

Creating a circular economy for plastic packaging that works in New Zealand by 2025.

Plastic Packaging Circular Innovation Programme Outputs from Masterclasses
- Circulate, Innovate, Eliminate

January 2020

Executive Summary.



In 2019 the Sustainable Business Network (SBN) brought key representatives from the packaging system together for three Plastic Packaging Masterclasses. Our core motivation was to address the urgent issue of plastic packaging polluting our environment. Our approach is to help a cohort of packaged goods suppliers begin to create a circular economy for plastic packaging in New Zealand. The events were designed to help this cohort meet packaging commitments that stipulate 100% of plastic packaging is reusable, recyclable or compostable by 2025.

The way New Zealand uses and deals with plastic packaging is changing. It's clear the necessary changes cannot be achieved by individual companies or sectors working in isolation. The whole packaging system, from design through to end of life, needs to be taken into account to avoid unintended consequences like food waste or breakdowns in supply chains.

The Masterclasses built on the recommendations from SBN's report 'New Zealand's Plastic Packaging System – an initial circular economy diagnosis'. They used the framework of Eliminate, Innovate and Circulate from the New Plastics Economy global initiative from the Ellen MacArthur Foundation.

From these events SBN created and augmented the relevant tools available to New Zealand businesses. These include guides to recycling and packaging design.

Action is happening. However more co-ordination, support and focus is needed.

The masterclasses have played an instigating role, and are set to continue in 2020.



Ministry for Primary Industries Manatū Ahu Matua





2

Executive Summary.



Summary of reccomendations

Packaged goods suppliers should:

- audit the amount and types of packaging they use to create a baseline to work from
- reduce or eliminate problematic single-use packaging wherever possible
- seek alternatives to single-use plastic options, particularly reusable models
- only use compostable packaging where the necessary processing infrastructure is readily accessible
- move to plastics with the highest recycling value (clear PET and natural HDPE).
- avoid laminates where possible
- source recycled content, ideally from New Zealand, to keep plastics in high-value circulation and out of the environment

Packaging designers and suppliers should:

- ensuring packaging is designed in line with a circular economy as genuinely reusable, recyclable or compostable
- scale up research and development into new materials and solutions

Government and local authorities should:

- use legislation to tackle the key problematic areas
- support the development of required infrastructure for onshore processing of plastic packaging







3

Introduction.



The following report contains the key outputs from the Sustainable Business Network's (SBN) Masterclass Series in the Plastic Packaging Innovation Programme.

The programme is designed to create a circular economy for plastic packaging that works in New Zealand by 2025. It was created by SBN as a part of its Circular Economy Accelerator (CEA) initiative. The CEA was established in 2018 to lead SBN's effort to hasten the adoption of a circular economy in New Zealand.

The Masterclass Series is presented in partnership with New Zealand King Salmon, the Ministry for Primary Industries and Foodstuffs NZ. It builds on SBN's report, <u>New</u> Zealand's Plastic Packaging System – an initial circular economy diagnosis.

The masterclasses are centred around a group, or cohort, of leading packaged goods suppliers committed to improving the circularity of New Zealand's packaging.

The 2019 series brought together a total of 122 individuals, representing 50 organisations, from across the wider packaging system (packaging designers & suppliers, retailers, waste processors, scientists, innovators and council & government). The aims were to help packaged goods suppliers make more informed packaging decisions and navigate towards 2025 packaging commitments. The following is a summary of what was achieved in each of the three Masterclasses.

The three masterclasses in the series were:

- **Circulate** 31 July 2019 *Recycling with radically improved economics and quality*
- Innovate 15 October 2019 Moving away from problematic plastics to new materials, including compostable packaging
- 3 **Eliminate** 20 November 2019 Designing out problematic and single use packaging by moving towards reuse and other models

For more information please contact: \rightarrow kate@sustainable.org.nz







4



Table of contents.

What do we know now?	6
Seminar sessions – key points	7
What's happening here in NZ?	12
Should I use compostable packaging?	16
Packaging design for recyclability	21
What needs to happen and when?	23
Summary of boards and conversation	24
Pathway to 2025	30

What should we do now?	35
Who's who and where to look for help	36
Definition of terms	38
Plastics resins guide	39





Seminar Sessions Key Points

Masterclass #1 - Circulate

Roderick Boyes & Liz Butcher, Ministry for the Environment Current & projected medium term status

- 1. Resource Efficiency and Circular Economy Transition (RECET) is a two-year programme approved through Cabinet. It aims to reform New Zealand's waste management system to reduce waste, increase resource recovery and transition New Zealand towards a circular economy.
- 2. A taskforce was set up last year to respond to the Chinese National Sword Policy, which placed a restriction on the import of many recycling materials. The taskforce looked at how our resource recovery system is functioning. Its recommendations will form part of the RECET work programme.

 \rightarrow <u>beehive.govt.nz/release/plan-recharge-recycling</u>

- 3. The single-use plastic shopping bag regulations have helped to bring the conversation around waste into the public domain. RECET will build on this through exploring options to expand the waste levy, looking at resource recovery infrastructure and systems and investigating the role of product stewardship.
- 4. Recent global agreements to amend the Basel Convention mean there will be improved

regulation in place around global trade of plastic waste in the future. The Basel Convention amendment will come into force on 1 January 2021.

5. A circular economy approach to plastics will require a collaborative approach that includes iwi, innovators, industry, business, science, consumers and government.

Marc Gaugler, Scion Overview of the science of plastics

- 1. Plastics are one of the most versatile materials, which have revolutionised our way of life.
- 2. Most plastics are made from petroleum-based sources, but there are bio-based alternatives. There is no general answer to the question 'are these new materials better or worse?'.
- 3. Mixing of different plastics in one product complicates recycling. Features that appear trivial can also have a detrimental effect on current recycling efforts.
- 4. While plastics are durable materials most of them cannot be mechanically recycled an infinite number of times without the performance of the material being reduced.
- 5. Plastics can be and are already used in closed loop systems, but material choice, article design, and end-of-life need to be aligned for a closedloop article to work.

