



END OF

# WASTE

A WHITE PAPER

**PACT**  
GROUP

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# EXECUTIVE SUMMARY

The tension surrounding Australia's management of household waste has reached boiling point. Waste is coming under unprecedented media attention, consumer sentiment has shifted noticeably against unnecessary packaging and the need to minimise landfill, and the effects of China's ban on accepting recycled waste are being seen, with plastic mounting up in warehouses across the country.

**"THERE IS NO SUCH THING AS AWAY. WHEN WE THROW ANYTHING AWAY, IT MUST GO SOMEWHERE."**

Annie Leonard, Greenpeace executive director

Meanwhile, consumption of packaging continues to increase in line with population and economic growth, but Australia's waste management systems are proving inadequate and no longer fit for purpose.

As a result, pressure is mounting across the supply chain, from brand owners and packaging manufacturers, to councils, governments and recyclers, to revolutionise the industry to ensure that less household packaging waste ends up in landfill.

The questions are clear: What is the solution, who will drive change, how much will it cost and who will pay?

This White Paper examines the economic cost imposts of change as well as the cost of inertia. It articulates the current opportunities facing the industry and proposes solutions to end household waste.

Pact Group has been a leader in sustainability for many years, with its *War on Waste* driving innovation. But now the company has set new, ambitious goals to drive change and lead the industry beyond the *War on Waste* to the *End of Waste* – a circular economy that will reuse, recycle and reduce landfill, without losing value.

Australians are demanding change. New research, commissioned by Pact Group, demonstrates that 91 per cent of consumers are concerned about the impact of packaging, while 76 per cent of Australians say they were more concerned about packaging waste now than they are five years ago. And tellingly, more than half say they don't understand what happens once their packaging is taken away for recycling.

**"THE PROBLEM OF WASTE HAS TO BE SORTED AND IT HAS TO BE SORTED NOW. THERE IS NO PLAN B."**

Ruffy Geminder, Pact Group chairman

Now more than ever, industry needs innovation in sustainability, and while such innovation can increase cost to the supply chain, a unified approach can provide scale to reduce costs and uncover new opportunities so consumers are not forced to choose between value and sustainability.

To achieve this goal of the *End of Waste*, industry must take bold steps to divert household waste from landfill, minimise packaging wherever possible and create closed-loop systems that recycle continuously without losing value along the way.

Pact Group's vision, underpinned by its bold 2025 sustainability goals, requires a coalition. Government support is critical, but it is industry that must lead a whole-of-society solution by simplifying options for consumers, eliminating problematic products and creating new products that build closed-loop systems to re-use and recycle household packaging waste.

This White Paper details the key challenges faced by industry, and market-wide solutions that can meet the rising expectations of government, retailers and consumers to bring about the *End of Waste*.

# THE PROBLEM: MANAGEMENT OF HOUSEHOLD WASTE

China's move last year to reduce imports of waste product from eight million metric tonnes (almost half the global trade) to zero today has caused massive disruption to the global flow of packaging waste.

The ban — an extension of China's "National Sword" policy to prohibit the importation of unwashed and contaminated recyclable materials — came into effect in January 2018, banning more

than 20 categories of waste, further weakening prices for recyclable material and consigning some materials to landfill or stockpile.<sup>i</sup>

The reaction to this by governments and corporate stakeholders highlighted the shortcomings of single-use packaging to consumers. It also accelerated the move away from problem packaging products, such as single-use coffee cups, straws and plastic cutlery, and created high-profile attempts to reduce the use of single-use plastics such as the controversial, confusing and ultimately reversed plastic bag bans in supermarkets.



# INCREASING CONSUMPTION, DECREASING SENTIMENT

## CONSUMERS TURN AGAINST PACKAGING WASTE

Based on Pact Group's research, Australian consumers have the appetite to do more, but there are several clear barriers including cost, confusion and scepticism about the recycling process.

The industry should not assume that consumers' continued heavy use of packaging means they do not have an emotional response to packaging waste.

