



# Aluminum Cans Market Assessment - Australia

Context, quantitative baseline, options

Final version

May 2023

# List of abbreviations – selection

<b>Abbreviation</b>	<b>Description</b>
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<b>ACT</b>	Australian Capital Territory
<b>APCO</b>	Australian Packaging Covenant Organization
<b>C2C</b>	Can to can
<b>CDS</b>	Container deposit scheme (Australian equivalent to DRS)
<b>DRS</b>	Deposit return scheme
<b>EPR</b>	Extended producer responsibility
<b>MRF</b>	Material recovery facility
<b>NSW</b>	New South Wales
<b>NT</b>	Northern Territory
<b>QLD</b>	Queensland
<b>SA</b>	South Australia
<b>SUP</b>	Single Use Plastic
<b>TAS</b>	Tasmania
<b>UBC</b>	Used beverage cans
<b>VIC</b>	Victoria
<b>WA</b>	Western Australia

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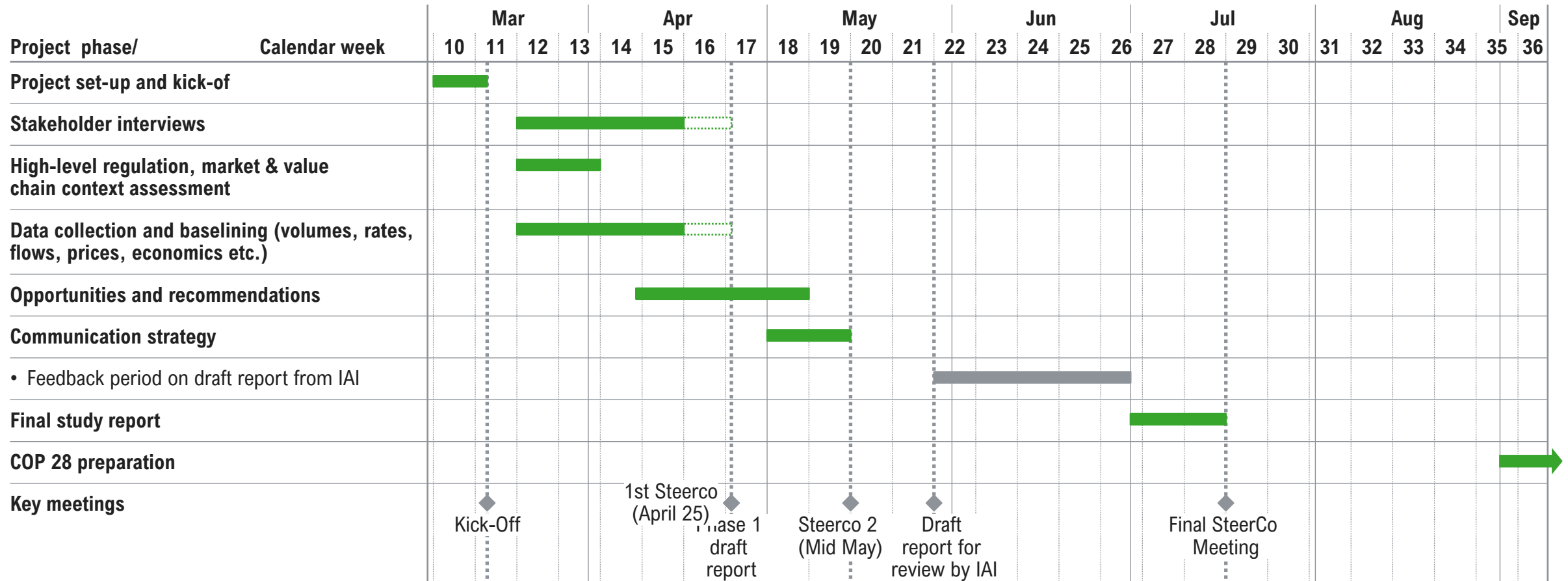
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# 1. Executive summary

# The overall project timeline spans 2.5 months with the draft reports of phase 1 delivered at the end of April

## Project timeline

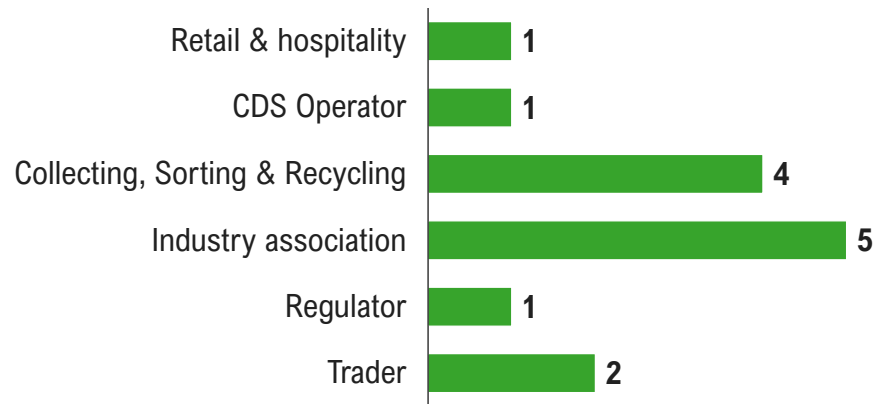


# To well-document the recycling infrastructure in Australia, multiple interviews with stakeholders across the value chain were held, in addition to research sources

## Overview of interviews and sources



**Σ 14 total**  
Interviews conducted



	#	Company	Position
<b>Retail &amp; hospitality</b>	1	Woolworths	CEO
	2	Coca Cola	Director of Collection and Recycling
<b>CDS Operator</b>	3	TOMRA Cleanaway	CEO
<b>Collecting, Sorting &amp; Recycling</b>	4	Veolia	Strategy Manager NSW
	5	Infrabuild	CEO
	6	Cleanaway	Manager
	7	Cemac	Sales Specialist
<b>Industry association</b>	8	Australian Beverages Council	Sustainability Manager
	9	APCO	CEO
	10	National Waste & Recycling Industry Council	CEO
	11	Australian Council of Recyclers	CEO
	12	ReLoop	Director
<b>Regulator</b>	13	QLD EPA	Director, Waste Policy and Legislation
<b>Trader</b>	14	SIMS Metal	Group Director Sustainability & Social Responsibility
	15	Cleanaway	Trading Lead

**Statistics/databases**

- Aluminium Consumption and Recovery figures
- Export data

**Industry players, experts, regulators**

- Federal government
- State governments

**Market studies**

**RB sources**

- Previous project experience
- Internal experts
- Industry contacts

# Australia has state-specific CDS, collection with room for improvement; With no local recycling, recovered UBCs are exported for C2C processing and downcycling

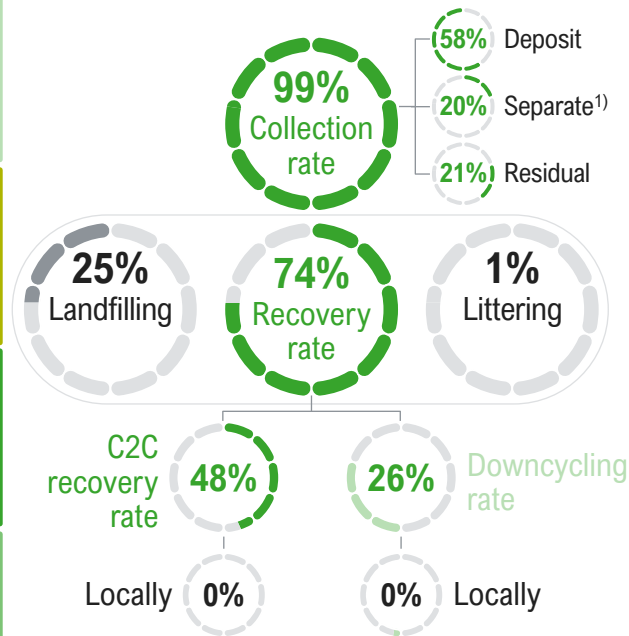
Aluminium can recycling in Australia



## 1 Waste management & regulatory context

<b>Waste mgmt. framework</b>	National and mostly state policies governing waste
<b>Infrastructure</b>	2 fraction collection common; good sorting infrastructure
<b>Recycling targets</b>	At state level, most ambitious in VIC and WA, least in NT
<b>EPR scheme &amp; DRS</b>	CDS present in 6/8 states, all from 2023; voluntary EPR in place

## 2 Overall performance



## 3 Material flows – key takeaways

- Most cans **collected through the states CDS** (~55% of POM), with another ~20% from **separate collections**
- **Sorting** with high recovery and some losses due to mistakes at the bin
- Almost all UBCs recovered to be **exported**, ~60% for **can-to-can recycling to Korea, KSA, TH, EU** and ~40% downcycling in S(E) Asia
- **No local recycling capabilities**, with limited downcycling pilots in the past

## 4 Improvement areas

- **Generation:** Improve consumer confidence & enforcement and increase awareness
- **CDS performance:** Increase deposit value; Improve convenience of return points (density, locations)
- **Sorting/ disposal:** Ensure the required MRF capacity and performance; Make landfilling less attractive
- **Export/ regulation:** Improve traceability after export; Assess domestic recycling potential; Introduce specific national targets