Duncan Wilson, Eunomia Overview of the current NZ recycling system

- 1. The majority of plastic packaging ends up in households.
- 2. Plastics are sorted in Material Recovery Facilities.
- 3. The more sorting that has to be done the more it costs.
- 4. Most plastic goes overseas for recycling which depends heavily on international markets.
- 5. Technically recyclable is not the same as economically recyclable: Only clear polyethlene terephthalate (PET) and high-density polyethylene (HDPE) have ever really been economically viable – use them!

Jenny Marshall, WasteMINZ Consumer behaviour & designing for recyclability

- 1. It is a universally acknowledged truth that everyone thinks they know how to recycle.
- 2. However, almost no one really understands how recycling works.
- 3. In order to design for recyclability we need to understand consumer behaviour.
- 4. People tend to make recycling decisions based on their familiarity with a particular product, rather than technical knowledge.



5. Councils and recyclers are working together to determine opportunities for greater national consistency.

Sharon Humphreys, Packaging NZ & Rachel Barker, Plastics NZ The role of plastic packaging

 Modern society relies on packaging to deliver goods, safely, undamaged and uncontaminated. Packaging communicates product infomation, including ingredients and quantities, recommendations/instructions for usage, appropriate storage and expiry dates.

- 2. Finding zero-impact packaging solutions is, as yet, not possible. All packaging material which undergoes a manufacturing process creates an environmental impact sometime, somewhere.
- 3. Today's siloed approach to 'sustainable packaging' is ill-equipped to reconcile trade-offs between the need for efficient packaging and the inability of infrastructure to recover the value in discarded packaging. If we add carbon implications, the potential for food waste impacts and safety and hygiene factors into the mix it is hardly surprising that we have lost consumers somewhere along the way.
- 4. Recycling is currently a minefield of confusion. It is not the only solution for discarded packaging.
- 5. Let's elevate the conversations so we aren't thinking about making "sustainable packaging"

but how we make packaging fit into a "sustainable system".

Robert Breukers, Callaghan Innovation Innovating with recovered materials

- 1. There are multiple technologies available or being developed to get value from materials where they cannot be recycled back into the same product.
- 2. Recycling can create wood substitute products from recovered plastics, e.g fence posts.
- 3. Separation treatments can be used to recover components of multilayer packaging, or to remove contaminants like pigments from plastics.
- 4. Chemical recycling can be used to convert polyethlene terephthalate (PET) to its original constituents or to convert waste plastics to crude oil substitutes.
- 5. Callaghan Innovation has grants, programmes and scientific capability available to assist companies with their R&D goals.

Masterclass #2 - Innovate

Stephanie Vercoe, Sustainable Coastlines The reality of what's leaking into our environment

1. While plastic is the main offender, we need to move away from single-use culture in general.

Change the behaviour, not simply the material.

- 2. There is no silver bullet. Solutions to plastic pollution need to happen at all levels. Sustainable Coastlines operates at a grassroots level, enabling New Zealanders to take action themselves.
- 3. Collaboration is crucial. Work together, share ideas, and let's solve this problem together. All the data, insights and solutions on the <u>litterintelligence.org</u> platform are open-sourced. This allows Kiwis to influence change at every level, whether through education, in their community, product design, infrastructure or government legislation.

Liz Butcher, Ministry for the Environment (MFE) Government update

 The Resource Efficiency and Circular Economy Transition (RECET) work programme aims to reduce waste, increase resource recovery and transition New Zealand towards a circular economy.

It includes work on:

- Investigation into waste levy expansion and waste data collection.
- National Resource Recovery work programme planning to investigate and develop plans to recharge recycling.
- Product stewardship consultation on regulated product stewardship closed on 4 October with six priority products discussed including packaging.



- Basel Convention global commitment to better manage mixed plastics.
- Transitioning towards a circular economy bigger than just waste transport, tourism, construction, energy.

Nick Baker, Visy

Improving recycling - What do we need to innovate away from?

- Labelling needs to be clear, precise and easily interpretable by the end user. The recycling industry in New Zealand needs a system that is understood by consumers. The Australian Recycling Label offers clear directions, taking the confusion out of recycling.
- 2. When it comes to packaging design here are some things to consider:
 - Anything smaller than 50mm will likely not be recycled.
 - When materials are mixed or layered it makes recycling too difficult and expensive so will likely not be recycled via kerbside collections
 - Soft plastics cannot be recycled via kerbside collections.
- 3. Clear polyethylene terephthalate (PET) and natural high-density polyethylene (HDPE) retain the most value within the recycling chain. If possible avoid coloured PET, polyvinyl chloride (PVC) trays, polylactic acid (PLA), low-density polyethylene (LDPE) and polystyrene (PS).

- 4. Anything heavily contaminated due to poor or no cleaning will be landfilled. The common culprits are peanut butter, mayonnaise and personal hygiene products, generally items that are oily/sticky.
- 5. Plans are in place to maximize material recovery. Currently Clear PET and Natural HDPE are sorted into high value bundles, with coloured PET and HDPE mixed in with plastics 3-7 to increase the value of mixed plastic bundles. In the future sorting could occur in five potential streams:
 - Clear PET
 - Coloured PET
 - Natural HDPE
 - Coloured HDPE
 - Polypropylene (PP)

Gaetano Dedual & Jacob Kohn, Futurity Innovating the system

- Collaboration throughout the value chain is essential to drive change and all members within the value chain need to demand change.
- 2. With respect to end-of-life (EOL) there is no silver bullet. Ask what is the right material and EOL for the right application, market, geography, demographic etc.
- 3. Right material choices for EOL and application need to be thought through and factored against relevant externalities.
- 4. New infrastructure needs to be efficient, complimentary and involve new technologies.

Marie Joo Le Guen, Scion Where are we at with alternatives to traditional petroleum based plastics?

- 1. Bioplastics are not all equal and green!
- 2. Infrastructure for the end of life of bioplastic has not yet been established.
- 3. We are only starting to unveil the potential for production of valuable chemicals through refining organic matter.
- 4. We need concerted efforts to set up a circular bioeconomy in New Zealand.

Logan Dingle, Living Earth Overview of composting

- Compostable packaging and, in particular, compostable plastics have the potential to cause significant challenges for prospective processors. This is from a biological process perspective as well as operational factors such as processing timeframe, organic certification and Resource Consent.
- 2. Certified compliance against an accepted standard is a key prerequisite, but may not be sufficient to gain acceptance for individual processors.
- 3. Economic and product nutrient benefits are unlikely to offset the processing challenges.