The benefits of plastic, with its unrivalled functional properties, are undeniable. It's lightweight and uses less energy to transport than any alternative. It is durable and malleable, low cost and convenient, and requires less time and energy to produce than alternatives. And with the proper systems in place, it is easy to recycle.

Its role in everyday life runs from ensuring fresh drinking water to billions of people and extending the shelf life of food, to enabling breakthroughs in medical technology. It can produce fence posts that won't rot, it can be used to build aeroplanes and cars that are lighter and use less fuel to operate.

Indeed, many consumers feel disempowered, and stuck in a conundrum: 82 per cent of Australian consumers report they do not feel they have enough choice on what products to buy to reduce packaging waste. Further to that, many feel their actions won't really make a difference. Half (52 per cent) of Australians say they don't understand what happens to packaging once it's taken away for recycling, and one in seven Australians (14 per cent)

say they don't recycle all their packaging as they don't feel their actions make any difference, or that the materials go to landfill anyway.

While 57 per cent of Australians agree they could do more to recycle packaging waste in their household, it is becoming increasingly harder to blame consumers. Consumers have very few options to effect change. The combined efforts of government, industry, brands and retailers have simply failed to create the markets and systems required to harness consumer sentiment and power the recycling of waste.

Contemporary and innovative packaging is still integral to the lives of billions of people, however the systems that have been built to handle packaging waste are simply no longer fit for purpose, and it is up to industry to create the innovations that can lead to the right solutions.



### CONSUMER

Rachael George  
Young mother, Melbourne

"As a young mother, I feel passionate about doing what I can to live life more sustainably and help protect the environment for my son. While I want to do more to minimise my waste, I am often confused about what I can and can't recycle. I would be willing to pay more for sustainable products; however, I would need to be sure that these are sustainable – and not just a marketing stunt.

"And after seeing all the news about China rejecting the recycling that we ship overseas, I have real concerns about whether my recycling is just going to landfill anyway.

"I think the Australian recycling industry and the wider packaging industry needs to ensure it actually uses recycled plastic more."

# AUSTRALIAN CONSUMER SENTIMENT

RESEARCH COMMISSIONED BY PACT GROUP

91%

of Australians agree they're concerned about the environmental impact of packaging

76%

of Australians report they are more concerned about packaging waste now than they were five years ago

70%

of Australians feel guilty about the amount of packaging waste their household produces

57%

say they could do more to recycle packaging waste in their households

87%

say they are annoyed by the amount of packaging on products

52%

say they don't understand what happens to packaging once it's taken away for recycling

14%

say they don't recycle all their packaging as they don't feel their actions make any difference or that the materials go to landfill anyway

45%

of Australians would be willing to pay more for a product with more environmentally friendly packaging