○ Not existing    ◐ Incipient, with limited scope    ◑ Developing    ◒ Matured    ◓ Fully developed

1) Separate coll. includes recovered after MRF & transfer station, and all UBCs picked by waste pickers



## 2. Aluminum Cans Market



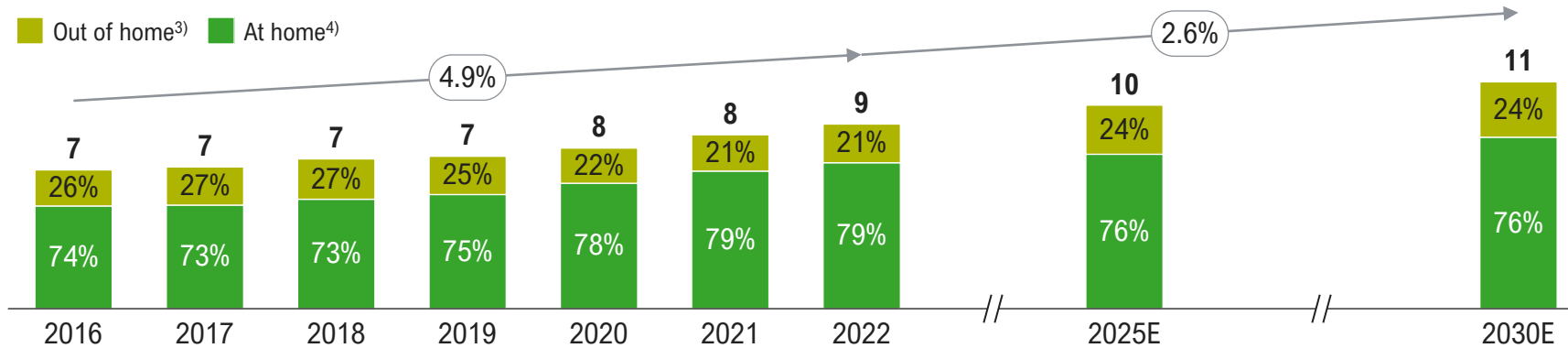
# The aluminium can market has been steadily increasing in Australia in the past years, and to slow down in the future

Overview of volumes put on market, aluminium cans

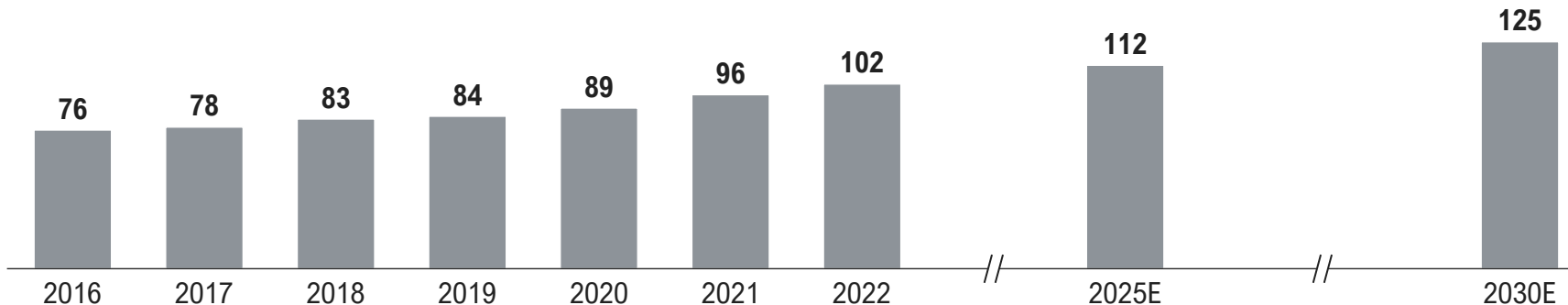


## Key takeaways

Aluminium cans put on market, 2016-2030E [b units]<sup>1)</sup>



Aluminium cans put on market, 2016-2030E [k tonnes]<sup>2)</sup>



- Aluminium beverage packaging volumes steadily increased, nudged by a gradual switch to metal from plastic in beverage packaging
- A 2.6% annual increase in the total market is forecasted until 2030, driven by increased population and growing consumption per capita, although at a slowing pace
- The majority of the aluminum cans are consumed at home, with a moderate share in out of home consumption
- COVID-19 largely changed the direction of consumption, which saw little growth before 2020 and a ~25% increase in the two years after, driven in large part by at home consumption

1) POM volumes are estimated by averaging input data from interviews with market stakeholders combined with reports from market research 2) Estimated weight per can: 11.3 g

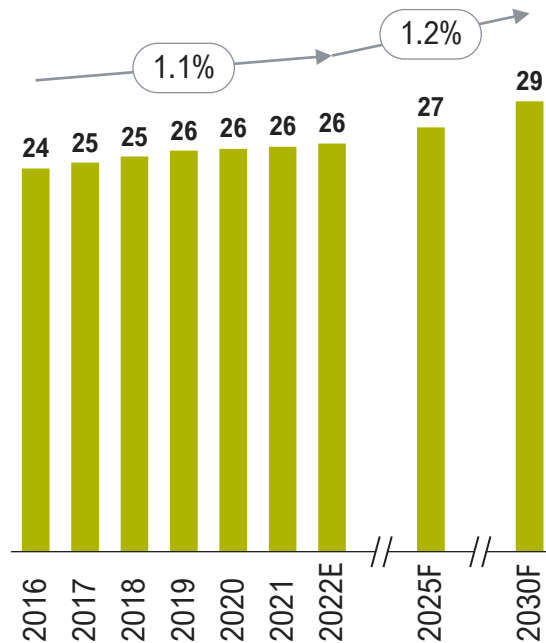
3) Out of home consumption includes hotels, restaurants, and catering; 4) At home consumption includes the remaining cans

# The aluminium can market has been steadily increasing due to increase in population and a larger share in total packaging

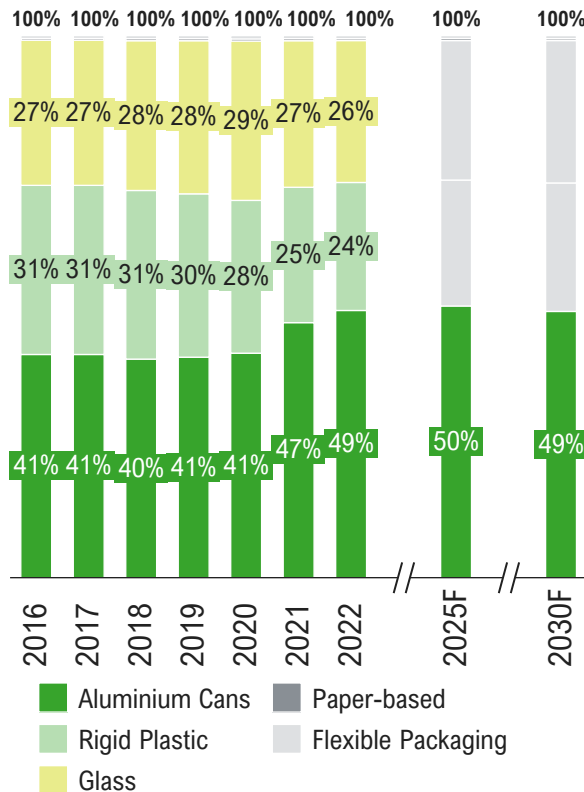
## Population, package & beverage trends



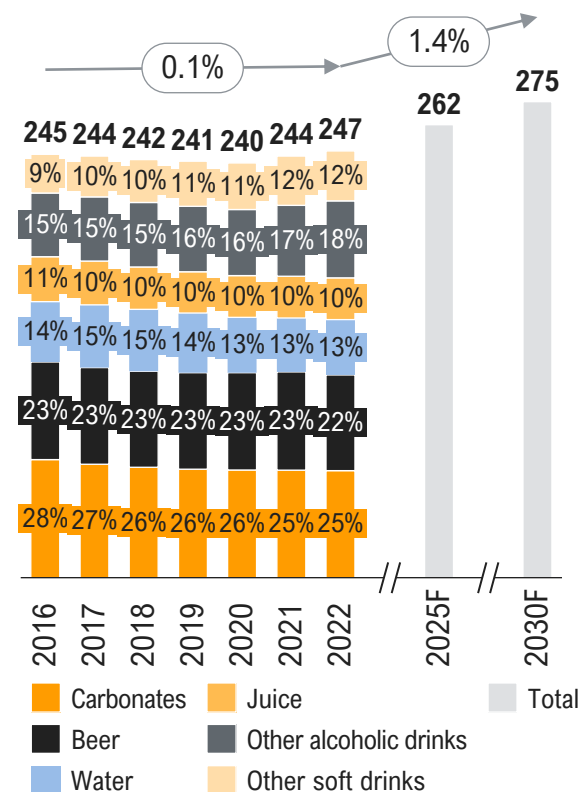
Population, 2016-2030E [m inhabitants]



Estimated annual packaged consumption [%<sup>2</sup>]



Estimated annual packaged beverage [l/ capita, %]