Masterclass #3 - Eliminate

Nick Morrison, Go Well Consulting

Case study - Consumer learnings from Bags Not Campaign:

- 1. Get well-informed then engage with customers to explain your why and how.
- 2. Be authentic.
- 3. Show bright spots to prove it works and can be done.
- 4. Behaviour change takes time, stick at it.
- 5. Be empathetic to the change experience it's really hard for some.

Francesca Goodman-Smith, Foodstuffs New Zealand

Case study - Elimination up the supply chain

- 1. Collaboration across the supply chain is essential to bring about a 'reusables culture'.
- 2. Clear processes and accountability is essential to embedding reusables in logistics networks.
- 3. Reusables can deliver functional, environmental and financial savings to businesses.

Vaughan Whyte, FoodCap Case Study - The FoodCap story:

- Consumer expectations for introduction of sustainable packaging are intensifying, but consumers can be unpredictable. The speed of consumer backlash to poor practices, communicated via social media is unprecedented, and this can impact your brand value, share price and consumer trust.
- 2. There is a risk that knee jerk reaction to 'plastic panic' may drive poor decisions and unanticipated outcomes. Some companies are searching for the 'silver bullet', a one-size-fits-all solution, but it doesn't exist. The majority of packaging will become more expensive, and this will impact the end consumer. Companies will need to become smarter at looking along the entire supply chain to gain efficiencies and cost advantage to offset these higher packaging costs.
- 3. Front end consumer packaging is receiving the majority of focus, (high consumer visibility + high fear of consumer backlash), but addressing the mountain of back end (transport packaging) is equally as important. Developing reusable transport packaging solutions can be easier than commercialising them. Initial traction will likely come from developing closed loop logistics models.

Andrew Pearson, New Zealand Food Safety Food safety considerations when changing materials or moving to reuse:

1. The responsibility for identifying and mitigating

hazards associated with food contact materials lies with the food business.

- 2. Failure to address hazards can mean chemical, microbiological or physical fragment contamination of food and consequent food safety risks.
- 3. A range of aspects need to be considered with moves towards recycling or replacement of food packaging; these include integrity, sterility, process contamination and material migration.

James Griffin, SBN

Elimination and Reuse - Overview:

- 1. At a global level to reach 2025 packaging commitments it is estimated that 30% of current packaging needs to be eliminated via redesign and innovation. 20% needs to move from single use to reuse models and 50% needs to remain in high value circulation via radically improved recycling.
- 2. High profile examples of elimination are being seen with multipack packaging (e.g. canned goods) and lids for 'on the go' containers.
- 3. Customer reaction to packaging changes is not yet fully understood, so pilots and trials are underway as opposed to full conversions to alternative designs and solutions.
- 4. Edible packaging is gaining interest as an opportunity to eliminate traditional plastics.



- 5. The four reuse models (refill on the go, refill at home, return on the go, return from home) outlined by the Ellen MacArthur Foundation provide a useful framework for focusing innovation on key usage areas.
- 6. There is evidence of businesses focusing on different packaging configurations that emphasise elimination/reduction and reuse for online sales where 'shelf presence' is not so relevant and there is more opportunity for customer education.

Barbara Nebel, thinkstep

Avoiding unintended consequences when changing packaging:

- 1. A full life cycle approach helps to avoid unintended consequences from shifting burdens from one stage of the life cycle to another, or from one environmental impact to another. We need to consider marine plastics as well as carbon emissions and can't just focus on one issue.
- 2. We need to shift from recycling to upcycling. Our recycling often results in a loss of material properties and in fact is down cycling. This is for example the case if different grades of aluminium are used in one product. Recycling them together will result in the lower grade material.
- 3. We need a mindshift from trying to reduce waste to recognising the resources locked up in our materials and the opportunities they provide. Or as Michael Braungart has put it "We don't have a waste problem, we have a materials in the wrong place problem".

Rachel Chiaroni Clark, Office of Prime Ministers Chief Science Advisor

Key recommendations from PMCSA *Rethinking Plastics* Report:

- Rethinking Plastics provides an evidence-based system-wide overview of plastics in NZ, along with a series of recommendations to government on ways to mitigate the issues related to plastics, while retaining its many benefits. The outputs from the project are 1) a long, detailed report; 2) a short summary report; 3) a website; 4) a resource portal – available at pmcsa.ac.nz.
- 2. The four workstreams are based on 1) the cultural transformation in how we use and dispose of plastic; 2) the innovations and ideas we can adopt to make plastic use more sustainable; 3) the environmental impacts of plastic; 4) quantifying use and material flows of plastics in NZ.
- 3. Our overarching recommendation is to implement a national plastics action plan that outlines a clear vision and timeline of actions, and signals expectations for the transition to a circular economy for plastics. The action plan can be built on the series of detailed recommendations and further actions outlined in the report, which aim to improve plastics data collection; embed plastics in the government agenda; create and enable consistency in design, use and disposal; innovate and amplify good ideas; and mitigate environmental and health impacts of plastic.





What's happening here in NZ?

Click to see what activity is occurring to enable a circular economy in plastic packaging for the following sectors:



Industry Bodies

Governance

Packaging Industry



Note: This information has largely been provided by attendees of the Masterclass Series. SBN is interested to hear of any other relevant activity.

Creating a circular economy for plastic packaging that works in New Zealand by 2025





Industry Bodies

WasteMINZ

Developed guidelines and resources on certification, processing facilities and communication for compostable packaging.

Contact information:

wasteminz.org.nz/projects/compostablepackaging

Australian Packaging Covenant Organisation (APCO)

Development of Packaging Recyclability Evaluation Portal (PREP) tool and Australasian Recycling Label (ARL). PREP tool provides a way to assess whether an item of packaging could be classified as 'recyclable' in Australia and New Zealand through kerbside collection. The ARL is an evidence-based system that provides clear consistent on-pack recycling information to inform consumers of the correct disposal method.

Contact information:

Packaging Forum

Working on solutions for rigid plastic food and beverage packaging, including product take back schemes.

Contact information: \rightarrow adele@3r.co.nz

Plastics NZ

Investigating polyproplene (PP) recycling across New Zealand.