66%

say the cost for more sustainable packaging should be borne by industry

# SO HOW CAN WE INCLUDE MORE RECYCLED CONTENT IN PLASTIC PACKAGING?

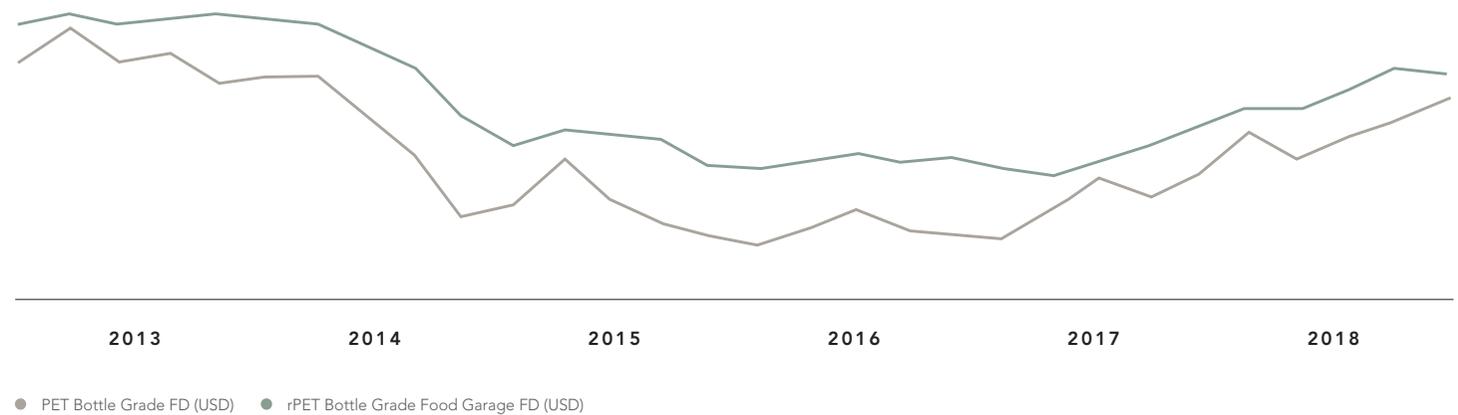
## FOOD AND BEVERAGE PACKAGING

One way to reduce the amount of household packaging going to landfill is to increase recycling rates and include more recycled content in packaging. Many brand owners have published commitments towards 2025 that focus on inclusion of recycled content in their packs. Whilst it is technically possible to include recycled content into packaging products, the high cost of material recovery for food-grade polymers can lead to cost imposts at a time when many manufacturers are feeling pressure to reduce costs. Access to food-grade recycled resin is scarce and there is currently a world shortage as brand owners seek to act responsibly. The chart (top right) shows the raw material cost impost of recycled Polyethylene terephthalate (rPET), commonly used to make beverage bottles and protein trays, over virgin resin for the past five years.

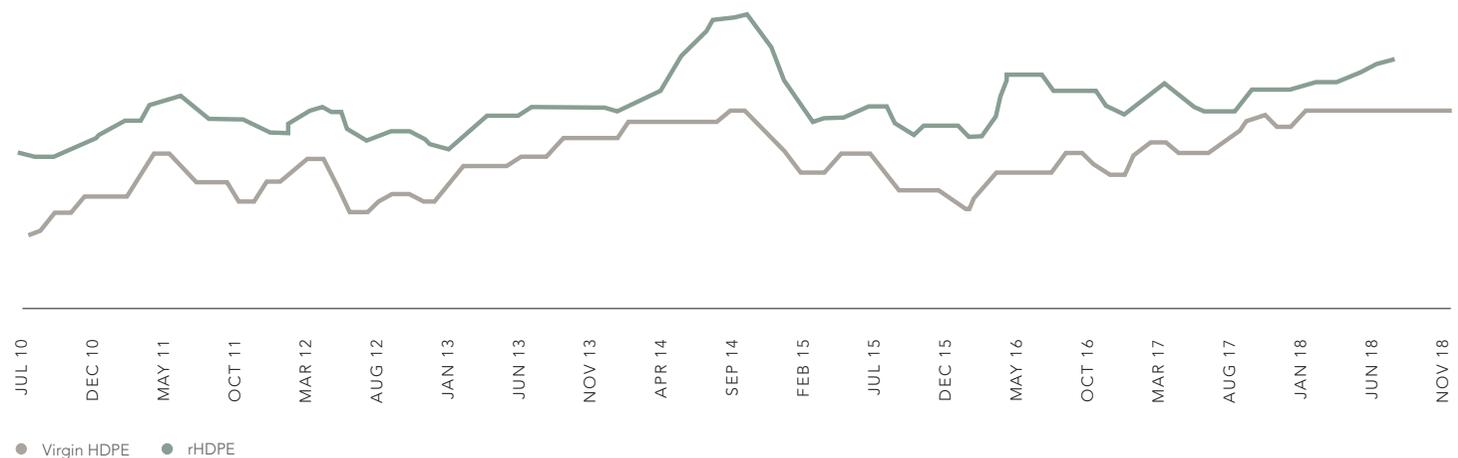
The same is true for recycled high-density polyethylene (rHDPE) (bottom right), the material which is commonly used to make milk and juice bottles. Significant investment needs to be made by industry to increase the amount of recycled food-grade polymers (rPET and rHDPE) to be commercially available at a consistent volume and quality. Some brand owners have launched new packs onto the market containing up to 100% recycled resin, but these currently occupy a niche position due to availability of raw material and the cost impost to support these new products. Larger brand owners have selected single hero lines to communicate their sustainability story and support the inclusion of recycled content. More needs to be done to lower the cost impost of recycled content over virgin prices to drive increased use of this material into packaging products.