## Key takeaways

- The population of Australia has been slowly increasing, mostly due to immigration and is forecasted to continue its growth at a similar pace until 2025/30
- Rigid plastic share has been decreasing, benefiting the market share of glass and aluminium beverage cans, driven by sustainability concerns and customer preference
- Consumption habits have remained largely unchanged:
  - Per capita consumption has been stable until 2022 and is forecasted to increase by <1.5% p.a. until 2030
  - ~40% of total beverage packaging is used in beer & other alcoholic drinks
  - Carbonates' and beer's share have decreased, replaced by other alcoholic drinks (mainly RTDs<sup>1)</sup>) and other soft drinks (energy drinks)

1) Ready to drink (premixed alcoholic drinks) 2) Volume per package type of the total volume of packaged drinks



### **3. Waste management & regulatory context**

# Most aspects of Australian Waste Management policies and systems are organized and designed at State Level – advocacy needed at both state and federal level

## Regulatory overview



### Waste mgmt. framework



- Waste management in Australia is governed by a complex regulatory framework consisting of federal and state laws
- The Federal Government provides overarching national policies
- Achieving the ambitious national goals and targets requires collaboration between government, industry, and the community
- There are also various acts and regulations structuring waste management at the state level

### Collection infrastructure



- There is at least a two-fraction waste stream (general and recycling) for all households and businesses in non-rural areas; some states or municipalities have more collection fractions
- The responsibility for collection lies within municipalities

### Treatment Infrastructure



- Recyclable waste is sorted in MRFs, usually operated by private companies, through tendering from local governments
- There is no operational incineration plant currently in Australia – currently two are planned to open in early 2024

### Recycling targets



- Waste reduction, recovery, recycling, and landfill diversion targets are set at state level, with significant differences observed
- Most states have some key targets; VIC and WA are highly ambitious, with NT the least ambitious (with no specific targets)
- Some landfill bans are in place in 2/8 states (SA and VIC)
- Aluminium-specific targets are lacking

### EPR scheme & DRS



- A voluntary ERP is in place, run by APCO, with the role to facilitate the harmonization of schemes and reporting between states for brand owners
- Membership fees are low compared to some countries with high recycling rates, e.g., from Western Europe (as a % on annual turnover)
- CDS is in place in 6/8 states (apart from VIC and TAS), with the remaining two expected to launch their own schemes in 2023

Maturity level, relative to most developed countries:



Not existing



Incipient, with limited scope



Developing



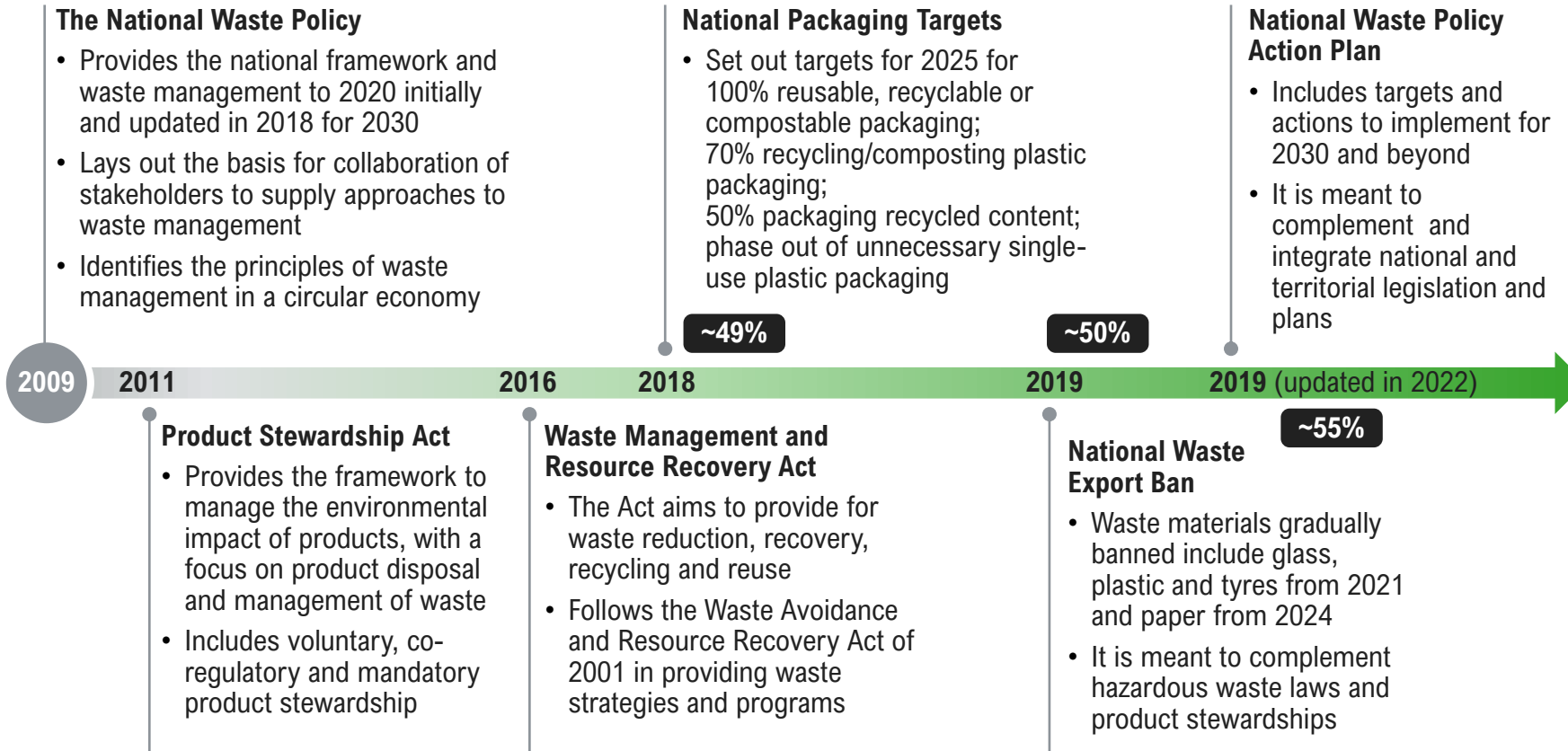
Matured



Fully developed

# The waste management regulation has been developing greatly in the last few years, with multiple policies supporting sustainability

## Regulation overview



x% Observed packaging recovery rate

1) No mandatory scheme in Australia

## Key takeaways



- Waste management in Australia is governed by a complex regulatory framework consisting of federal and state laws
- Achieving the ambitious national goals and targets requires collaboration between government, industry, and the community to create a sustainable waste management system
- In addition, there are also various acts and regulations structuring waste management at the state and territory level, such as the New South Wales Protection of the Environment Operations Act of 1997

# Most states have taken significant action to promote circular economy and sustainable waste management, with still some notable regional differences (2/2)

## Summary of state waste policies



	Development	CDS <sup>1)</sup> & return rates	Landfill bans	SUP <sup>2)</sup> bans	Main documents	Key targets	Other comments
<b>South Australia</b> 1.8		Yes 76%	Yes, for hazardous and recyclable materials	<ul style="list-style-type: none"> <li>• Yes</li> <li>• Plastic bags since 2009</li> <li>• Others from 2021/22</li> </ul>	<ul style="list-style-type: none"> <li>• South Australia’s Waste Strategy 2020–25</li> </ul>	<ul style="list-style-type: none"> <li>• Zero avoidable waste to landfill by 2030</li> <li>• 5% less waste generation per capita by 2030</li> <li>• 75% landfill diversion target for MSW by 2025</li> </ul>	
<b>New South Wales</b> 8.2		Yes 67%	No	<ul style="list-style-type: none"> <li>• Yes</li> <li>• Plastic bags since 2022</li> <li>• Others from 2022</li> </ul>	<ul style="list-style-type: none"> <li>• NSW Waste and Sustainable Materials Strategy 2041</li> <li>• NSW Plastics Action Plan</li> </ul>	<ul style="list-style-type: none"> <li>• 30% litter reduction by 2025</li> <li>• 80% recovery rate by 2030</li> <li>• 10% less waste generation per capita by 2030</li> </ul>	<ul style="list-style-type: none"> <li>• Chemical recycling pilot project</li> </ul>
<b>Victoria</b> 6.7		No To be introduced in 2023	Yes, for hazardous waste	<ul style="list-style-type: none"> <li>• Yes</li> <li>• Plastic bags since 2009</li> <li>• Others from 2023</li> </ul>	<ul style="list-style-type: none"> <li>• Recycling Victoria: A new economy (2020)</li> </ul>	<ul style="list-style-type: none"> <li>• 72% landfill waste diversion by 2025 and 80% by 2030</li> <li>• 15% less waste generation per capita by 2030</li> </ul>	<ul style="list-style-type: none"> <li>• Chemical recycling pilot project</li> </ul>
<b>Tasmania</b> 0.6		<ul style="list-style-type: none"> <li>• No</li> <li>• To be introduced in 2023</li> </ul>	No	<ul style="list-style-type: none"> <li>• Yes</li> <li>• Plastic bags since 2013</li> <li>• Some others from 2021</li> </ul>	Waste Action Plan (2019) -draft	<ul style="list-style-type: none"> <li>• 100% reusable, recyclable or compostable packaging by 2025</li> <li>• 5% less waste generation per capita by 2025 and 10% by 2030</li> <li>• 40% recovery rate for all waste by 2025 and 80% by 2030</li> </ul>	

x.x State population, 2022

1) Deposit Return Scheme (Container Deposit Scheme); overall return rates [2021]; 2) Single Use Plastic