Contact information: \rightarrow rachel@plastics.org.nz

Governance

Ministry for the Environment

On-going efforts under the Resource Efficiency and Circular Economy Transition (RECET) work programme. This programme includes work on the Waste Levy expansion, regulated product stewardship, national resource recovery and Basel Convention commitments. Another programme is The Waste Minimisation Fund, funding projects that promote or achieve waste minimisation.

Contact information: \rightarrow mfe.govt.nz/waste

Auckland Council

Reviewing and making improvements to Auckland's Materials Recovery Facility. Plans for 2024 include implications of the container deposit scheme and investment into PP #5 separation. Working on labelling with community and industry collaborations as well as standardising kerbside collection across New Zealand.

 $\begin{array}{l} \text{Contact information:} \\ \longrightarrow nadine.wakim@aucklandcouncil.govt.nz \end{array}$

Tauranga City Council

Working to augment kerbside recycling collection system.

Contact information: \rightarrow sustainability.waste@tauranga.govt.nz

The Office of the Prime Minister's Chief Science Advisor

Released a report titled '<u>Rethinking Plastics</u> <u>in Aotearoa New Zealand</u>' which analysed and collated the evidence-base around plastic use and waste in New Zealand. This will guide a series of recommendations to mitigate the negative impacts of plastic while retaining its many benefits.

Contact information:

 $\rightarrow \underline{rachel.chiaroni-clarke@auckland.ac.nz}$

Creating a circular economy for plastic packaging that works in New Zealand by 2025



Innovators and Collaborators

Sustainable Coastlines

Created the Litter Intelligence Tool which utilises citizen science to gather and analyse what problematic materials and components are ending up in our oceans and on our beaches.

Contact information: \rightarrow sustainablecoastlines.org

Scion

Offers biodegradation certification by testing biodegradation properties of bioplastics according to European standards.

Contact information: \rightarrow mariejoo.leguen@scionresearch.com

Futurity

Developing bio-based materials to replace petrochemical derived materials using renewable New Zealand wood.

Contact information: $\rightarrow \underline{ella@futuritygroup.co.nz}$

Go Well Consulting, Pitch Black & Supertrash

Developing a compostable packaging project aimed at creating a compostable plastics collection scheme. The scheme plans to create New Zealand drop-off locations for consumers to return their certified compostable packaging for commercial composting.

Contact information:

- \rightarrow <u>nick@gowellconsulting.co.nz</u>
- \rightarrow jack@supertrash.co.nz

Packaging Industry

Custom-Pak

Operating a polyethlene terephthalate (PET) washplant, Christchurch. Supplying recycled PET (RPET) packaging.

Contact information: \rightarrow Glen Wilson 027 430 4337

TC Transcontinental

Working on trial projects recycling clean and uncontaminated soft plastics into packaging for non-food contact.

Contact information:

- \rightarrow jarrod.puddy@tc.tc
- \rightarrow <u>donald.lee@tc.tc</u>

Tetra Pak

Working with global technologies and local organisations to develop recyling for cartons in New Zealand.

Contact information:

 \rightarrow <u>sally.cunnington@tetrapak.com</u>

Sealed-Air

Offers a kerbside recyclable temperature paper insulation (Tempguard) as an alternative to expanded polystyrene.

Contact information:

 $\rightarrow \underline{michael.basagre@sealedair.com}$

The Better Packaging Co.

Working on The Better Collective, which is a network enabled by technology that enables people without a compost to drop off compostable packaging. In 2020 there will be a pilot of a reusable courier satchel under their SWOP project.

Contact information: \rightarrow hello@betterpackaging.com



Marx Design

Have created an open source briefing form for brand owners to guide them through key considerations for end-of-life when designing their packaging.

Contact information: \rightarrow janine@marxdesign.co.nz

Infrastructure

Flight Plastics Ltd

Polyethlene terephthalate (PET) closed loop recycling and recycled PET (RPET) packaging supplier (Wellington).

Contact information: \rightarrow keith@flight.co.nz

Comspec

High-density polyethylene (HDPE) wash plant (Christchurch).

Contact information: $\rightarrow \text{comspec.co.nz}$

Visy

Reprocesses polyethlene terephthalate (PET) in Sydney. Reprocessed PET converted into packaging in New Zealand.

Contact information: \rightarrow nick.baker@visy.co.nz

PACT Group

New Auckland closed loop re-processing facility for polyethlene terephthalate (PET) to be established.

Contact information: \rightarrow pactgroup.com.au





Should I use compostable packaging?

Decision tree developed during Masterclass #2 - Innovate.



Can you Eliminate or Reuse?



Should I use compostable packaging?

Can you use recyclable packaging?



Key considerations for recyclable packaging

Currently clear PET #1 and natural HDPE #2 have strong economic end markets for recycling and are widely collected.

Using plastics with a percentage of recycled content helps to create markets for recycled plastics and improve overall circularity of the system. Coloured PET, coloured HDPE and PP #5 are largely bundled with low value mixed plastics. However, they may be separated into single higher value recycling streams in the short-medium term future depending on location.

Plastics made from resins 3, 4, 6 & 7 are unlikely to be sorted in the near future and hold little to no value for recycling currently.

Bio based drop-in materials like bioPET, bioHDPE are becoming more available – these can be

recycled in traditional recycling streams and do not come from traditional petrochemical feedstocks.

There may be unintended consequences for shifting to materials e.g glass weighs more than plastic and therefore requires more energy to transport. Life cycle assessments are a useful tool to analyse the environmental impact of a product during its entire life cycle.



Should I use compostable packaging?

In-home



Key considerations for home compostable packaging

How many of your customers own or have access to compost bins?

Of those how many manage their compost effectively?

Compost needs approximately a 25-30:1 ratio of carbon to nitrogen (C:N ratio) – packaging falls under carbon and too much packaging could throw home compost bins out of balance.

Public drop-off points for pre-approved certified compostable packaging are being discussed but are not available yet. Is the final format of your packaging actually certified versus just certification of individual layers?

Are you clearly communicating to the consumer how to effectively compost the packaging, including removal of any non-compostable elements e.g cutting packaging into small pieces prior to composting?

*WasteMINZ Compostable Packaging: wasteminz.org.nz/sector-groups/compost-nz/position-statement-from-new-zealand-composters-on-compostable-packaging/

Outputs from Masterclasses - Circulate, Innovate, Eliminate



Should I use compostable packaging?