### VIRGIN PET VS rPET

Comparison of increased cost of food-grade rPET vs virgin resin



### VIRGIN HDPE VS rHDPE



## CREATING LARGE SINKS FOR CONSUMPTION OF RECYCLED RAW MATERIAL

The heavy cost impost of food-grade recycled resin means that alternative solutions need to be sought in different sectors to ensure that household packaging waste does not end up in landfill. Non-food contact recycled resin is more abundant and requires less processing and decontamination. It can serve as a great raw material for environmental and infrastructure products such as wheelie bins, road core, underground water tanks, telecommunication pits and sound-proofing noise walls, and its lower material value offers a cost benefit over processing virgin resin. The large amount of material required in these sectors equates to huge tonnages of plastic waste that can be diverted from landfill.

There is still more that can be done to ensure better recovery of this waste by reducing contamination brought about by using mixed substrates in packaging design and decoration. The plastics identification symbol has been a part of the plastic economy for the past 40 years, but it has fallen short as a total solution to assist with recycling plastic waste. Improved, consistent and unified on-pack labelling to instruct consumers how to correctly dispose of packs will increase the likelihood of material recovery. New research by Pact Group has revealed that 91 per cent of Australians are concerned about the environmental impact of packaging – and more importantly, three-quarters (76 per cent) say they are more concerned about packaging waste now than they were five years ago.

In looking at plastic packaging specifically, just 14 per cent of the world's plastic packaging is recycled each year.<sup>ii</sup> The remaining plastic packaging waste is either not collected or collected but illegally dumped.

“IN LOOKING AT PLASTIC PACKAGING SPECIFICALLY, JUST 14 PER CENT OF THE WORLD'S PLASTIC PACKAGING IS RECYCLED EACH YEAR.”

The value cycle is stilted further – of the plastic that is recycled, only a third is reused. Even then, the material is recycled into lower value goods, and is not recycled again.<sup>iii</sup>

In Europe, the goal for all plastic packaging in the European Union market to be recyclable or reusable by 2030 is leading the global marketplace for plastics recycling. The European Union's initiatives are expected to nearly triple the tonnage of plastic products being recycled over time (from four million tonnes in 2016 to 11 million tonnes by 2030).

With a plastic packaging recycling rate of just 27.6 per cent, Australia is an equal contributor to the global waste dilemma despite having the infrastructure and consumer awareness around the issues that would be expected of a developed country.

Despite recycling and sustainability being at the top of the marketing and education agenda for industry and governments, recycling in practise has not historically excited consumers or voters, nor has it driven action from brands and retailers in terms of real, practical incentives and systems. The industry has been long on rhetoric, and short on actual recycling.



# A FRAGMENTED APPROACH: COMPOUNDING THE WASTE MANAGEMENT PROBLEM

## SOLVING THE PROBLEM REQUIRES A WHOLE-OF-INDUSTRY APPROACH TO DRIVE INTEGRATION, INVESTMENT AND INNOVATION

As manufacturers, government, brand owners, retailers and the packaging industry have pursued their own individual solutions, the recycling industry has moved further from a single unified solution. Media headlines in 2018 tell the story as the tipping point for packaging waste. This year, China rejected waste imports, instantly crystallising and highlighting the problem to consumers. Following this, consumers and corporations declared war on single-use plastic.

Innovative, functional packaging is essential in today's world. Packaging waste is not.

Balancing between the provision of essential products and responsibly managing packaging waste is exactly what must be done to solve the waste problem. This is not a media problem; it is a genuine threat to the packaging industry and the world's ecology.

And while consumer appetite for change exists, it is no longer appropriate to expect consumers to solve the problem, nor pay for a solution.

