alternatives.
 <p>Disposable foodware 25K tonnes</p>	Utensils, straws and stirrers 2K tonnes	<ul style="list-style-type: none"> • Businesses don't provide single-use utensils and consumers BYO. • Where still required, made from plastic free alternatives. • Food containers designed so as not to require them.
	Cups, lids, bowls and plates 23K tonnes	<ul style="list-style-type: none"> • Businesses don't provide single-use and consumers BYO. • Rent/return schemes are readily accessible. • Where still required, made from plastic free alternatives.

RECOMMENDED GOVERNMENT ACTIONS

Act now	Phase in	Impact
<ul style="list-style-type: none"> • Increase water refill stations. • Mandate the 2025 APCO recycled content target. • Expand containers eligible for CDS refund. • Deploy effectively designed container deposit schemes in Vic and Tas. • Increase public awareness of CDS. 	<ul style="list-style-type: none"> • Make tethered lids mandatory. • Optimise refund amount and increase location convenience and intensity of existing schemes. 	<ul style="list-style-type: none"> • Use decreased by 15K tonnes. • Recovery increased by 100K tonnes. • Leakage decreased by 20K tonnes.
<ul style="list-style-type: none"> • Provide grants and other incentives to scale-up innovative non-plastic alternatives. • Introduce levies to discourage use. • Mandate the 2025 APCO 100% reusable, recyclable or compostable packaging target. • Increase effectiveness of existing soft-plastic collection schemes, through education and labelling. 	<ul style="list-style-type: none"> • Define product standards to increase product recyclability. • Scale-up soft-plastic collection. 	<ul style="list-style-type: none"> • Use decreased by 80K tonnes. • Recovery increased by 55K tonnes. • Leakage decreased by 15K tonnes.
<ul style="list-style-type: none"> • Ban the release of balloons (deliberate or by accident) into the environment. • Ban thick plastic bags and encourage reuse models. 		<ul style="list-style-type: none"> • Included in impact above.
<ul style="list-style-type: none"> • Provide grants and other incentives to scale-up innovative non-plastic alternatives. • Ban plastic utensils, straws and stirrers noting exceptions needed for certain groups (e.g. people with disabilities). 		<ul style="list-style-type: none"> • Use decreased by 2K tonnes.
<ul style="list-style-type: none"> • Provide grants and other incentives to scale-up innovative non-plastic alternatives and rent/return schemes. • Increase availability of recycling collection in public areas of high consumption. 	<ul style="list-style-type: none"> • Ban plastic cups, lids, bowls and plates, ensuring there are reasonable and necessary exceptions in place. 	<ul style="list-style-type: none"> • Use decreased by 23K tonnes.

SUMMARY OF RECOMMENDED ACTIONS AND IMPACT (CONT.)

Category (weight use)	Sub-category (weight use)	Target state
 <p>Disposable packaging/containers 60K tonnes</p>	Food containers 50K tonnes	<ul style="list-style-type: none"> • Businesses and consumers adopt reusable container models wherever possible. • Where still required, food containers are made with alternative, compostable or plastic free material.
	EPS goods packaging 10K tonnes	<ul style="list-style-type: none"> • Single-use packaging replaced with reusable models. • Where required, made from non-plastic alternatives. • Improve economics of recycling.
 <p>Cigarettes</p>	Cigarette filters 3K tonnes	<ul style="list-style-type: none"> • Don't contain plastic (no filter). • Are much less likely to be littered.
	E-cigarettes	<ul style="list-style-type: none"> • All cartridges are reused. • Most e-cigarettes are appropriately disposed of.
 <p>Microplastics</p>	Microbeads & microfibres 650 tonnes	<ul style="list-style-type: none"> • Products don't contain microbeads. • Synthetic clothes shed less microfibres. • Most microfibres shed don't enter the ocean.

RECOMMENDED GOVERNMENT ACTIONS		
Act now	Phase in	Impact
<ul style="list-style-type: none"> • Ban EPS food containers. • Provide grants and other incentives to scale-up innovative non-plastic alternatives and rent/return schemes. • Introduce levy on plastic food containers to discourage use. • Increase availability of recycling collection in public areas of high consumption. 	<ul style="list-style-type: none"> • Ban all plastic based food containers for uses where sustainable alternatives exist, otherwise allowing compostable plastics. 	<ul style="list-style-type: none"> • Use decreased by 50K tonnes.
<ul style="list-style-type: none"> • Ban loose fill EPS, e.g. peanuts. • Provide grants and other incentives to scale-up innovative non-plastic alternatives and rent/return schemes. 	<ul style="list-style-type: none"> • Ban the use of EPS for all consumers packaging. • Introduce EPR to improve collection for B2B applications. 	<ul style="list-style-type: none"> • Use decreased by 10K tonnes.
<ul style="list-style-type: none"> • Enact prohibitions and increase education to reduce litter. 	<ul style="list-style-type: none"> • Ban plastic filters in cigarettes. 	<ul style="list-style-type: none"> • Use decreased by 3K tonnes. • Leakage decreased by 0.5K tonnes (short term).
	<ul style="list-style-type: none"> • Ban single-use cartridges. • Introduce EPR return deposit schemes for e-cigarettes and cartridges. 	<ul style="list-style-type: none"> • N/A (no estimates for e-cigarettes).
<ul style="list-style-type: none"> • Ban use of microbeads. 	<ul style="list-style-type: none"> • Introduce product standards to reduce shedding of microfibres and to increase catchment of microfibres. 	<ul style="list-style-type: none"> • 650 tonnes of microbeads.