# Most states have taken significant action to promote circular economy and sustainable waste management, with still some notable regional differences (2/2)

## Summary of state waste policies



	Development	CDS <sup>1)</sup> & return rates	Landfill bans	SUP <sup>2)</sup> bans	Main documents	Key targets	Other comments
<b>Queensland</b>   5.4	Yes	62%	No Proposed ban of organics by 2030	<ul style="list-style-type: none"> <li>• Yes</li> <li>• Plastic bags since 2018</li> <li>• Others from 2021</li> </ul>	<ul style="list-style-type: none"> <li>• Waste Management and Resource Recovery Strategy 2018–2050</li> </ul>	<ul style="list-style-type: none"> <li>• 55% MSW recycling rate average by 2025</li> <li>• 10% less MSW per capita by 2025</li> <li>• 10% less waste to landfill by 2025</li> </ul>	
<b>Western Australia</b>   2.8	Yes	68%	No Ban on e-waste by 2024	<ul style="list-style-type: none"> <li>• Yes</li> <li>• Plastic bags since 2018</li> <li>• Others from 2022/23</li> </ul>	<ul style="list-style-type: none"> <li>• Waste Avoidance and Resource Recovery Strategy 2030</li> </ul>	<ul style="list-style-type: none"> <li>• 10% less waste generation per capita by 2025 and 20% by 2030</li> <li>• 75% increase in material recovery</li> </ul>	
<b>Australian Capital Territory</b>   0.5	Yes	68%	No	<ul style="list-style-type: none"> <li>• Yes</li> <li>• Plastic bags since 2011</li> <li>• Others from 2022/23</li> </ul>	<ul style="list-style-type: none"> <li>• ACT Waste Management Strategy: Towards a sustainable Canberra 2011–2025</li> </ul>	<ul style="list-style-type: none"> <li>• 90% recovery rate by 2025</li> </ul>	
<b>Northern Territory</b>   0.3	Yes	72%	No	<ul style="list-style-type: none"> <li>• Yes</li> <li>• Plastic bags since 2011</li> <li>• Others by 2025</li> </ul>	<ul style="list-style-type: none"> <li>• Waste Management Strategy for the Northern Territory 2015–2022</li> <li>• Northern Territory Circular Economy Strategy 2022–2027</li> </ul>	<ul style="list-style-type: none"> <li>• No specific targets set</li> </ul>	<ul style="list-style-type: none"> <li>• No landfill levy</li> </ul>

 x.x State population, 2022

1) Deposit Return Scheme (Container Deposit Scheme); overall return rates [2021]; 2) Single Use Plastic

# CDS structure in Australian states includes an industry-owned operator, with the profits used to finance the system

## Overview of the CDS<sup>1)</sup> architecture



### System characteristic

### Typical architecture

### Additional remarks

#### Type of SOA<sup>2)</sup>

Industry-owned

- Operator is generally a not-for-profit entity (exception being NSW)
- Operator is owned by FMCG producers, sometimes with minority retail shareholding

#### Included materials

Cans (alu or steel), bottles (excl. wine) (plastic or glass), cartons

- All items with the specific “10c” symbol are included

#### Included products

Excluded dairy products, pure juices, syrups and wine/ spirit bottles

- Plain milk bottles and cartons are excluded to avoid price increase of basic goods, as well as contamination
- Syrups and large containers of flavored milk or pure fruit juices excluded due to possible contamination
- Glass wine and spirit bottles are exempt, as they are commonly consumed at home and not usually found as litter<sup>3)</sup>

#### Included sizes

0.15 – 3 liters

- Vast majority of accepted packaging ranges between 0.15 and 3 liters (up to 1 liter for some specific products)

#### Deposit preference

Monetary, single

- Flat value is AUD 0.10 (~EUR 0.065 equivalent) per unit

#### Redemption type

Return to retail/ drop-off locations

- Typical redemption site density is 1 site per c. 20,000 residents

#### Handling fees

To be paid to return point operators

- Fees are larger for automated systems than for manual ones

#### Material ownership

Scheme operator

- Material is typically owned by the scheme operator (exception being NSW where owned by the network operator)

#### Unredeemed deposits

Scheme operator

- Unredeemed deposits are used to finance the system

#### Return rate

50-80% depending on state

- Return rate depends on material, consumer specifics and state

1) Deposit Return Scheme / Container Deposit Scheme; 2) System Operator Administrator; 3) They are about to be included in Queensland



# The CDS state schemes all show low density of return points and small deposit value but different approaches – same operator as coordinator in QLD/WA, for profit in NSW

## State CDS characteristics



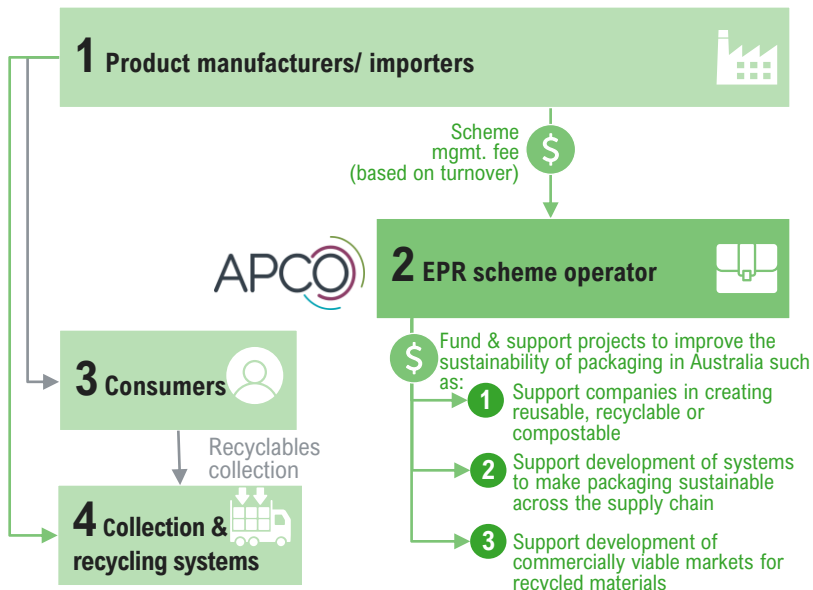
System characteristic	South Australia	Northern Territory	New South Wales	Queensland	Australian Capital Territory	Western Australia
<b>Coordinator</b>	• SA EPA	• NT EPA	• Exchange for Change	• COEX (Container Exchange)	• Exchange for Change	• WARRRL <sup>4)</sup>
<b>Operator</b>	• Non-profit • Multiple industry operators	• Non-profit • 4 companies <sup>1)</sup>	• For profit • Tomra Cleanaway	• Non-profit • COEX (Container Exchange) (also coordinator)	• Non-profit • Return-It	• Non-profit • WARRRL <sup>4)</sup> (also coordinator)
<b>Included materials</b>	Alu, glass, PET, HDPE, LPB <sup>2)</sup>	Alu, glass, plastic, other <sup>3)</sup>	Alu, glass, plastic, steel, LPB <sup>2)</sup>	Alu, glass, plastic, steel, LPB <sup>2)</sup>	Alu, glass, plastic, steel, LPB <sup>2)</sup>	Alu, glass, plastic, steel, LPB <sup>2)</sup>
<b>Included products</b>						
<b>Included sizes</b>	<3 L generally <1/ 0.25 L for some	<3 L generally <1/ 0.25 L for some	<3 L generally <1/ 0.25 L for some	<3 L generally <1/ 0.25 L for some	Most containers of 0.15 - 3 L (<1 L for some)	Most containers of 0.15 - 3 L (<1 L for some)
<b>Deposit value</b>	10c	10c	10c	10c	10c	10c
<b>Return points # and density</b>	~130 ~14,000 people/ point	~30 ~8,300 people/ point	~600 ~13,700 people/ point	~300 ~17,800 people/ point	~20 ~23,000 people/ point	~200 ~14,000 people/ point
<b>Return rate<sup>5)</sup>, 2020-21</b>	• 87% aluminium • 90% overall	• 80% aluminium • 86% overall	• 80% aluminium • 80% overall	• 80% aluminium • 78% overall	• 80% aluminium • 63% overall	n/a <sup>6)</sup>
<b>Material recovered [kt], 2021-22</b>	• 4.6 kt aluminium • 47 kt overall	• 0.7 kt aluminium • 7 kt overall	• 15.1 kt aluminium • 190 kt overall	• 21.4 kt aluminium • 199 kt overall	• 0.6 kt aluminium • 6.6 kt overall	n/a <sup>6)</sup>

Soft drinks Alcoholic beverages Water and juices Flavored milk

1) NT Coordinators Pty Ltd, Envirobank Recycling NT, Statewide Recycling, Marine Stores Pty Ltd; 2) Liquid paperboard; 3) Includes some specific materials such as sachets, casks and others; 4) WA Return Recycle Renew Ltd.; 5) As reported by schemes; 6) Scheme started in 2020 – data not available yet