Out-of-home



Closed-loop systems

Three closed-loop out of home situations identified by WasteMINZ^{*} as being potential options for compostable packaging:

- 1. Commercial food waste collections where cafés and restaurants only use compostable serviceware chosen from an approved list of vendors, do not use any plastic serviceware and where the service provider is providing a sorting service.
- 2. Events where manual separation and thorough decontamination of waste takes place.

3. Venues or businesses (such as Vector Arena) where only compostable packaging is used and decontamination is undertaken.

Key considerations for industrial compostable packaging

There are limited industrial composters nationally that accept packaging. Check out who can <u>here</u>.

Composters do not need compostable packaging to make quality compost, as it doesn't add value to the

final product. This is because compostable packaging provides little to no nutrient value for compost.*

If a product is certified industrially compostable, do not advertise it as being suitable for home composting.*

Ensure that the compostable packaging is sorted, and any non-compostable contaminants are removed before being transported to the composting facility.^{*}

*WasteMINZ Compostable Packaging: wasteminz.org.nz/sector-groups/compost-nz/position-statement-from-new-zealand-composters-on-compostable-packaging/



Should I use compostable packaging?

Key considerations for both home and industrial composting

Referencing the work WasteMINZ is leading on compostable packaging plus contribution from masterclass attendees:

When using compostable packaging ensure that packaging meets an international standard for industrial or home compostability as appropriate.*

Getting certification for compostable packaging in its final format requires significant investment.

Inks, adhesives and other additions to compostable packaging need to be organic and make up <5% of the packaging to be certified.

Compostable packaging that is not home composted or commercially composted is likely to go to landfill. Limited landfills in New Zealand have the ability to capture the greenhouse gases (like carbon dioxide and methane) from the anaerobic digestion of compostable packaging that occurs. In non-closed loop systems it is difficult to tell the difference between compostable plastic packaging and traditional plastic packaging. When compostable packaging enters the recycling stream it has the potential to contaminate and vice versa.

Compostable packaging leaked into the environment is harmful – litter is litter and will have the same impact if ingested by wildlife. We need to move to closed-loop systems.*

New Zealand councils have agreed that until technology improves to enable non-compostable plastics to be easily identified and removed, current and future council-provided kerbside food and green waste collections will not accept compostable packaging.*

Food waste is a rich source of nutrients for compost. So, products and packaging that assist

in the diversion of food waste from landfill should be made compostable, e.g. compostable food waste caddy liners.*

Ideally, compostable packaging should not be bright colours, e.g. pink or blue, as this risks the marketability of compost products, if flecks of those colours show up in compost.*

Certified compostable packaging is made from a renewable source rather than traditional petrochemical feedstocks.

*WasteMINZ Compostable Packaging: wasteminz.org.nz/sector-groups/compost-nz/position-statement-from-new-zealand-composters-on-compostable-packaging/



Packaging design for recyclability



*Adapted from Royal Society Te Apārangi: <u>royalsociety.org.nz</u>



Packaging designs to avoid for recyclability

Although some packaging formats may in theory be recyclable this is not always the case in practice. This can be due to the inefficiency and difficulty of processing and separating the materials it is composed of.

Building on the work by Royal Society Te Aparangi and WrapUK, our masterclass recycling experts have helped up us to identify certain packaging materials, formats and designs to avoid to ensure we have a radically improved recycling system.

*Adapted from WrapUK: <u>wrap.org.uk</u>

- Aluminium/metal closures on plastic bottles
- Black plastic
- Coloured opaque PET bottles
- Compostable, biodegradable and oxy-degradable plastics
- Sleeves with >60% cover
- Multi-layer laminates and PE sealing layers
- Non-removable film lids
- PVC sleeves and components
- Silicone valves used with PET bottles
- Coloured opaque HDPE materials

- Multimaterials in general
- Avoid (6) Polystyrene (PS) and Expanded polystyrene (EPS)
- In-mould labelling especially with mixed materials e.g HDPE label on PET. In mould labelling degrades the material when it is recycled as the label cannot be removed and therefore can discolour the resin. When inmould labels are made of a different type of plastic it contaminates the recycled product
- Anything adhered too strongly (e.g soaker pads on meat trays) and tough to remove often results in materials being downgraded or landfilled



Creating a circular economy for plastic packaging that works in New Zealand by 2025



Summary of table boards and conversations

During masterclass sessions participants worked through key questions around what could enable a transition to 100% reusable, recyclable or compostable packaging by 2025.

The following is a summary of themes and outputs:

#1 - Circulate

How can the system support businesses to improve the recyclability of their packaging?

The cohort identified the following needs from the plastic packaging system (Packaging Industry, Governance & Infrastructure and Design & Innovation) to enable improved recycling towards a circular economy for packaging:

Packaging industry:

- Clear decision making tools and guidance to enable more informed packaging decisions
- A source of validation of packaging claims
- Agreement on, and widespread adoption of, on-pack labelling for recycling and associated consumer education



- Collaboration to speed and scale innovation required for alternatives to difficult-to-recycle packaging e.g. multi-layered pouches

Infrastructure & governance:

- As above, we need cross sector collaboration to speed and scale the innovation required for alternatives to difficult-to-recycle packaging
- Mandatory product stewardship schemes
- A consumer education campaign
- Funding recycling facilities in New Zealand
- Consistent kerbside collections across the country
- A map of facilities and actions to meet the 2025 packaging commitments

Design & innovation:

- Packaging design guidelines and resources to enable improved recycling rates
- Collaborative innovation of new solutions to drive speed and scale of adoption (rather than first to market proprietary approach)
- Increase scale and range of plastics recycling options



#2 - Innovate

How can the system support business innovation?

The cohort identified the following needs from the plastic packaging system (Governance, Infrastructure, Packaging Industry and Design & Innovation) to enable innovation towards a circular economy for packaging:

Governance

- Clear guidelines on when to use compostable packaging and New Zealand specific standards on labelling/certification for use of compostable packaging.
- Public/Consumer education campaigns on how to recycle/compost to support positive end-of-life outcomes.
- Insights into how product stewardship and container deposit scheme will impact

businesses.