4. DETAILED RECOMMENDATIONS



PLASTIC BOTTLES



© ANTONIO BUSIELLO / WWF-US

 ONLY
32.7%
OF THE PRIMARY
MATERIAL OF
PLASTIC BOTTLES
IN AUSTRALIA IS
RECYCLED

Current situation in Australia

Despite increasing container deposit schemes across the country, only 32.7% of the primary material of plastic bottles, polyethylene terephthalate (PET), in Australia is recycled.²⁷

- Over one billion water bottles are bought in Australia every year,²⁸ with many ending up in the environment where they can take over 20 years to decompose.
- Virgin material is primarily used in the production of water bottles due to the cost and quality competitiveness of virgin material versus recycled plastic, highlighting the need for more plastic bottles and lids to be collected and recirculated through CDSs.
- Almost 100,000 bottle caps and lids were collected across registered sites in 2019 for Clean Up Australia Day.²⁹

Container deposit schemes are either in place or planned in all states and territories, with varying degrees of effectiveness:

- Implemented launch date, and return rate: NT (2012, 84%), SA (1977, 77%), NSW (2017, 64%), ACT (2018), Qld (2018, 56%).
- Planned launch: WA (Oct, 2020), Tas (2022), Vic (2022/2023).

DESIGN/PURCHASE SOLUTIONS

Target state

- Most people carry reusable drink bottles, which they can refill at ubiquitous water refill stations.
- Recycled content is used to make all plastic bottles, which are designed to minimise litter, e.g. with tethered lids.

How we get there

Act now

- Implement plan to invest in water refill stations for all new public space developments and review existing spaces to ensure sufficient availability.
- Mandate the 2025 APCO recycled content target to create pull demand for recycled material.

Phase in

- Make tethered lids mandatory by passing legislation requiring beverage companies to sell plastic bottles with tethered lids.

DISPOSAL SOLUTIONS

Target state

- The vast majority of plastic bottles are recovered for recycling through container deposit schemes which are deployed across the nation with sufficient convenient drop-off points (e.g. retail centres, supermarkets, schools, and highway stops) and effectively priced refunds.

How we get there

Act now

- Deploy effectively designed container deposit schemes in Vic and Tas with deposit amount and location and intensity optimised to maximise recovery.
- Increase public education around container deposit schemes, including encouraging links with local community groups, schools, charities and businesses.
- Expand containers eligible for refund at container deposit schemes to all commonly purchased plastic bottles (e.g. juice, milk and cordial bottles).

Phase in

- Optimise refund amount and improve location convenience and intensity of container deposit schemes across the nation.

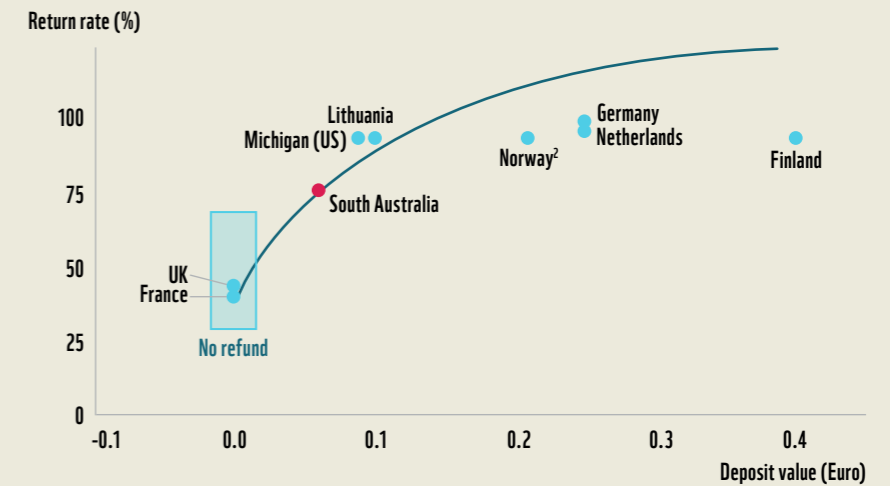


We-Refill provides hydration stations at events across Australia, such as Bluesfest. Through encouraging people to refill their own bottles, they have reduced the need for 454,324 plastic bottles.

CASE STUDIES

Optimising refund amount and availability of CDS to increase recovery

Return rates are strongly correlated to the value of the refund³⁰



- The container deposit scheme return rate in South Australia increased by 6% in 2008/09 (to 75.8% from 69.9% the previous year) after the refund amount was increased from five cents to 10 cents in September 2008.³¹
- In the Northern Territory, return rates have increased from 61% in 2016-17 to 84% in 2017-18 due to increased availability and awareness of CDS in regional and remote areas.³²

Refill UK is a nationwide network of refill station points offering the public free tap water in the UK, accessible via the Refill app. They estimate that if all their Refill Stations were used twice a week, they could save more than 14 million bottles a year. Similar initiatives in Australia such as **We-Refill** provide refill options at major events to encourage people to bring their own bottles. We-Refill has been used at 70 major events in Australia, reducing the need for 454,324 plastic bottles.³³

Sustainable beverage packaging - The Eco Six Pack Ring (E6PR) provides a compostable alternative to plastic beverage rings made from by-product waste and other compostable materials.



© ECO SIX PACK RING



European Union - tethered lids

The EU has issued a directive requiring beverage containers (up to three litres) to have tethered caps and lids by 2024.