# Within the voluntary EPR scheme, PROs collect fees from producers & importers and use the resources to improve packaging recycling across the value chain

## Packaging EPR voluntary scheme overview (The Australian Packaging Covenant)



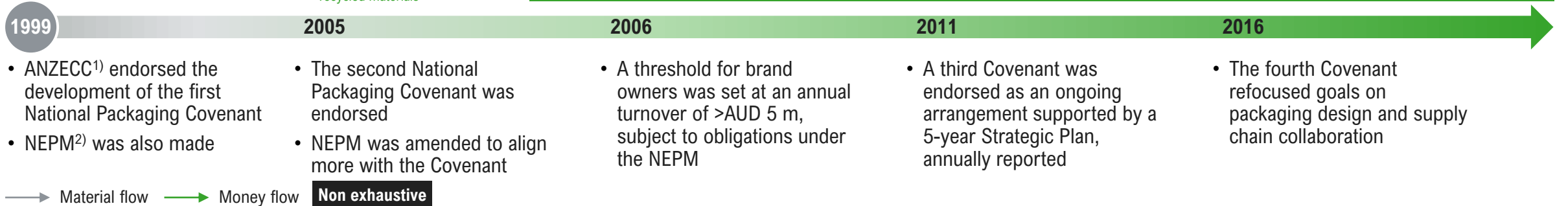
- Pay the EPR fee (businesses with annual turnover >AUD 5 m)
    - **Membership fees are c. 0.002-0.01% of annual turnover, depending on turnover bracket (very small compared to typical burden in Europe)**
  - Brand owners can decide whether to commit to the scheme or report individually in each state** (>1,500 companies joined the voluntary scheme)

- APCO provides advocacy support at federal level but no role in implementation**
  - Sets the membership fee and collects funds from manufacturers
  - Supports nation-wide reporting and executes projects across the value chain to improve the overall sustainability of all aspects of the packaging supply chain

- Generate waste and segregate at source or deliver packaging to container deposit location
- Collect packages, including through Container Deposit Scheme funded by the beverage industry

**Targets**

- 100% reusable, recyclable or compostable packaging by 2025
- 70% plastic packaging recycling target (incl. composting) by 2025
- 50% of average recycled content in packaging by 2025
- Phase out of problematic and unnecessary SUP packaging by 2025



1) Australian and New Zealand Environment and Conservation Council; 2) National Environment Protection Measure

# Obligations for the signatories of the covenant are voluntary and easily achievable

APCO: obligations for signatories



## To comply with the Covenant, Brand Owner Signatories are required to take the following actions:

- Within three months of becoming a signatory, submit an action plan that sets out what the signatory proposes to do to contribute to the covenant's aim and meets the obligations published by APCO
- By 31 March each year, commencing in the financial year following the year in which a company becomes a signatory, submit an annual report that outlines performance against all the action plan commitments and meets the reporting obligations as published by APCO
- Publish the action plan and annual reports on its website in a prominent and readily identifiable way.
- Make annual financial contributions in the form of membership fees payable to APCO
- Implement policies or procedures to buy products made from recycled materials
- Establish collection and recycling programs for used packaging materials generated on-site
- Take action, where appropriate, to reduce litter
- Allow independent audits of annual reports and the implementation of action plans, including allowing access to relevant supporting documentation demonstrating application of the sustainable packaging guidelines, or an alternative to the guidelines, and
- Assist APCO to respond to complaints from the public about the design and use of packaging materials.

## Signatories are also required to apply APCO's Sustainable Packaging Guidelines (SPG) to all new packaging and review existing packaging with them.

**The SPGs are the following:**

- |                                |                                  |                           |                                   |   |
|--------------------------------|----------------------------------|---------------------------|-----------------------------------|---|
| 1 Design for recovery          | 3 Design to reduce product waste | 5 Use recycled materials  | 7 Design to minimize litter       | 9 Design for accessibility                        |
| 2 Optimize material efficiency | 4 Eliminate hazardous materials  | 6 Use renewable materials | 8 Design for transport efficiency | 10 Provide consumer information on sustainability |

1) SPGs: Sustainable Packaging Guidelines



## 4. Value Chain

# Australia displays an average collection rate (through CDS), with the scrap being exported for recycling and rolls & cans imported for production by brand owners

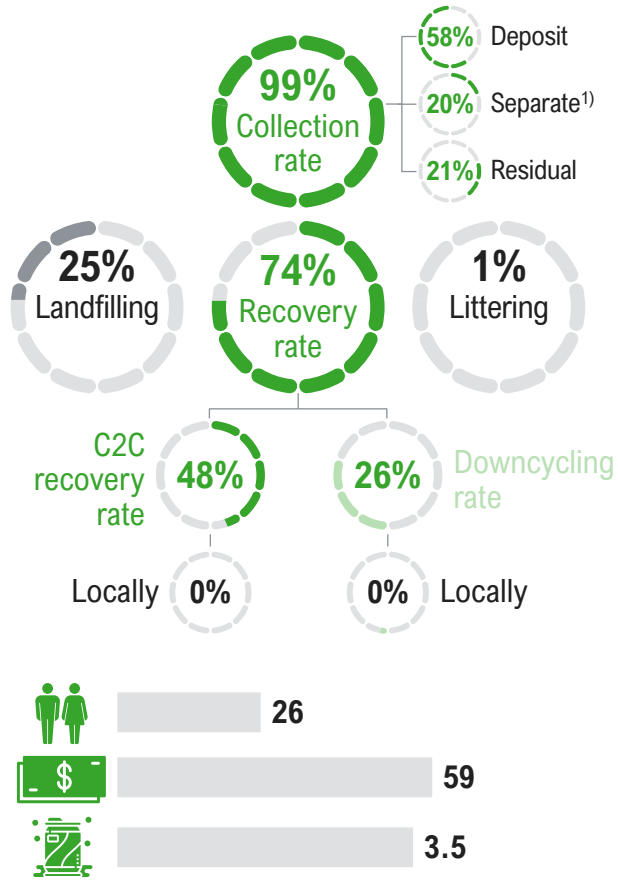
## Overview of aluminum cans value chain



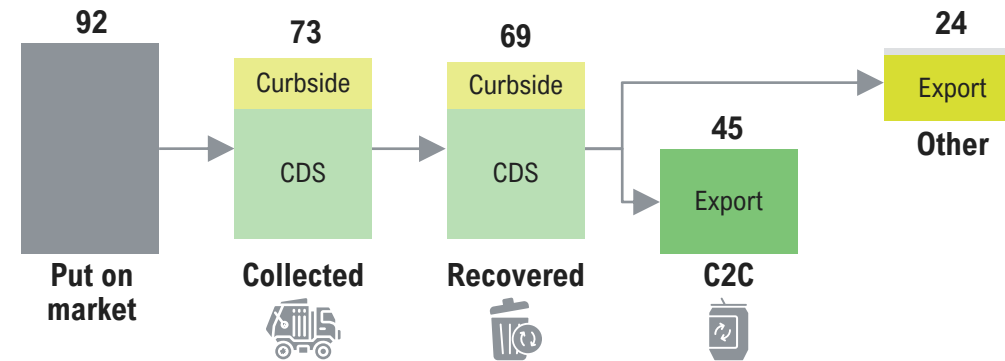
# Australia has good collection & recovery, but only <60% of that is sent for C2C recycling, and none locally



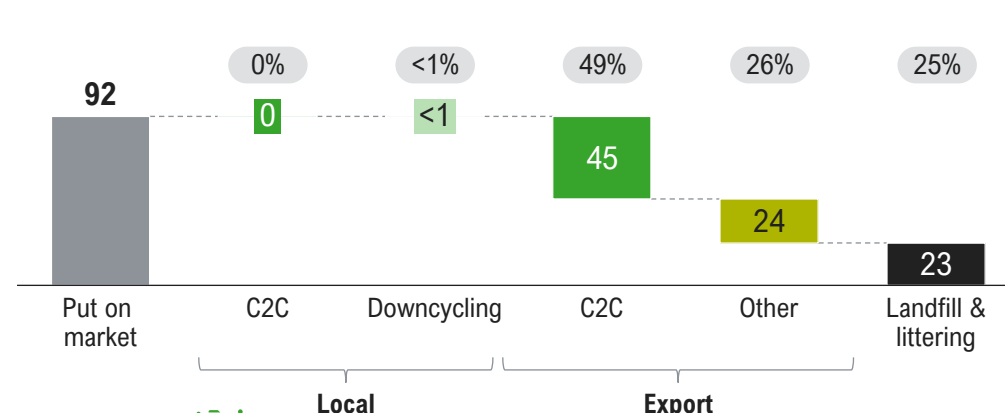
Summary of aluminium cans flows [k tonnes, 2020-21]



Key market indicators [k tonnes]



Destinations [k tonnes, % put on market]



## Key takeaways

- High put-on market volumes, in line with EU countries
- No local aluminium roll production & no capacity to process UBC, hence no local "closed-loop"
- Relatively high collection rates
- Imperfect sorting at the source:
  - Room for improvement with general public
  - Room for improvement in commercial environments
  - Comparatively low CDS collection rates
- High rate of collection at the source, high quality UBC stream exported to *can-to-can* countries (Korea, Thailand, KSA)
- Lower quality UBC exported to India & Indonesia is likely not being used in can to can recycling