*So, who should pay?*

According to research commissioned by Pact Group, while three-quarters of Australians (73 per cent) would switch their brand loyalty to purchase an alternative brand (or product) if it were to have more sustainable packaging, fewer than half (46 per cent) would be willing to pay more. This was highlighted by the consumer backlash when supermarkets across Victoria banned plastic bags in August this year.

Many Australians believe the cost should be absorbed by other parties: 66 per cent say it should be the companies who make the products, and 48 per cent say packaging companies should be responsible.

There needs to be solutions that can solve for the *End of Waste* without simply increasing cost and losing value. These must deliver an integrated approach to drive innovation and scale.

This problem requires a whole-of-society solution, with all players involved along the packaging supply chain to commit to a combined solution, to review their role and ensure every opportunity is made to reduce, reuse and recycle.

# SOLUTIONS

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# THE END OF WASTE IS HERE

It is time to look beyond the *War on Waste* to a new way of thinking. We refer to this new circular economy as the *End of Waste*.

Such a solution focuses on eliminating single-use packaging, minimising packaging wherever possible and creating closed-loop systems that recycle continuously without losing value along the way.

In theory, the solution appears relatively simple. The circular economy is the answer — the framework within which packaging can be responsibly produced, used and reused, recycled into a new life or converted into energy. As the industry co-operates to create systems and infrastructure in support of a circular economy, new markets are created and innovation meets scale, driving down cost.

This continuous regeneration process is the only way to contain the impact of packaging waste while retaining the tremendous convenience of the products.

In April this year, the Australian Government launched its plan to stop the growing packaging waste problem, a plan which includes reducing the amount of waste generated and making it easier for products to be recycled.

Among its goals, the Government plans to:

- Set a target of 100 per cent of Australian packaging being recyclable, compostable or reusable by 2025 or earlier.
- Increase Australia's recycling capacity and reduce reliance on China to process recycled waste.
- Explore opportunities to advance waste-to-energy and waste-to-biofuels projects.

This action is in line with government policies around the globe, as all countries come under increasing pressure to act. However, while government incentives and policy frameworks can underpin the circular economy, it is input and action from across the packaging value chain that will drive innovation and change.

In support of the Australian Government's targets, Pact Group has committed to ambitious 2025 sustainability targets, designed to help drive the industry to the *End of Waste*, and will be reaching out across the industry to work with partners to achieve these targets.

## PACKAGING MANUFACTURER

Raphael Geminder  
Pact Group Chairman

"The problem of waste has to be sorted and it has to be sorted now. There is no Plan B.

"The key ingredient for change is industry collaboration, with manufacturers, brand owners and retailers, and it has to happen at the highest levels.

"Any chance to power seismic shifts towards a circular economy has to come from captains of industry.

"If everyone shared the same sense of urgency, and there was leadership — and not just at procurement level — people would sit down together to ask, 'What can we pool? How can we reduce? What can we take out of the supply chain? How can businesses better supply each other? How can we reduce the amount of material we use, the weights of packaging and products?' In the answers to these questions, there are environmental and economic benefits to realise by being smarter.

"Government is important — it has to play a role in funding innovation and ensuring all players adhere to the new rules.

"As for consumers, the biggest thing they want to know is: are they being adequately educated and informed about what the retailers are doing?"

BY 2025

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WILL ELIMINATE ALL  
NON-RECYCLABLE  
PACKAGING THAT  
IT PRODUCES

WILL HAVE SOLUTIONS  
TO REDUCE, REUSE AND  
RECYCLE ALL SINGLE-USE  
SECONDARY PACKAGING  
IN SUPERMARKETS

WILL OFFER 30 PER CENT  
RECYCLED CONTENT  
ACROSS ITS PACKAGING  
PORTFOLIO

# INDUSTRY COLLABORATION

Pact Group is calling for industry to come together to form a cross-functional group that works on real solutions in collaboration. Bringing this circular economy into reality requires innovation at the highest level, and at every stage of packaging production, use and recycling, and the development of uses for recyclate. It requires industry co-operation on market-wide solutions that can meaningfully impact waste problems and meet shifting expectations of retailers and consumers.