SOFT 'SCRUNCHABLE' PLASTICS - FOOD WRAPPERS



© WWF-AUSTRALIA / ADOBE STOCK / SERGEY RYZHOV



Current situation in Australia

- Plastic food wrappers are typically difficult to recycle – often ending up in landfill or as litter in the ocean or in the urban environment.
- Packaged food is often consumed outdoors and is one of the most commonly littered items found in clean-ups.
- Packaged food often contains excessive plastic packaging or uses composite materials, making products more difficult to recycle and more harmful to the environment.

DESIGN/PURCHASE SOLUTIONS

Target state

- A. No unnecessary food wrap plastic, that does not serve a freshness or hygiene purpose, e.g. windows for product marketing on dry goods.
- B. Food wrappers are designed to be 100% recyclable, or made from alternative, environmentally friendly material (e.g. dissolvable/edible food packaging).

How we get there

Act now

- Provide grants and other incentives to scale-up innovative non-plastic, sustainable and environmentally friendly alternatives.
- Introduce levies on plastic food wrappers to discourage use where there isn't significant hygiene or freshness benefits.
- Mandate the 2025 APCO 100% reusable, recyclable or compostable packaging target.

Phase in

- Define product standards to increase product recyclability (e.g. remove plastic 'windows' and composite material from packaging design).

DISPOSAL SOLUTIONS

Target state

- C. An increased portion of soft-plastic waste is recovered for recycling, with a high degree of consumer awareness and convenient collection options.

How we get there

Act now

- Increase effectiveness of existing soft-plastic collection schemes, through actions such as:
 - Public education around use and benefit of industry-led soft-plastic recycling programs (e.g. REDcycle).
 - Mandate the Australasian Recycling Label to make it easy for consumers to correctly identify, separate, and dispose of packaging (both compostable and recyclable soft plastics).

Phase in

- Scale-up soft-plastic collection by working with industry to implement a comprehensive scheme (from design/purchase to disposal). Disposal considerations include: wider distribution of soft-plastic recycling schemes (e.g. expansion of existing schemes such as REDcycle), introduction of kerbside collection, new innovative collection programs (e.g. for schools, communities and businesses) and composting facilities for non-plastic alternatives.

Note: See Appendix 3 for additional analysis on biodegradable plastics.



CASE STUDIES



© EVOWAVE

Edible and dissolvable packaging

Evoware is a social enterprise based in Indonesia which uses seaweed as an alternative to plastic packaging. The seaweed film is edible grade and suitable as food wrap for products like coffee or sauces. The non-edible grade film can be used for packaging items such as soap and sanitary pads. The packaging is reported to be almost odourless and tasteless and lasts for up to two years in a cool, dry environment.

© EVOWAVE



MonoSol is a U.S. company that produces a range of transparent ethylene-based polymers that dissolve in water. They are most commonly used for dishwasher or laundry pods, however, the polymer can also be safely used to contain food, according to European and U.S. regulators, and has no effect on smell, texture, or taste (unless flavourings are added). The edible film can hold single servings of food and beverage products and then naturally biodegrade, reducing the amount of plastic packaging needed to sell single serving portions.

© MONOSOL



Food wrappers designed to be recyclable

Removing unnecessary packaging

Barilla UK introduced 100% recyclable packaging across its biggest pasta lines in May 2020 by removing the plastic window and adding instructions and visual aids to ensure ease of disposal for consumers. Barilla Australia are yet to make these changes.

© BARILLA UK



Simple changes in packaging materials to improve sustainability

As part of a company-wide packaging review in 2018, **Campbell Arnott's** made a number of changes to the packaging of the iconic Tim Tam biscuits. For example, Arnott's reduced the number of inks and swapped black plastic trays for recyclable plastic. Simple changes led to substantial reductions in resource usage, and a 54% increase in the recovery of Arnott's branded soft packaging.³⁴



SOFT 'SCRUNCHABLE' PLASTICS - THICK PLASTIC BAGS AND BALLOONS

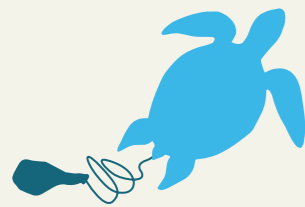
Current situation in Australia

Thick plastic bags

- While significant progress has been made in removing complimentary single-use plastic bags from supermarkets, thick plastic bags continue to be available and are often only used once or twice by consumers. Due to their increased thickness, these items take longer to break down, posing greater damage when littered in the environment.
- Thick plastic bags can mistakenly be used to throw items into the recycling bin, contaminating recycling loads and driving up recycling sorting costs.

Balloons

- Balloons (foil-coated or latex-based), balloon attachments, and fragments are often not biodegradable.
- Once released, balloons can travel hundreds of kilometres and burst at high altitudes, inevitably returning as litter into the ocean and natural environment.
- Balloons are among the top most harmful waste items to wildlife – often mistaken for food and swallowed, which causes injury and death.



BALLOONS ARE AMONG
THE TOP MOST
HARMFUL WASTE
ITEMS TO WILDLIFE

DESIGN/PURCHASE SOLUTIONS

Target state

- Consumers are in the habit of carrying their own reusable, plastic free bags.
- Where still required, single-use plastic bags (and plastic balloons) are replaced with environmentally friendly alternatives (e.g. bags compostable under Australian Standard AS 4736-2006, or bubbles, paper pompoms and streamers replace balloons).

How we get there

Act now

- Ban thick plastic bags, working to avoid unintended increases in single-use of other bag materials through:
 - Working closely with industry to increase reuse of bags;
 - Educating consumers and raising awareness;
 - Potential limited exceptions for compostable plastics.