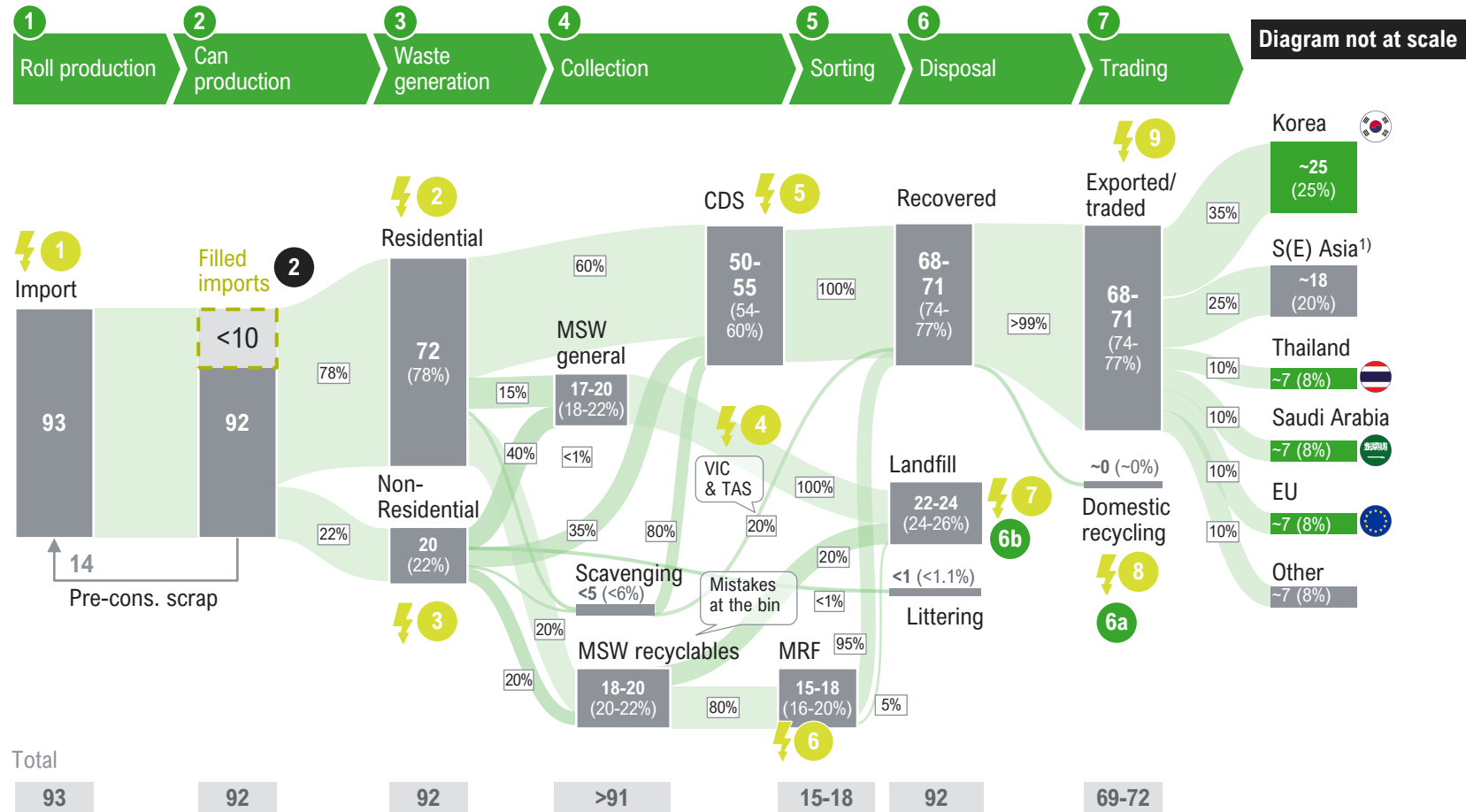
Population (million, 2021) GDP per capita (USD k/ capita, 2021) Annual consumption (kg/ capita, 2020-21)

X% Final destination [% put on market]

1) Separate coll. includes recovered after MRF & transfer station, and all UBCs picked by waste pickers

# A high proportion of cans are collected through the states' CDS and turned into scrap with the other sorted material before being sent to export for recycling

Material flows of aluminium cans, 2020-21 [k tonnes<sup>2)3)</sup>, (% of total POM volume)



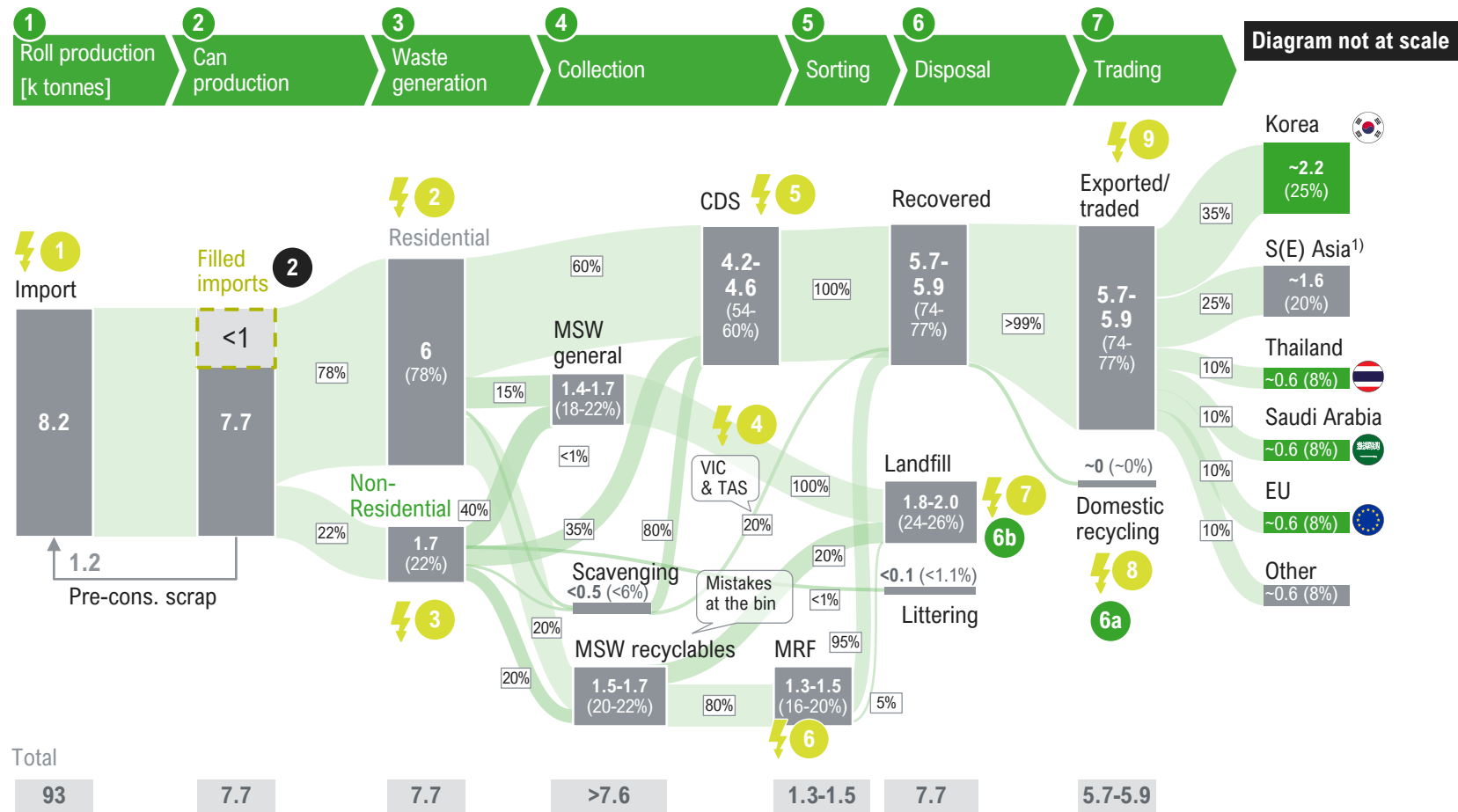
## Key observations & improvement areas

- 0** Overall high ambition, with steep targets (e.g. 100% reusable, recyclable or compostable packaging by 2025)
- 1** No local aluminium remelting capacities (there are 4 large smelters producing primary aluminium) – only small volumes selectively for downcycling
- 2** Imperfect sorting at source due to decreased awareness/confidence in the system & lack of incentives/enforcement
- 3** Lack of sorting discipline in non-residential and commercial re-sorting
- 4** Lack of sorting for contaminated/ rejected waste
- 5** CDS return rates are relatively low due to:
  - Limited number of return points, compared to European systems (1 for 20k residents mandated vs. 1 for 2k installed in Germany)
  - CDS deposit is low compared to other European systems (EUR 0.06 in Australia compared to EUR 0.25 in Germany)
- 6** Additional MRF capacity is needed in large urban centers; investment is difficult due to unfavorable investment conditions (state tendering process)
- 7** Landfill fees are low compared to European countries (typically <EUR 70/ tonne, except urban NSW and SA vs. >EUR 100 in many Western European countries)
- 8** Domestic recycling capacity is lacking
- 9** There is limited traceability after exporting, although moderate confidence of traders regarding recycling of products