- Greater understanding of the effects of a waste levy increase.
- Guidelines for use of Australian Recycling Logo (ARL) and Packaging Recyclability Evaluation Portal (PREP) tool. There is growing consensus that New Zealand companies should adopt this.
- Clear decision making tools and guidance to enable more informed packaging decisions.
- Collaboration across the sector to speed and scale innovation required for alternatives to difficult-to-recycle packaging.
- Regulations to phase out problematic materials (both imported and local).
- Enabling greater accessibility for certification of compostable packaging.
- A source of validation of packaging claims.



Infrastructure (Recycling & Composting):

- National infrastructure with the ability to process a wider range of materials e.g coloured materials, small format packaging, polypropylene (#5) and compostable packaging. Possible solutions discussed were: improved kerbside collection with greater segregation (e.g soft plastics and organics bins), chemical recycling and product stewardship/ container deposit scheme.
- Consistency across the national network to avoid public confusion and streamline consumer communications.
- Clarity on composting infrastructure at a national level with regards to collections, destination/processing and consumer education.
- Improved kerbside collection segregation.

Packaging Industry:

- Increase focus on end-of-life impacts as well as functional properties.
- Agreement on, and widespread adoption of, on-pack labelling for recycling/compostables and associated consumer education.
- New and broader packaging options that meet 2025 commitments of 100% reusable, recyclable or compostable.

Design & Innovation:

- Commercialisation of new technology/ materials providing the same functional properties as traditional packaging with viable closed-loop end-of-life processing.



#3 - Eliminate

How can the system support business transition to reuse?

Representatives from the plastic packaging system (Governance & Infrastructure, Packaging Industry & Innovators, and Consultants) were asked how they might assist in the transition of packaged goods suppliers adopting reuse models instead of using problematic/single-use packaging.

Governance & Infrastructure

Governance and infrastructure identified they could support transition to reuse models by:

 Leading by example. Government agencies can ensure procurement processes stimulate markets for reuse systems (e.g. America's Cup, APEC, local events etc) as well as government offices.

- Waste levy increases incentivising alternatives to landfill and encouraging new models of reuse. Funding from a waste levy increase could be invested through the Waste Management Fund and could be used to support new reuse models and innovation in reuse.
- The introduction of product stewardship regulations. This is an opportunity for businesses to engage with circular models. Reuse models should be encouraged under the scheme.
- Government acting to ban problematic materials will also create opportunity to influence those looking for alternate packaging options. This opportunity can be used to encourage businesses to move towards reuse models.
- Support educating businesses and public on reuse systems including health and safety aspects.



Packaging industry

The packaging industry (suppliers and industry bodies) identified they could assist packaged goods suppliers transition to reuse by:

- Encouraging collaboration by connecting clients to their supply chain and the right people.
- Providing whole-of-life scenario analysis for customers to better understand impacts of packaging across life cycles.
- Bringing international examples, best practice models and local case studies forward to encourage businesses to reuse.
- Facilitating business to business (B2B) solutions to single use.

Consultants

The group of consultants (packaging, sustainability and life cycle consultants) identified they could assist businesses in a transition to reuse by:

- Within new product development ensure circular economy processes are adopted from the start, including reuse models.
- Staying up to date and learning from cultures with limited space/high populations/low resources to help adopt international best practice in reuse.
- Educate clients on the impacts of product stewardship being mandated and encourage circular solutions.
- Encouraging and facilitating impact analysis of reuse pilot projects.
- Integrating reuse into packaging suppliers' (and the wider industry's) strategies.
- Assist in developing reuse policies



Pathway to 2025

Recycling with radically improved economics and transitioning to reuse models and innovation is required to eliminate the use of problematic or unnecessary packaging by 2025.





By end of 2020

Outcomes

Recognition the current linear system must change and collaboration is needed

Business understands options for more circular solutions – eliminate, innovate, circulate

More circular packaging on shelves

Emerging capacity for on-shore polypropylene (PP) processing

Customers seek circular packaging solutions & recycled content

Range of regulation options identified (and international comparisons made)

Increased on-shore plastic processing of polyethlene terephthalate (PET) & high-density polyethylene (HDPE)

Increased awareness of what constitutes problematic or unnecessary plastic packaging

Initial evidence that policy changes and design

guidance are reducing unnecessary/problematic packaging

Identification of a material choice hierarchy

Increased use of clear PET, Natural HDPE and materials with recycled content

Investment needs identified for infrastructure and new materials

New categories ripe for reuse identified

Growing momentum for more reuse solutions

Activities

Sign up to the 'New Plastics Economy Global Commitment'

Champion use of recyclable, in practice, packaging and recycled content

Supermarkets phase out low value plastics

New recycling facilities open

New and additional end markets for recycled materials developed – e.g. options for polypropelene (PP)

Good information on end of life on all packaging

Co-create strategy for New Zealand to be a low carbon circular economy

Collaborate on public awareness campaigns on increased circularity

Prioritisation of recommendations from the Office of the Prime Minister's Chief Science Advisor's Rethinking Plastics in Aoteoroa New Zealand project (2019)

Tools to help smaller businesses meet New Plastics Economy (NPEC) Global Commitments rolled out – e.g. audit templates, guidance fact sheet for packaging design, preferred plastic types, label size, etc

Clearing house for information on circular packaging design, contacts, technical, considerations to prevent unintended consequences, carbon calculators, Life Cycle Assessments, case studies

Data collection system established for the waste data framework



Brands that use GS1 (barcode information) to include packaging information for their product providing more accurate data on plastic packaging volumes

New re-processing/recycling facilities for high value plastics

Labelling standards agreed – Australasian Recycling Label (ARL), Packaging Recyclability Evaluation Tool (PREP), includes degradable, compostable/other

Procurement used to increase circularity

Invest in end markets for recycled materials

Promote relevant circular packaging innovations

Wider actions to prevent plastic escaping into the environment e.g. littering education and compliance, storm water filtration, beach and ocean clean-ups, management of old landfills

Basel Convention consultation on waste exports comes into legislation

Co-design of mandatory product stewardship for plastic packaging and start of implementation

Identification of problematic materials requiring regulatory control

Waste levy expands

Landfill waste levy consultation (pending cabinet decision) signals increase in waste disposal costs