DISPOSAL SOLUTIONS

How we get there

Act now

- Ban the release of balloons (deliberate or by accident) into the environment following Queensland's example. Ensure ban is accompanied with sufficient public awareness regarding the ban and the damage caused by balloons.

CASE STUDIES



© WOOLWORTHS

Consumer behaviour nudges to increase use of reusable bags

Woolworths sells a reusable Bag for Good which they will replace for free if it gets damaged and recycle the old bag. Proceeds go toward the Woolworths Junior Landcare Grants Program.

Boomerang Bags engages local communities to make reusable bags out of post-consumer material to replace plastic bags. People can borrow for free and return at participating retailers, such as IGA. 504,547 boomerang bags have been made to date and 176,591 kgs of waste has been diverted from landfill.³⁵

Harris Farm provides recyclable cardboard boxes (repurposed from food delivery) or recyclable paper bags as an inexpensive, sustainable alternative to plastic.



© BOOMERANG BAGS

QUEENSLAND



Queensland - balloon releases

The release of helium balloons is banned in Queensland under Queensland's Waste Reduction and Recycling Act 2011, while the release of 20 or more helium balloons is an offence in ACT and NSW.



DISPOSABLE FOODWARE - UTENSILS, STRAWS AND STIRRERS



©SAM HOBSON / WWF-UK

AUSTRALIANS USE ABOUT **10 MILLION STRAWS EVERY DAY** **3.5 BILLION A YEAR**



Current situation in Australia

- Australians use about 10 million straws every day, or 3.5 billion a year and they are one of the most common items found in litter collections.³⁶
- An estimated seven million plastics utensils are used every day in Australia.³⁷
- All disposable single-use plastic foodware tends to be difficult to sort and recycle due to their size, shape, and material inconsistency. As a result, a lot of disposable, single-use plastic foodware ends up in landfill or polluting the environment and harming marine life.

DESIGN/PURCHASE SOLUTIONS

Target state

- Businesses don't provide single-use items for eat-in dining and delivery and consumers are in the habit of carrying their own reusable, plastic free utensils, straws and stirrers for takeaway.
- Where still required, disposable foodware is made with sustainable alternative, plastic free material such as paper, wood and edibles.
- Containers are designed so as not to require additional disposable plastics (e.g. juice boxes don't require separate straws).

How we get there

Act now

- Provide grants and other incentives to scale-up innovative non-plastic, sustainable and environmentally friendly alternatives.
- Ban plastic utensils, straws and stirrers, noting exceptions needed for certain groups (e.g. people with a disability).

CASE STUDIES



© STARBUCKS®

Starbucks® has redesigned the lids of its cold drinks cups to have spouts in a bid to ditch the need for straws. Redesigning cups can play a large role in reducing straw usage.

BioPak is an Australian company that has designed and manufactured wood stirrers made from sustainably sourced and FSC™ certified Birchwood. Stirrers have a six month shelf life from purchase, are compostable in a home and commercial compost and will biodegrade.

Edible cutlery presents a novel alternative to single-use plastic. Bakeys' edible spoons are one example; their spoons are made of millet, rice and wheat flours that can last for 20 minutes in hot water before dissolving. Being a net exporter of grains, such as wheat, Australia has the opportunity to develop and scale production of similar edible utensils.

International bans - straws and utensils



- As of April 2020, the UK banned the supply of plastic straws and stirrers by shops and supermarkets but exceptions are in place for sale by registered pharmacies for people with disabilities.
- Vanuatu was the first country in the world to have banned the use of drinking straws in July 2018.
- Taiwan banned the sale of straws and plastic utensils in 2020 with an overall ban on straws in dining outlets and levies on retail stores for providing free utensils to customers.

Key consideration - straws



Issue: A significant number of people with specific needs require access to flexible straws to be able to drink beverages.

Solution: Source environmentally friendly alternatives to plastic straws that are suitable for people with a disability.

DISPOSABLE FOODWARE - CUPS, LIDS, BOWLS AND PLATES



TAKEAWAY COFFEE CUPS ARE USUALLY LINED WITH A MEMBRANE OF POLYETHYLENE. THIS MEANS THEY ARE NOT RECYCLABLE ALONGSIDE OTHER PAPER OR CARDBOARD, NOR ARE THEY BIODEGRADABLE.

Current situation in Australia

- More than a billion disposable coffee cups and lids are binned in Australia every year.³⁸ Paper-based takeaway coffee cups are usually lined with a membrane of polyethylene to make them waterproof. This means they are not recyclable alongside other paper or cardboard, nor are they biodegradable. However this is poorly understood as they are often mixed with other recycling and contaminate the collection.
- Plastic plates are too light to be sorted correctly by recycling machines, which are designed to separate larger items like bottles and tubs. Recycling machines will often mistakenly sort plastic dinnerware as paper. The plastic items end up contaminating the paper and cardboard products and significantly reduce the quality of the recycled paper products.
- Coffee cups and lids are commonly found items in clean-up surveys as they are often consumed away from home.

DESIGN/PURCHASE SOLUTIONS

Target state

- Businesses don't provide single-use items for eat-in dining and delivery and consumers are in the habit of carrying their own reusable, plastic free coffee cups, bowls and plates for takeaway.
- When still needed, a reusable option can be sourced from a convenient rent/return scheme (e.g. Returnr).
- If still required, disposable foodware is made with sustainable alternative, plastic free material.

How we get there

Act now

- Provide grants and other incentives to support businesses to scale-up rent/return schemes and plastic free designs for cups, lids, bowls and plates.