In practice, this could mean regular (quarterly) innovation forums in which industry leaders identify projects that can lead to meaningful change. These forums would see leaders agree on the process and support required across the value chain to create secure markets and support successful recycling programs.

Investment in infrastructure will be needed to handle packaging waste, to ensure collection systems are in place at scale, and that sorting and recycling mechanisms are reliable.

Opportunities exist to standardise packaging solutions in selected industries – for example protein trays. Customers make buying decisions based on the quality of the meat, animal welfare, cost and cut of meat. The type of tray used to contain the meat never plays a part in the buying decision at point of purchase. Packaging substrates used in this category are diverse and there is no national scheme to ensure that these trays do not end up in landfill. The tray needs to be functional, durable, recyclable and good value. There is an opportunity to ensure through standardisation that every tray includes recycled content and can be recycled. There are quick-fix solutions, there just needs to be collaboration to achieve agreed standards across the system.

# THE END OF WASTE WILL REQUIRE



UNIFORM COLLECTION SCHEMES AND SORTING AND PROCESSING SYSTEMS



GOVERNMENT TO ENSURE ADHERENCE TO SYSTEMS, AND SUPPORT RESEARCH AND DEVELOPMENT



GOVERNMENT INCENTIVES FOR COMPANIES THAT SUPPORT CLOSED-LOOP RECYCLING SYSTEMS



INDUSTRY TO ENSURE SUPPLY CHAIN CERTAINTY



INVESTMENT IN CONVERSION OF WASTE TO ENERGY



CO-ORDINATED INNOVATION, MATERIALS AND LABELLING



PLATFORMS WHERE MANUFACTURERS AND RETAILERS UNITE TO POOL RESOURCES



INVESTMENT IN POLYMER SCIENCE TO CONVERT RECOVERED MATERIALS INTO VALUE-ADDED RECYCLED PRODUCTS



COSTS TO CONSUMERS KEPT TO A MINIMUM



INDUSTRY COLLABORATION AND DEVELOPMENT OF LARGE SINKS FOR RAW MATERIALS



CONSUMER EDUCATION AND AWARENESS LOCALLY, NATIONALLY AND GLOBALLY

## RETAILER

**Adrian Cullen**  
Woolworths head of sustainability

“Our customers are telling us they want to see a reduction in plastics across our store, particularly on fruit and vegetables. Packaging plays a key role in the retail supply chain. It protects the significant investment that we and our suppliers have made in growing, processing and transporting the products to our shelves and makes sure they are delivered safely to customers’ homes.

“There is still more work to be done, and we are continuing to work with all our suppliers to actively pursue plastic packaging alternatives and increase recyclability where possible.

“Clear on-pack communication that informs customers how to dispose of each packaging component after use is an important part of increasing recycling rates in Australia. To overcome this challenge, retailers, manufacturers and government all need to play a part in providing consumers with clear and consistent information about how to reduce, reuse and recycle.”