Funding streams for strategic circularity continue: Provincial Growth Fund (until 2020) and Waste Minimisation Fund (ongoing)

Resource recovery infrastructure and systems designed and invested in

Product stewardship schemes legislated

Develop interventions to bridge cost gap between virgin and recycled content

Joined up conversations across government agencies for consistent and complementary approaches

Lead companies begin internal audits to identify problematic or unnecessary packaging, sharing their results nationally and internationally

Initial development and/or adoption and distribution of best practice to eliminate problematic and/or unnecessary packaging at design stage

Initial potential solutions selected for trials/pilots

Collaborative innovation initiatives established

Launch of open source innovation challenges to stimulate solutions

Government developing changes to procurement policies and importation regulations to eliminate problematic or unnecessary packaging and incentivise replacement

Public end of life awareness campaigns creating consumer demand for materials with practical end-of-life solutions

Increased awareness and use of easily recycled materials e.g Clear PET and Natural HDPE

Local bio-based 'drop-in' materials pioneered and tested

Communication of ideal use cases for compostable packaging

Internal packaging audits identify opportunities ripe for reuse

High profile reuse examples launched e.g. coffee cup reuse systems, "bring your own container" offerings



By end of 2022

Outcomes

Aotearoa manages all plastic waste onshore

Landfill price increased

Use of low value (contaminated) mixed plastics declines rapidly

Simplification of plastic materials and movement towards bio-based polyethlene terephthalate (PET) and high-density polyethylene (HDPE)

Standardised end of life labelling on all plastics

Good packaging data collected and made opensource

Basel Convention leads to end of low value packaging/plastics

Product bans led by consumers, enforced by government, leading to new solutions

Widespread awareness of what constitutes problematic or unnecessary plastic packaging

Increasing evidence that policy changes and

design guidance are dramatically reducing problematic/ unnecessary packaging

Product stewardship in place for packaging for both NZ made and imports

Conversion to bio based 'drop-in' materials has started

Customer uptake of reuse model builds across sectors

Activities

Information and education through public awareness campaigns on product stewardship schemes

Review and update plastic packaging design guidance

New Zealand Plastics Pact - a pack of NZ tools and reporting on circular progress

Procurement used to stimulate circular solutions

Keep ahead of international best practice (import & export)

Investment in next level infrastructure

Recycling label standard adopted as mandatory

Kerbside collection standardised nationally

Regulatory control of problematic plastic types (import & export)

Mandatory product stewardship for plastic packaging fully implemented

NZ low carbon circular strategy review connected to infrastructure strategy

Invest in end markets for recycled materials

Investment in next level infrastructure for closing the loop

Further potential solutions selected for trials/pilots

Initial trials/pilots from collaborative innovation initiatives



By end of 2025

Government establishes new procurement policies and importation regulations to eliminate problematic and/or unnecessary packaging in New Zealand and incentivise replacement

Regulations put in place for recycled local content in packaging

Better understanding of barriers and opportunities for compostable plastics and how they fit into a centralised system

The user experience for reuse continues to improve through better design

Communication campaigns to drive awareness of reuse

Outcomes

Plastic packaging compatible with a circular economy becomes mainstream

Companies meet their commitments to ensure 100% of their plastic packaging is reusable, recyclable, or compostable in practice

Reuse becomes increasingly part of mainstream culture and reuse behaviour is commonplace

Relevant single use packaging formats have moved to reusable models

Activities

Further solutions and alternative products and processes established and mainstreamed

Importation controls on problematic and/ or unnecessary packaging to New Zealand maintained and regularly updated

Businesses adopt reuse as a performance indicator



What should we do now?

What should we do now?



Make a commitment to address your plastic packaging by 2025

e.g. sign up to the New Plastics Economy

<u>newplasticseconomy.org/projects/global-commitment</u>

Audit your plastic packaging and identify what to...

Eliminate $_$ Innovate $_$ Circulate

Create your strategy towards 2025...



For developing new packaging, use the open source Marx Design packaging brief

Marx Design has updated its client packaging briefing document to include a section that leads conversations on packaging stewardship. By including this early in the consultation process it can ensure that reduce, reuse and recyclability are designed for from the very beginning.

Download the packaging stewardship design briefing template here

 \rightarrow marxdesign.co.nz/contact/

Packaging Stewardship & Design for end of life	
Does the packaging deliver the required shelf life and protection for distribution and nothing more? (i.e. is it over-engineered?)	Please enter your answer here
Is the packaging designed for minimal use of material, energy and space?	Please enter your answer here
Could the packaging be simplified to a single material?	Please enter your answer here
Does the packaging aim to comply with the NZ Plastic Packaging Declaration by 2025 or earlier? Reusable, Recyclable or Compostable.	Please enter your answer here
Is the packaging reusable?	Please enter your answer here
What features make it reusable?	
If any where does it fit within the 4 mosts models: Refill a Home: users refill at home with refills porthese from retail or series that subscription service at retail packaging at a store or at drop off collection ports Return from Home: users collect packaging, then freques to a store packaging the store ports to a receptor such as Ternacycle. Or packaging is picked up from home by a pick-up service (e.g. a logistics company)	

What should we do now?



Who's who and where to look for help

Sustainable Business Network → <u>sustainable.org.nz</u>

Industry bodies

Packaging Forum → <u>recycling.kiwi.nz/about-us</u>

Packaging NZ \rightarrow packaging.org.nz/page/6/who-we-are

Plastics NZ \rightarrow plastics.org.nz/about-us

WasteMINZ \rightarrow wasteminz.org.nz/about

Government & policy updates

Ministry for the Environment \rightarrow mfe.govt.nz/waste

Scion - compostable packaging certification

→ <u>scionresearch.com/__data/assets/pdf_file/0006/</u> <u>66156/Compostabilty_testing_infosheet.pdf</u>

Resource list

New Plastics Economy Global Commitment (NPEC)

A global commitment to eliminate plastic pollution at its source. \rightarrow <u>newplasticseconomy.org/projects/global-commitment</u>

New Zealand Plastic Packaging Declaration

Local and international businesses commit to using 100% reusable, recyclable or compostable packaging in their New Zealand operations by 2025 or earlier.