Phase in

- Ban plastic cups, lids, bowls and plates, ensuring there are reasonable and necessary exceptions in place.

DISPOSAL SOLUTIONS

How we get there

Act now

- Increase availability of recycling collection for plastic foodware (particularly coffee cups and lids) in public areas of high consumption.

CASE STUDIES

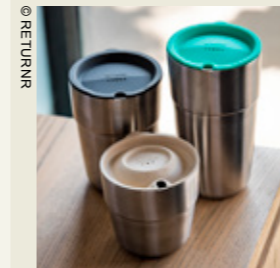


Reusable models and disposal

Recup is a reusable coffee cup sharing system in Germany. It allows those who forget their reusable cup to help reduce plastic cup waste by creating a reusable cup network in restaurants and cafes. Users download the RECUP app, pay one EUR 1 deposit for the cup and get a discount on their order. They can then take the cup with them and give it to any other participating cafe or restaurant to get their deposit back.

Returnr® supplies high quality insulated stainless steel bowls and cups for a deposit of AU\$6 that can be borrowed by customers via participating cafes, restaurants or food delivery services. Customers who return a clean washed bowl to a partner within the network are eligible for a refund of their deposit. During its initial trial period, Returnr helped to divert 85,000 single-use plastic bowls from landfill.³⁹

Simply Cups is Australia's largest cup recycling program, having saved almost 13 million cups going into landfill.⁴⁰ They have teamed up with 7-Eleven Australia to provide cup recycling station deposits at 7-Eleven stores. Cups are taken to a facility that can process them and generate new recycled products. Simply Cups offer recycling collection units for schools and workplaces that include a pick-up service.



International action - cups, plates and bowls



- France banned the sale of single-use plastic plates, cups and cotton buds in January 2020.
- Ireland is set to impose a 'latte levy' of up to €0.25 per cup in 2021 to encourage all coffee drinkers to adopt reusable cups.
- China is phasing out the production and sale of disposable tableware in major cities by 2020 and nationwide by 2022.

DISPOSABLE PACKAGING & CONTAINERS - FOOD CONTAINERS

Current situation in Australia

- Most fresh food containers in supermarkets and takeaway food containers are completely or partially composed of plastic and often end up in landfill or the environment.
- Takeaway food and beverage services have experienced rapid growth in recent years, facilitated by increased food delivery services. Takeaway containers represent one of the largest categories of litter in Australia.
- Expanded polystyrene (EPS) containers are particularly harmful to marine life;
 - EPS is lightweight and can easily reach the ocean from litter, landfills and in-ocean activities (e.g. fishing);
 - Once in the environment, EPS fragments rapidly but endures;
 - It is often difficult to recycle due to low availability of accessible recycling points, cost to transport and lack of end market demand.

DESIGN/PURCHASE SOLUTIONS

Target state

- Businesses adopt reusable container models wherever possible, either consumers bringing their own reusable food containers or businesses provide access to rentable, reusable food containers, such as borrow a bowl schemes (e.g. Returnr).
- Where still required, food containers are made with sustainable alternative, compostable or plastic free material such as compostable plastic, cardboard, etc.

How we get there

Act now

- Ban EPS food containers. e.g. already committed to by SA and ACT.
- Provide grants and other incentives to support businesses to innovate container reuse/return schemes and plastic free design alternatives.
- Introduce a levy on plastic food containers at point of sale to discourage use.

Phase in

- Ban all plastic based food containers, for uses where sustainable alternatives exist, otherwise allowing compostable plastics when and if disposal infrastructure exists.

DISPOSAL SOLUTIONS

How we get there

Act now

- Increase availability of recycling collection in public places for out-of-home consumption.

CASE STUDIES



Reusable container schemes

In 2019, **NZ supermarket Countdown**, rolled out a BYO containers scheme for food sold over the counter at its supermarkets nationwide after a successful trial in 18 stores. Consumers can choose to reduce single-use plastic by reusing their own containers at Countdown's deli, meat and seafood counters. Customer feedback has been very positive and demonstrates scalability of BYO container schemes.



Loop is a circular shopping system where products (including groceries) are sold in reusable and refillable containers. Consumers pay a small deposit fee, refundable on return of containers and can purchase and return containers both in-store and online. Loop has experienced high global uptake with more than 100 major brand partners on-board, including Unilever, PepsiCo, Nestlé and Coca-Cola Co. Woolworths is set to launch a Loop partnership in June 2021.



Waitrose started trialling a BYO container scheme in mid 2019 where customers could bring their own containers, borrow or purchase a reusable container. The goods taken out of their packaging included cut flowers, fruit and vegetables, beer, lentils, couscous and seeds, as well as a 'pick and mix' for frozen fruit. Sales for 'unpacked' products overtook those of equivalent packed products excluded from the trial and ten weeks' worth of beer was sold in four days. There was also a positive customer response; over 90% of survey respondents said they would purchase unpacked products again.⁴¹



San Francisco - expanded polystyrene containers

San Francisco has banned food service providers from using EPS food containers since 2007 and requires substitutes to be biodegradable or compostable unless there are no affordable alternatives. In the three year period after the ban, there was a 41% decrease in EPS litter.⁴² There has been a high rate of compliance (~98% in 2012) and low community resistance.

SAN FRANCISCO





DISPOSABLE PACKAGING & CONTAINERS - EPS GOODS PACKAGING

Common Sydney octopus (Octopus tetricus) found with duct / adhesive tape stuck to its suckers at Bare Island, La Perouse, Sydney.