# PARTNERSHIP WITH GOVERNMENTS

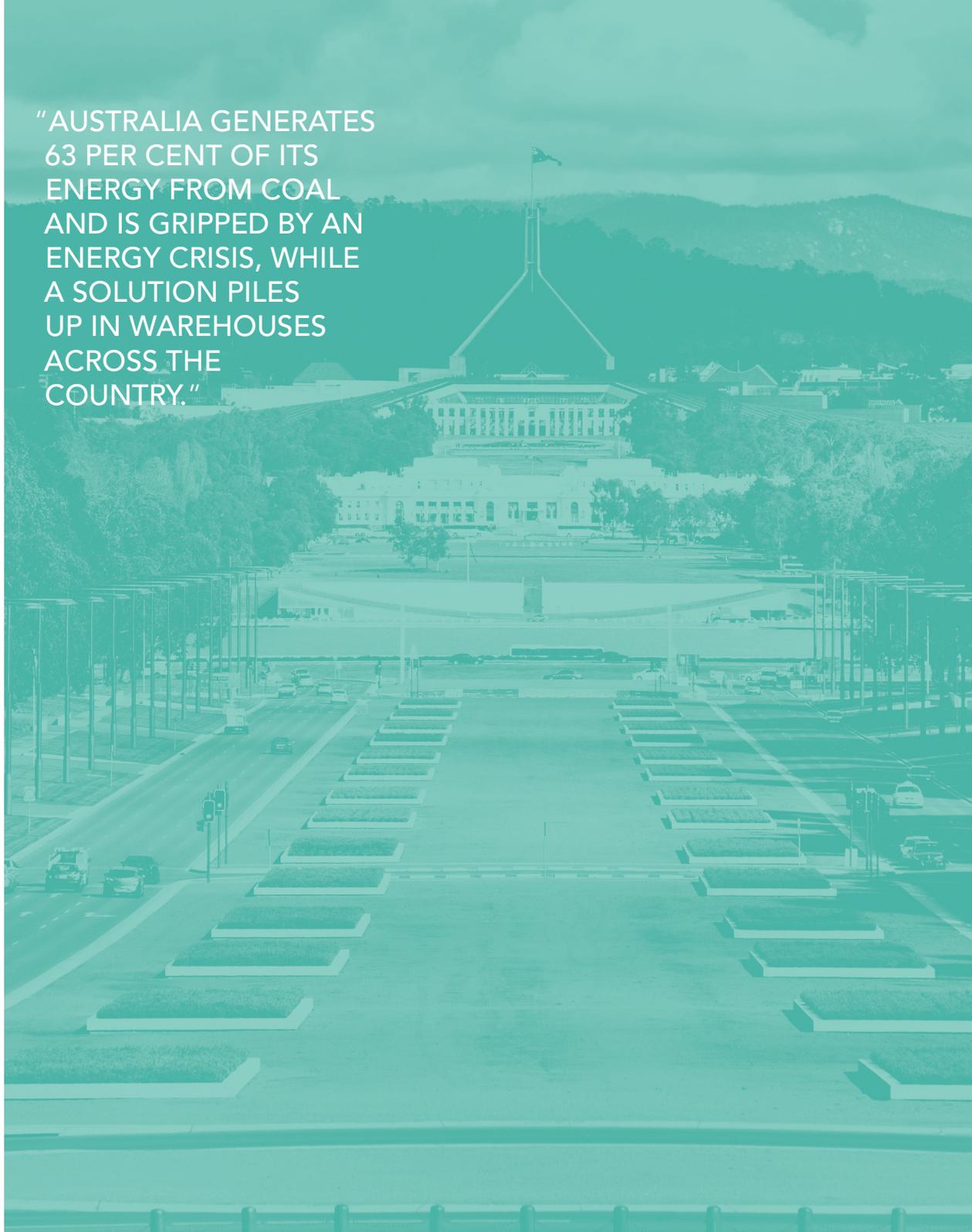
Beyond sustainability targets and policy frameworks, the *End of Waste* will require ongoing government support, regulation and R&D funding for an industry striving to be more sustainable, and deep understanding by policy makers of how to incentivise industry changes that will trickle down to impact businesses and consumers.

An engaged government can ensure the right regulations are created, that laws are adhered to, and all players are actively encouraged to participate. Government needs to fund research and development, to incentivise companies to do the right thing. This could include a landfill levy credit to reward organisations who reduce the amount that goes to landfill. Those who manufacture with recycled materials could also be rewarded, to contribute to the establishment of a stable market.

Research on converting waste into energy must translate into action. Australia generates 63 per cent of its energy from coal and is gripped by an energy crisis, while a solution piles up in warehouses across the country. Sweden has successfully implemented a waste-to-energy program that has been so successful that it now imports waste to convert to energy. Waste-to-energy technology has evolved to the point where Australia could implement these programs in compliance with environmental regulations.

Alongside these programs will be communication initiatives that can educate and engage consumers with the real issues, to mitigate the need to act with superficial responses to sensational media reporting.