1) Includes India, Indonesia, Malaysia; 2) Estimated weight per can: 11.3 g; 3) ~3.2% of can weight is due to paint

# A high proportion of cans are collected through the states' CDS and turned into scrap with the other sorted material before being sent to export for recycling

Material flows of aluminium cans, 2020-21 [b units<sup>2)3)</sup>, (% of total POM volume)



- Key observations & improvement areas**
- 0 Overall high ambition, with steep targets (e.g. 100% reusable, recyclable or compostable packaging by 2025)
  - 1 No local aluminium remelting capacities (there are 4 large smelters producing primary aluminium) – only small volumes selectively for downcycling
  - 2 Imperfect sorting at source due to decreased awareness/confidence in the system & lack of incentives/enforcement
  - 3 Lack of sorting discipline in non-residential and commercial re-sorting
  - 4 Lack of sorting for contaminated/ rejected waste
  - 5 CDS return rates are relatively low due to:
    - Limited number of return points, compared to European systems (1 for 20k residents mandated vs. 1 for 2k installed in Germany)
    - CDS deposit is low compared to other European systems (EUR 0.06 in Australia compared to EUR 0.25 in Germany)
  - 6 Additional MRF capacity is needed in large urban centers; investment is difficult due to unfavorable investment conditions (state tendering process)
  - 7 Landfill fees are low compared to European countries (typically <EUR 70/ tonne, except urban NSW and SA vs. >EUR 100 in many Western European countries)
  - 8 Domestic recycling capacity is lacking
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# The key stakeholders interviewed generally agreed on improving the CDS efficiency as a key lever of development for Australian waste management

Selection



Perception of key stakeholders - quotes from interviews

## Observations



- 3 ...the majority of gaps are in multi-unit domestic dwellings, as well as commercial spaces and high traffic touristic areas
- 2/3 ...increased contamination of municipal waste streams
- 5 ...CDS schemes principles are close to their best possible design
- 8 ...vast distances in rural areas pose transport difficulties
- 8 ...it is a high priced commodity and there are generally no major concerns it will be recycled
- ...stakeholders often do not see past their own interest
- ...there is politics involved in the beverage industry



- 2 ...the mistake often happens at the bin
- 2 ...should celebrate the aluminium recycling performance in public awareness
- 5 ...the system is optimized for the cost factors and commercial realities
- 5 ...CDS weak points are: limited concentration of return points and low deposit value
- 6 ...the tendering and contracting structure does not encourage building more sorting capacity
- 9 ...most likely they would get recycled after arriving in South Korea or Europe, but nobody knows



## Opportunities for improvement

Collection 
 Sorting 
 Recycling 
 Trading 
 Regulation 
 Corresponding improvement areas identified

# There are 4 large smelters in Australia, and no capacity for recycling<sup>1)</sup>; most volumes of rolls imported from South Korea

List of main aluminium producers



	Company	Main products	Production volumes [k tonnes/ year]	Markets/ clients
<b>Smelters</b> 	Bell Bay	Ingots and T-bars	190	East Asia, Southeast Asia, India  Asia
	Boyne Smelters		450	
	Portland	22.5 kg ingots	360	
	Tomago	Ingots, billets and rolling slabs	590	
			$\Sigma >1,600$ K tonne/year	<b>All smelters produce aluminium from bauxite</b>
<b>Rolls producers</b> 	n/a			
<b>Cans producers</b> 	Visy Orora	Majority of packaging		



## Key takeaways

- Rolls are imported for can production; empty cans are not typically transported from abroad
- There have been pilots in the past, at limited scale, accepting aluminium can scrap for downcycling (e.g. for applications other than can-to-can, such as in the maritime industry)
- Large distances pose an infrastructure issue, with some material needing to travel vast distances for aggregation of significant volumes

*"It is not economically viable to operate an aluminium can recycling plant in a country with Australia's population (~25 m people) and such low density"*

– Market expert



1) Weston Aluminium taking some occasional small volumes of cans, and not for can-to-can

# While households have good separate collection (outside rural areas and especially in states with CDS), biggest challenges are in the commercial and business areas

## Overview of waste collection



Waste Generator	Volumes [k tonne/ year]	Common aluminium cans collection methods	Segregation at generation source
<b>Households</b>			
Single family homes	17		
Multifamily residential	21		
Apartments	27		
Rural houses	7		
<b>Retail/ commercial</b>			
Restaurants	3		
Cafes & clubs	4		
Hotels	2		
Shopping centers	3		
Public spaces	4	<sup>1)</sup>	
<b>Institutions</b>			
Public institutions	1		
Offices	2		
Schools & universities	3		

### Key takeaways

- There is ~95% national coverage of curbside collection (>85% to almost 100% for “urbanized” states, while only 60% for NT), >90% incl. curbside recycling collection
- Generally, there are tenders for regions, municipalities or urban zones, depending on the population of that area
- All states have at least a 2 fraction collection system (general and recyclables)
- Multi-units dwellings pose the largest issues in household collection due to the layered management of the real estate and waste

*“Many people are not fully aware of the “recycling rules” at the bin and some have lost confidence in the system”*

– Industry expert

- Few small businesses sort their material for CDS (for deposit value or charity)
- Some of the biggest gaps to cover in collection are in shopping centers, as well as high traffic tourist/ entertainment areas (including sports and events venues)

*“Businesses often have to make arrangements for sorting of recyclables at the source and staff needs to be trained in making the split-second decisions”*

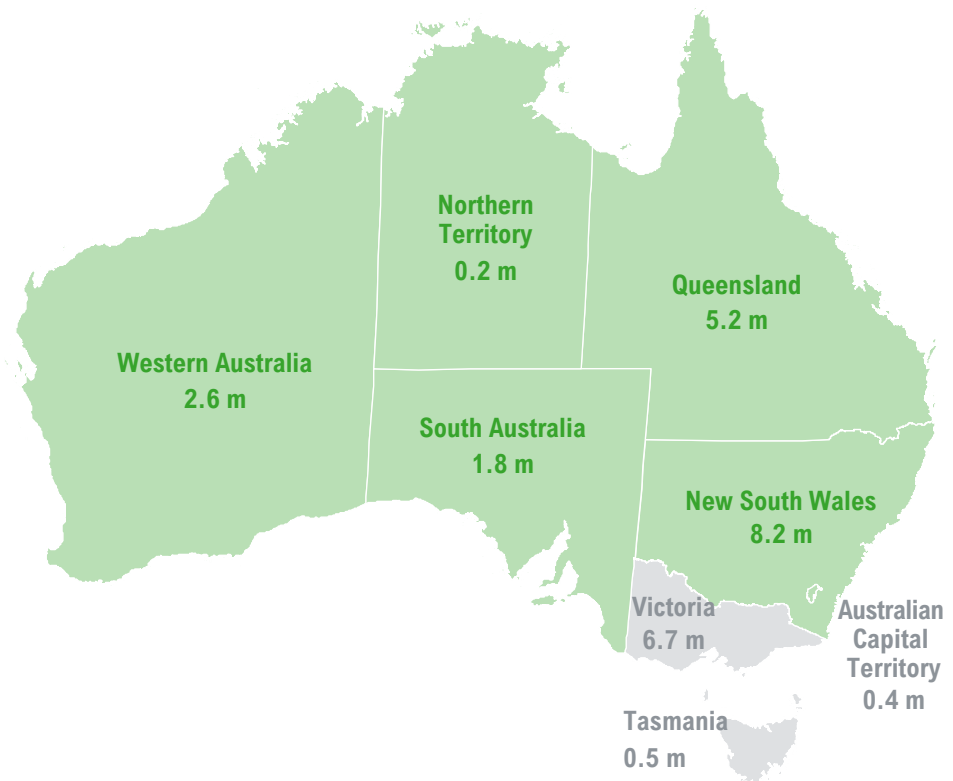
– Industry expert

- Institutions have smaller volumes, with some implementing separate collection bins
- Business towers pose some of the largest difficulties in separate collection


1) Includes scavenging CDS Curbside Contracted UBCs sorted at source UBCs mixed with other recyclables UBCs mixed with general waste Observation Improvement area

# CDS is implemented in six states and being created in the other 2, following country-wide industry guidelines

CDS for beverage containers in Australian territories



■ CDS present ■ CDS planned introduction x.x Territory population [inhabitants], 2020



Scheme name	Territory	Introd. year	Overall return rate (2021)
Container deposit scheme (CDS)	South Australia	1977	76%
Container deposit scheme (CDS)	Northern Territory	2012	72%
Return and earn	New South Wales	2017	67%
Containers for change	Queensland & Australian Capital Territory	2018	62%
Container deposit scheme (CDS)	Australian Capital Territory		68%
Containers for change	Western Australia	2020	68%
Recycle rewards	Tasmania & Victoria	2023 (exp.)	53%

## Key takeaways



- 6/8 territories have a CDS (~70% of population)
- Victoria and Tasmania are planning an introduction of CDS in 2023, covering the rest of the population
- The return rates are lower than typical rates in Europe (>80%), also due to the low density of return points
- The system is funded by beverage suppliers, at a deposit cost per container of **~EUR 0.06** (EUR 0.1-0.3 typical in Europe)

*"Current design of supermarkets and the lack of support from CDS operators does not facilitate in-store locations"* – Retailer

*"The CDS deposit is low and many people have to make a trip to an inconvenient location to drop off their recyclables"*

” – Industry association expert

# Australians are nudged to participate in source separation through return points & by using separate bins in households

Summary of collection systems across Australia

**Source separating in the curbside waste stream is designed to avoid complexity & to nudge people towards recycling**



- The waste bin which is made available to households is often smaller than the wastebins designed for recycling waste streams
- The color coding for waste bins is standardized across the country (General waste is red, recyclables are yellow, etc.)