© DANIKA HEAD / WWF-AUS

Current situation in Australia

- Expanded polystyrene-based containers and packaging fillers are difficult to recycle – there is little end market demand, and the economics are poor.
- National recycling rate for EPS is approximately 29%.⁴³
- In the litter stream EPS is a particular problem because it is lightweight and easily breaks down into small pieces that enter the environment and causes harm to wildlife.

DESIGN/PURCHASE SOLUTIONS

Target state

- Single-use packaging replaced with reusable models (e.g. reusable food crates for B2B goods).
- Where still required, packaging made with sustainable alternative, plastic free material (e.g. cardboard, starch, pulp, wool).

How we get there

Act now

- Ban loose fill EPS, e.g. packaging peanuts.
- Provide grants and other incentives to support businesses to innovate goods packaging reuse/return schemes and polystyrene-free design alternatives.

Phase in

- Ban the use of EPS for all consumer packaging.

DISPOSAL SOLUTIONS

Target state

- Economics of reuse improved by internalising full cost of EPS.

How we get there

Phase in

- Introduce extended producer responsibility requiring recovery of EPS waste for B2B packaging applications.

CASE STUDIES



© PLANET PROTECTOR PACKAGING

Alternate materials to EPS

Planet Protector Packaging creates insulated, thermal packaging made from 100% sheep waste wool, manufactured in Australia and New Zealand. Liners are recyclable or compostable. They can be used for a range of products including produce, wines and seafood. So far Planet Protector Packaging has been adopted by a number of businesses transporting produce B2B, having sold 5.6 million boxes since its inception. Planet Protector Packaging estimates that through the purchase of these products, 81,250 meters cubed of polystyrene have been replaced, the equivalent weight of 20,000 grand pianos.⁴⁴

Starch packing peanuts are made from naturally derived starches, including wheat and cornstarch. Produced by a number of packaging companies globally, with broad uptake. For example, LUSH cosmetics in Australia use 'eco-flo' peanuts made from 100% Australian wheat and soy starch. They are water soluble and home compostable, meaning that they can be easily disposed of without harmful leakage into the marine environment.

Mushroom packaging (MycoComposite) was invented by Evocative Design, which licences the technology to producers, including New Zealand company 'BioFab'. BioFab creates polystyrene replacements using agricultural waste and eco-friendly mycelium. BioFab grows packaging by filling custom-shape moulds with agricultural waste such as wood chips, which act as a food source for the mycelium. The packaging is home compostable; reported to compost within 30 days and can be used as fertilizer. There has been broad uptake of MycoComposite by a number of consumer goods companies, including IKEA and Dell.



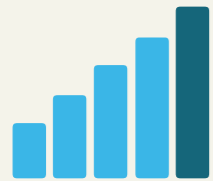
© PLANET PROTECTOR PACKAGING



© LUSH



© BIOFAB



AN ESTIMATED EIGHT BILLION CIGARETTE FILTERS ARE LITTERED IN AUSTRALIA EACH YEAR, MAKING CIGARETTE FILTERS THE MOST LITTERED ITEM ACROSS AUSTRALIA



CIGARETTES - CIGARETTE FILTERS

Current situation in Australia

- Cigarette filters are made from non biodegradable plastic (~12,000 strands of cellulose acetate) that can take up to 12-15 years to break down. Upon breaking down, they convert to microplastics and leach their toxic materials.⁴⁵
- An estimated eight billion cigarette filters are littered every year, making cigarette filters the most littered item across Australia.⁴⁶
- Littered cigarette filters get washed into stormwater drains and into waterways, where marine life can mistake the filter for food and are harmed by the toxic materials in the cigarette (i.e. cadmium, lead and zinc).
- Despite the environmental impact, Australians continue to litter cigarette filters and wrongly perceive the filters to improve health outcomes. Efforts in Australia have focussed on education and awareness campaigns and recycling (i.e. Litter Hotpots program in Victoria), however the issue remains.

DESIGN/PURCHASE SOLUTIONS

Target state

A. Cigarettes don't contain single-use plastic, with filters removed and packaging plastic free.

How we get there

Phase in

- Ban plastic filters: Requiring companies to remove plastic filters (which have not been proven to improve health outcomes).

DISPOSAL SOLUTIONS

Target state

B. Cigarette filters are much less likely to be littered.

How we get there

Act now

- Enact prohibitions and increase education to reduce litter (based on successful global case studies) such as:
 - Ban smoking in public and national parks, beaches and waterways where littering leads to a heightened risk to animal life.
 - Increase fines for littering of cigarette filters.
 - Increase education/awareness of the environmental impact of littering cigarette filters and that plastic filters are unnecessary.

CASE STUDIES



© TEN LITTLE PIECES

Ten Little Pieces collaborated with the Sunshine Coast Council in 2019 to test a **Cigarette Butt Voting Ballot Box**. This involved the placement of three ballot boxes at high-pedestrian traffic spots near the beach with voting questions changed weekly to encourage participation. The 12 week trial was successful and prevented almost 2,000 cigarette filters potentially entering the ocean with estimates that cigarette butt litter was reduced by 70% in the area.⁴⁷

CASE STUDIES

CALIFORNIA



International action - cigarettes

- California has proposed a ban on single-use plastic filters. In 2019, a bill (SB 424) aimed at banning filters made its way through Senate and will be heard by the lower house in 2020. The bill bans the sale of single-use tobacco products (filtered cigarettes, disposable plastic holders and mouthpieces, single-use electronic cigarettes), and requires multi-use tobacco products to be recyclable or collected for take-back by manufacturers.
- The EU have adopted a 'polluter pays' model. Introduced in 2018 as part of a broader effort to reduce the impact of single-use plastics, the 'polluter pays' principle and new labelling requirements aim to reduce the environmental impact of plastic filters. Extended producer responsibility schemes will require producers of cigarettes with filters to cover the costs of waste management and clean up. Mandatory labelling is also required to highlight the negative environmental impact of cigarettes with plastic filters.