"AUSTRALIA GENERATES 63 PER CENT OF ITS ENERGY FROM COAL AND IS GRIPPED BY AN ENERGY CRISIS, WHILE A SOLUTION PILES UP IN WAREHOUSES ACROSS THE COUNTRY."



# REAL, TANGIBLE SOLUTIONS

Regulatory changes, sweeping policy changes and industry collaboration are critical to bringing about the *End of Waste*. However, these changes are neither simple nor quick to implement. It is individual product innovation and tangible, incremental changes that ultimately drive all towards the solution.

There are incremental changes that can be made to continue to remove waste from the system. Products can be light-weighted to use less packaging (and reduce freight costs), pigments can be removed from plastics to ease recycling, and packaging can be streamlined and made uniform to make cross-retail solutions easier to implement.

Packaging should also be made from single substrates and clearly labelled to increase the likelihood of being recycled.

Over the past 12 years, Pact Group has partnered with supermarkets in a pooling system for reusable plastic crates. The company has joined forces with councils to produce a wheelie bin from recycled material and when the bins reach the end of their functionality, they collect them and recycle them back into wheelie bins.

Pact Group has also light-weighted bottles to reduce transport costs and created a meat tray from 50 per cent recycled material. The trays are 100 per cent recyclable and do away with the need for a soaker pad, once destined straight for landfill.

Each of these innovations is a small step but combined, they will help make giant leaps towards the *End of Waste*. And they represent just a few tangible examples of the sorts of solutions that can be achieved by an integrated, industry-wide approach to this urgent problem.

"THERE ARE INCREMENTAL CHANGES THAT CAN BE MADE TO CONTINUE TO REMOVE WASTE FROM THE SYSTEM."



# CRATE POOLING

The *End of Waste* can be achieved as industry aligns around packaging solutions that can be part of the circular economy to solve the total waste stream challenge. Following is a working example that illustrates the sort of incremental, but tangible, change that is required to bring about the *End of Waste* — a collaboration amongst Pact Group, councils across Australia and retailers including Coles and Woolworths.

A study by Initiate Mehrweg shows by the sixth rotation, a reusable plastic crate

has a lower greenhouse gas emission than a corrugated box. Overall, the use of reusable plastic crates results in a 60 per cent reduction in greenhouse gas emissions compared to the use of corrugated boxes.

There are currently 10 million crates in circulation, replacing traditional single-use corrugated boxes. The pooled plastic crates replaced 120 million single-use corrugated boxes.

Pact Group manufactures reusable crates from polypropylene (PP)

The crates are used by retailers including Coles, Aldi and Woolworths, for fresh fruit and vegetables. An identical system is used for transporting protein

Once used in store, the crates are returned to retail distribution centres where Pact Group collects them

The crates are then washed in water heated by natural gas to 75°C, with centrifugal spin drying which is more energy-efficient than traditional methods such as heated air and fan

The washing water is recycled under environmental best trade practices. The annual benefit is about 9 million litres which is a 30 per cent improvement on current market technology

The crates have wash-return rates of up to 14 cycles per year

The crates are then re-issued to growers to pack produce to be sent to retailers

After 10 years, the crates are recycled into products for non-food related applications such as underground cable covers and electrical pits



# CONCLUSION

To build a circular economy with mass reach will take a whole-of-society approach, with input from a coalition of problem solvers across industry, government, manufacturers, brand owners, retailers, the waste management sector, recyclers and consumers.

Most importantly, it requires a bold, ambitious vision to align drastically varied interests. We must transition from the *War on Waste* to the next logical step: the *End of Waste*, entirely.

Consumers are demanding change. Policy makers are and will increasingly regulate change. The packaging industry must cooperate to find bold, ambitious solutions, and turn this problem into a long-term opportunity for every stakeholder in the supply chain.

Pact Group does not have all the solutions to the total waste stream challenge, but this document seeks to recommend approaches on how to move forward with a focus on simplified processes for industry and consumers, and creating new, recyclable and reusable products.

Ambitious targets, industry collaboration, government support and tangible, incremental innovation can begin to create the systems and markets that can take us to the *End of Waste*.

**The *End of Waste* is possible,  
if industry works together.**



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