→ mfe.govt.nz/news-events/new-zealand-plasticpackaging-declaration

WasteMINZ compostable packaging work and resources

→ <u>wasteminz.org.nz/projects/compostable-packaging/</u>

Packaging Recyclability Evaluation Portal (PREP)

A tool providing information about the recyclability of specific packaging formats.

→ prep.org.au/main/content/about

Rethinking Plastics in Aotearoa New Zealand

At the link below are some of the resources for the #rethinkplastic project from the Office of the Prime Minister's Chief Science Advisor. \rightarrow pmcsa.ac.nz/2019/04/18/rethinkplastic-resources/

Open Source Marx Design packaging brief

→ <u>marxdesign.co.nz/contact/</u>

WrapUK, Design tips for making rigid plastic more recyclable

→ <u>wrap.org.uk/content/design-tips-making-rigid-plastic-</u> <u>more-recyclable</u>

Definition of terms.



One of the issues we need to work on is use of correct terminology...

Here are the definitions of terms used in the <u>New Plastics</u> <u>Economy Global Commitment</u>, which should form a reference point for all those making these commitments:

Reuse of packaging

Operation by which packaging is refilled or used for the same purpose for which it was conceived, with or without the support of auxiliary products present on the market, enabling the packaging to be refilled.

Reusable packaging

Packaging which has been designed to accomplish or proves its ability to accomplish a minimum number of trips or rotations in a system for reuse.

Material recycling

Reprocessing, by means of a manufacturing process, of a used packaging material into a product, a component incorporated into a product, or a secondary (recycled) raw material; excluding energy recovery and the use of the product as a fuel.

Recyclable packaging

A packaging or packaging component is recyclable if its successful post-consumer collection, sorting, and recycling is proven to work in practice and at scale.

Post-consumer recycled content

Proportion, by mass, of post-consumer recycled material in a product or packaging.

Composting

Aerobic process designed to produce compost.

Compostable packaging

A packaging or packaging component is compostable if it is in compliance with relevant international compostability standards and if its successful post-consumer collection, (sorting), and composting is proven to work in practice and at scale.

Renewable material

Material that is composed of biomass from a living source and that can be continually replenished. When claims of renewability are made for virgin materials, those materials shall come from sources that are replenished at a rate equal to or greater than the rate of depletion.

Renewable content

Proportion, by mass, of renewable material in a product or packaging.

Closed loop

The packaging is collected and recycled, then used to manufacture the same type of packaging. For example, bottle-to-bottle, cardboardto-cardboard, or cup-to-cup.

Open loop

The product is collected and recycled into other products.

Bio based 'drop-in' materials

Bio based, non-biodegradable 'drop-in' plastics such as bio-PP, bio-PE and bio-PET are chemically identical to their petrochemical counterparts. In theory, they should be sorted out in the same mono streams as conventional plastics, e.g. Ecostore sugar cane HDPE.

Types of plastics used in packaging



				25	265	
PET	HDPE	PVC	LDPE	РР	PS/EPS	OTHER
Polyethylene Terephthalate	High Density Polyethylene	Poly Vinyl Chloride	Low Density Polyethylene	Polypropylene	Polystyrene / Expanded Polystyrene	Other (includes PLA – Poly Lactic Acid)
Soft Drink Bottles, Mineral water, Condi- ment/Food Jars, Food containers (trays, pun- nets and clam shells).	Milk Bottles, Cleaning Prod- ucts, Personal Care.	Packaging/ Wraps (e.g. on plastic take- away contain- ers), Flexible Packaging/Bags, Sleeves on PET bottles.	Stretch film (such as Cling Film), shrink wrap, bubble wrap, zip-lock bags, grocery bags, squeez- able bottles, coating of milk cartons.	Takeaway and ready meal (microwave- able) containers, Refrigerated Food Contain- ers, Medicine Bottles, Bottle Caps.	Styrofoam Cups, Takeaway food contain- ers (e.g. sushi packs), Meat Trays, Pro- tective Foam Packaging, CD Cases, Small Hard-wearing Bottles.	Various (e.g. PLA water bottles).



Attendees Masterclass #1.

Packaged goods supplier cohort New Zealand King Salmon Foodstuffs NZ Griffin's Life Health Foods Vitaco Fuji Xerox Lewis Road Creamery Cooks Global Foods Abe's Bagels

Packaging Industry Packaging NZ Custom-Pak Tetra Pak Cospak TC Transcontinental Packaging Forum Pack Tech Plastics NZ

Recycling Infrastructure & Governance Auckland Council Tauranga City Council Ministry of Primary Industries

Office of the Prime Minister's Chief Science Advisor Ministry for the Environment Eunomia Visy WasteMINZ Reclaim Innovation and Design thinkstep Futurity Marx Design Packaging Forum/3R Group Scion Callaghan Innovation 3R Group



Attendees Masterclass #2.

Packaged Goods
Supplier CohortNew Zealand King SalmonFoodstuffs NZGriffin'sNZ Safety BlackwoodsVitacoEpic DairyCommonsense OrganicsRaw EssentialsAbe's BagelsHello Fresh

Packaging Industry Packaging NZ Custom-Pak Convex Sealed Air Packaging Forum Better Packaging Co. Plastics NZ

Recycling Infrastructure & Governance Auckland Council Ministry for Primary Industries Office of the Prime Minister's Chief Science Advisor Ministry for the Environment Eunomia Visy Reclaim Living Earth Supertrash Innovation & Design thinkstep Go Well Consulting Sustainable Coastlines MacDiarmid Institute Futurity Marx Design Scion Siempre Callaghan Innovation 3R Group



Attendees Masterclass #3.

Packaged Goods Supplier Cohort New Zealand King Salmon Foodstuffs NZ Griffin's Zuru Edge Vitaco New Zealand Post Wakatū/Kono Epic Dairy Abe's Bagels

Packaging Industry Sealed Air Custom-Pak Tetra Pak Cospak FoodCap TC Transcontinental Packaging Forum Pack Tech Plastics NZ

Recycling Infrastructure & Governance

Auckland Council Ministry for Primary Industries Office of the Prime Minister's Chief Science Advisor Ministry for the Environment Visy Innovation & Design thinkstep Marx Design Go Well Consulting Scion 3R Group Oxygen Consulting qdesign



Thanks to our Partners.

Ministry for Primary Industries Manatū Ahu Matua