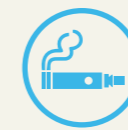
Key consideration

Australia has an opportunity to continue its position as a leader in tobacco reform. To complement a ban on single-use plastic filters, education is critical. Smokers still perceive there to be health benefits from filters, despite research disproving this.

- Researchers have shown that modern filters can increase the risk of lung cancer.⁴⁸
- Inclusion of filters results in smokers inhaling more often/more frequently.⁴⁹



© CLEAN UP AUSTRALIA



CIGARETTES - E-CIGARETTES

Current situation in Australia

- E-cigarettes are battery operated devices that heat a liquid to produce a vapour that users inhale, replicating the act of smoking cigarettes but without the tobacco. It is currently illegal to sell, possess or use an e-cigarettes that contains nicotine.
- Despite these laws, the use of e-cigarettes is growing in Australia, particularly among young people. Approximately nine per cent of the general population aged 18 and above have used e-cigarettes.⁵⁰
- The devices are non-recyclable and nonbiodegradable, as the pods are made of hard plastic while containing lithium batteries that can't be recycled with regular household plastic waste.⁵¹
- When littered or improperly discarded, devices can leach heavy metals and battery acid into the local environment.⁵²

DESIGN/PURCHASE SOLUTIONS

Target state

A. All e-cigarettes and cartridges are reusable.

How we get there

Phase in

- Ban single-use cartridges: achieved through introducing a new product standard that requires e-cigarette companies to produce e-cigarettes that are reusable.

DISPOSAL SOLUTIONS

Target state

B. Most e-cigarettes and cartridges are disposed of correctly (for hazardous/e-waste), with high degree of consumer awareness and convenient correct disposal options.

How we get there

Phase in

- Introduce extended producer responsibility, requiring companies to introduce return deposit schemes, offering refunds in exchange for used e-cigarette units and cartridges.



MICROPLASTICS - MICROBEADS AND MICROFIBRES



AN AVERAGE PERSON
COULD BE INGESTING
APPROXIMATELY
FIVE GRAMS
OF MICROPLASTIC
EVERY WEEK

Current situation in Australia

- Microbeads and microfibres persist in the environment and are almost impossible to be captured by wastewater treatment systems due to their size. They therefore end up in the ocean due to their miniscule size.
- A 2019 study by the University of Newcastle, Australia found that an average person could be ingesting approximately five grams of microplastic every week.⁵³
- **Microbeads:** small plastic beads, typically found in personal care and household cleaning products.
- **Microfibres:** tiny threads shed from synthetic fabrics. They are an increasing source of plastic pollution, with synthetic microfibres being particularly harmful to wildlife and the environment. It is estimated that washing synthetic textiles may be responsible for up to 35% of total annual releases of microplastics to the oceans.⁵⁴ Regardless of the relative contribution of synthetic textiles, the sheer size of emissions is a reason for concern.

DESIGN/PURCHASE SOLUTIONS

Target state

- Products don't contain microbeads.
- Synthetic clothes shed less microfibres.

How we get there

Act now

- Microbeads: Ban the use of microbeads. Introduce legislation to ban the import, manufacture, and sale of products with microbeads – precedent set in US, UK, Canada, various European countries, and NZ.

Phase in

- Microfibres: Enact product standards to reduce shedding of microfibres after points of sale:
 - Introduce pre-washing standards to minimise pollution generated by consumers.

DISPOSAL SOLUTIONS

Target state

- Most microfibres shed don't enter the ocean.

How we get there

Phase in

- Enact product standards to improve catchment of microfibres in washing machines:
 - Fitting of microfibre filters as standards for new washing machines.

CASE STUDIES



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PlanetCare sells washing machine filters which can be installed on any washing machine and will stop 90% of microfibres from polluting the environment.⁵⁵ PlanetCare then takes back the microfibres and supplies new cartridges to customers.

There are a number of natural alternatives to microbeads.

L'Oréal has replaced plastic microbeads with mineral-based ingredients, such as clays and the powder of fruit kernels, in its wash-off cleansing and exfoliating products.

Unilever stopped making products containing plastic microbeads in 2014 and has replaced them with natural alternatives, including apricot kernels, cornmeal, ground pumice, silica and walnut shells.

International action - microplastics

Microfibres

France is the first country to enact a legal provision directly addressing microfibre pollution from washing machines. The law n° 2020-105 of February 10, 2020 states that as of January 1, 2025, new washing machines will be fitted with a plastic microfibre filter.

Microbeads

The US, UK, Canada, France, Ireland, Italy, Holland, Sweden, Taiwan and New Zealand have or plan to introduce various legislation prohibiting the manufacture and distribution of microbeads.

FRANCE





Appendix 1 - Implementation considerations

Considering how changes are implemented is critically important

Design regulation to maximise effectiveness

- Ensure solutions are convenient and effective, e.g. location and refund amount drive significant differences in CDS effectiveness.
- Accompany changes with information and education campaigns.
- Ensure levies and/or incentives are set at a sufficient rate to influence behaviour.

Plan for unintended consequences

- Ensure necessary exceptions, e.g.
 - Straws for people with a disability
 - Times of national emergency (e.g. pandemic).
- Ensure levies and/or incentives are not set so high that they are punitive or lead to perverse outcomes.
- Plan for contingencies, ensuring banned products can be accessed if required.

Minimise the potential for negative impacts on community and industry

- Engage early and often with the public and industry on planned changes.
- Act consistently and move together to avoid a fragmented regulatory landscape.
- Provide sufficient lead time for industry to adapt to new regulation bearing in mind the impact of inaction.

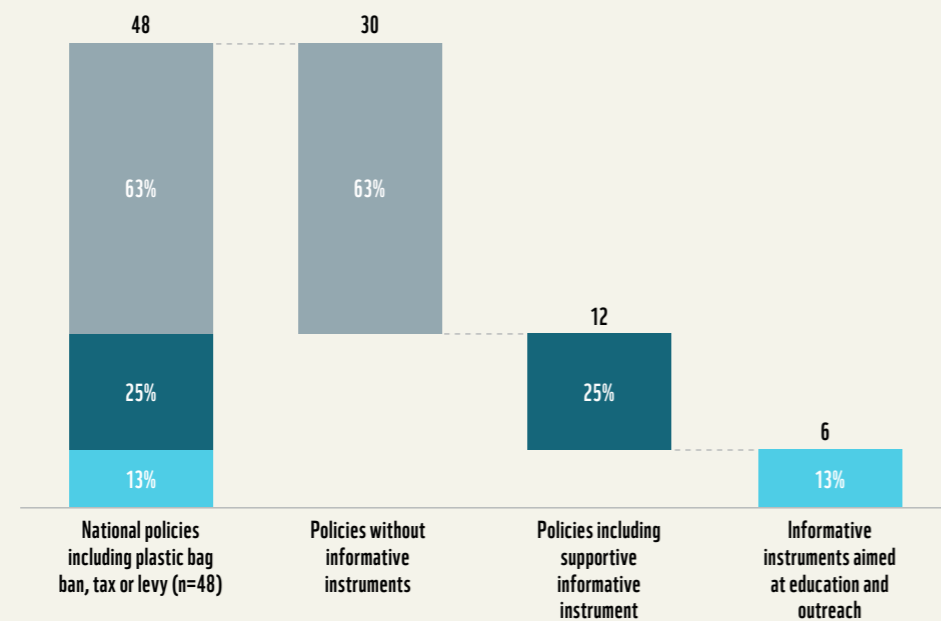
Well coordinated, designed and implemented regulation presents a positive economic opportunity for local industry to provide alternatives and other solutions.

Appendix 2 – Education and awareness

Education and awareness campaigns must be paired with regulatory or economic instruments to raise public support and ensure effectiveness of those instruments

While not always specifically called out, every recommended action in this report requires supplementary informative policy levers to be effective.

A recent study found only 13% of policies aimed at plastic bags included education and outreach.⁵⁶



Studies find that policies' effectiveness increase when paired with investment in campaigns to raise public support and awareness.

- An Australian study compared awareness-raising campaigns with state-enacted waste policies and found that investments in awareness-raising campaigns led to larger reductions of waste in the environment.⁵⁷
- A global study into government responses to plastic pollution highlights the importance and effectiveness of education or outreach campaigns, as public support for and compliance increase when there is a better understanding of environmental benefits.⁵⁸
- Education received the most responses (28%) in a Victorian survey asking what people believed was the most effective strategy for reducing plastic litter.⁵⁹

Appendix 3 - Biodegradable plastic

Biodegradable plastics are an effective solution only if supported by the necessary infrastructure

While this report focuses on design, use and disposal, biodegradable plastics are an example of where suitable infrastructure is required in order for a material to be an environmentally friendly alternative.

Biodegradable plastics are required to meet standards and be processed in specific facilities.

- The majority of biodegradable plastics are compostable plastics which require specific processing conditions (e.g. temperature, presence of microbes) in industrial composting facilities.
- In landfill or in home composts, these plastics still take 50 to 100 years to breakdown and can release powerful greenhouse gases.
- Most recycling facilities only accept biodegradable or compostable plastics that meet standards AS4736-2006.
- However, an increasing number of products claiming to be 'biodegradable' or 'compostable' do not meet relevant industry standards AS 4736-2006.⁶⁰

Even biodegradable plastics that comply with standards can create environmental issues.

- Biodegradable plastics become a contaminant in existing kerbside recycling systems, especially when contaminated with food residue.⁶¹
- Lack of a consistent labelling system for the disposal of biodegradable plastics often leads to confusion:
 - Consumers are often unsure of the correct way to dispose of biodegradable plastics.
 - It is difficult to identify and sort biodegradables after collection,⁶² leading to reluctance from some waste contractors to transport compostable packaging to facilities.⁶³

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100%
RECYCLED



PLASTIC POLLUTION

By 2050, estimates indicate that plastic will outweigh the fish in the ocean.

PLASTIC INGESTION

Every year humans and animals continue to ingest plastics from food and drinking water, with the full effects still unknown

WILDLIFE

Plastic entanglement or ingestions affects approximately 415 different species, including mammals, reptiles, birds and fish.

GOVERNMENT

Only government has the levers to catalyse a transition that sufficiently addresses the problem of plastic pollution at scale.

SOLUTIONS

There are solutions to plastic pollution that bring our collective ambition for action closer to reality.



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Why we are here

To stop the degradation of the planet's natural environment and to build a future in which humans live in harmony with nature.

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