**Further improvements can nevertheless be envisaged**

- Several waste streams don't systematically use different waste bins – this is more regularly the case in restaurants and businesses
- Generally, no fines are issued for misplacing items, items placed in the non-recyclables bin end up in landfill as the non-recyclable waste is generally not sorted
- The curbside collection system is funded through municipal taxes, leaving little opportunity to implement the pay-as-you-throw principle in a straightforward manner

**CDS operators offer a variety of return locations**

Depots



Reverse vending machines



Over-the-counter return points



**Nevertheless, the convenience and density of collection points could be improved**

- A common complaint is linked to return points being located outside retail points (although return locations on parking lots are common)
- The density & convenient location of drop-off points was also raised as areas of improvement

# There are also dedicated collection initiatives taken by private companies for both individuals and businesses, accepting a wide range of materials

Overview of digital collection initiatives [selection]



## Initiative

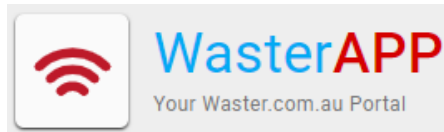
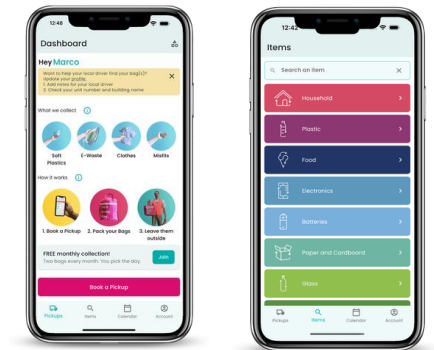
## Companies and partners involved

## Description of initiative

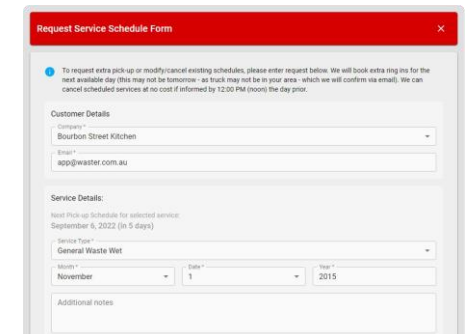


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- The program offers **scheduled pickup** also for harder to recycle materials, including textiles, electronics, bottles and **cans**, as well as flexible plastics
- Pickup is **scheduled via the app** and **bags are left outside** for collection
- The free plan is **available in 13 councils** in the **Sydney area** and only for select materials
- **Additional areas are eligible** for monthly or on-demand plans at a cost of roughly **AUD 5/ bag**
- In <2 years diverted **c. 282 t** from landfill



- The Waster App aims to provide digital services **for small and medium businesses** from the recycling solutions provider
- Main services include **checking bin schedules** and **requesting additional services**
- A wide range of materials can be requested for pickup, including comingle recyclables (**bottles and cans**)



# Additional MRF capacity is needed in more populated areas (where large players operate), but tendering conditions are not encouraging

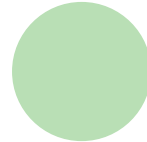
Overview of sorting facilities



Operators

State

Total capacity  
k tonnes/ year



NSW



...~125 total MRFs

Total recyclables  
volumes processed



## Key takeaways

- MRFs are usually private companies, except some smaller ones often in more remote areas which are increasingly government owned nowadays
- Contamination has been reportedly increasing to 10-15% in more recent years
- There is an issue with the policy of sealed bags in the recyclables bin being discarded to landfill
- Market experts report insufficient investment, leading to a lack of MRF capacity in certain regions; Contracts are typically 5+2 or 7+2 years
- In the future, some of the more basic MRFs might not be sufficiently equipped to handle the increased contamination or require additional manual or complex sorting methods

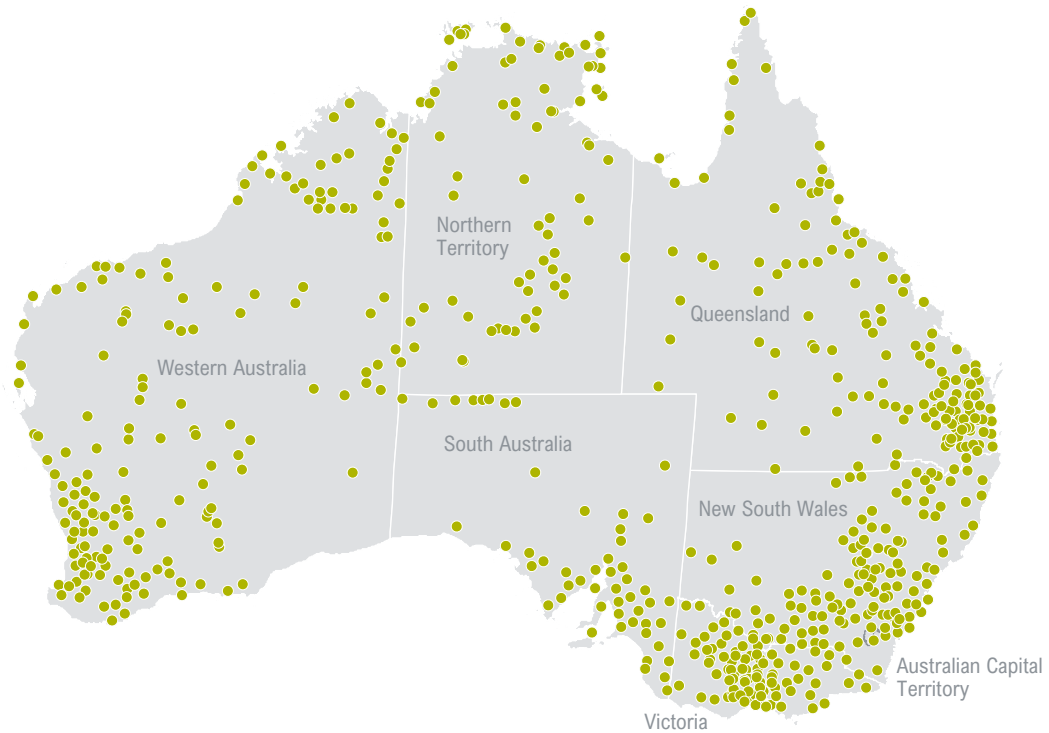
*"Victoria (especially Melbourne) could need additional capacity (1-2 large MRFs)"*

– Industry expert

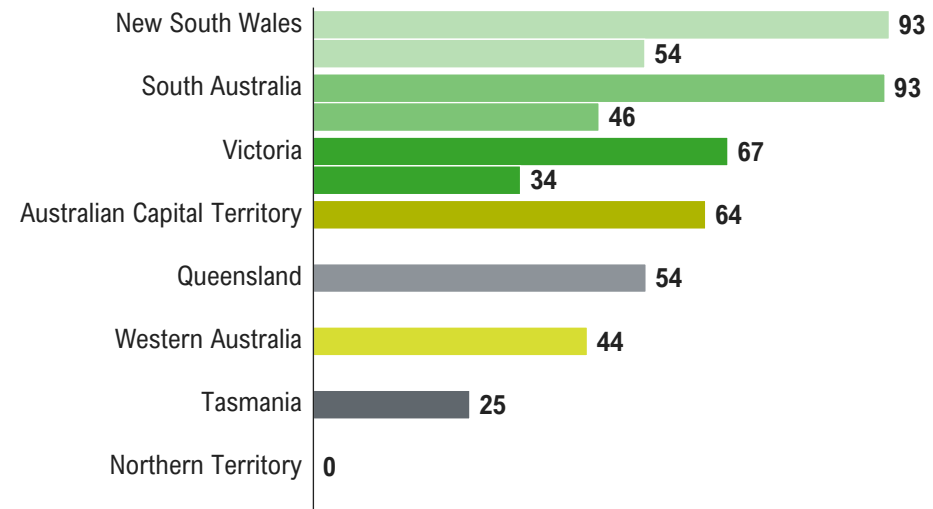
# There are over 1,000 landfills in Australia, and this is still the most common waste treatment method; levies are still at low levels compared to Western countries

## Landfilling overview

### Map of landfills in Australia



### Landfill levies for MSW [EUR/ tonne]



NSW, SA and VIC have lower levies for rural areas

There are almost 1,300 landfills in Australia as of 2022.

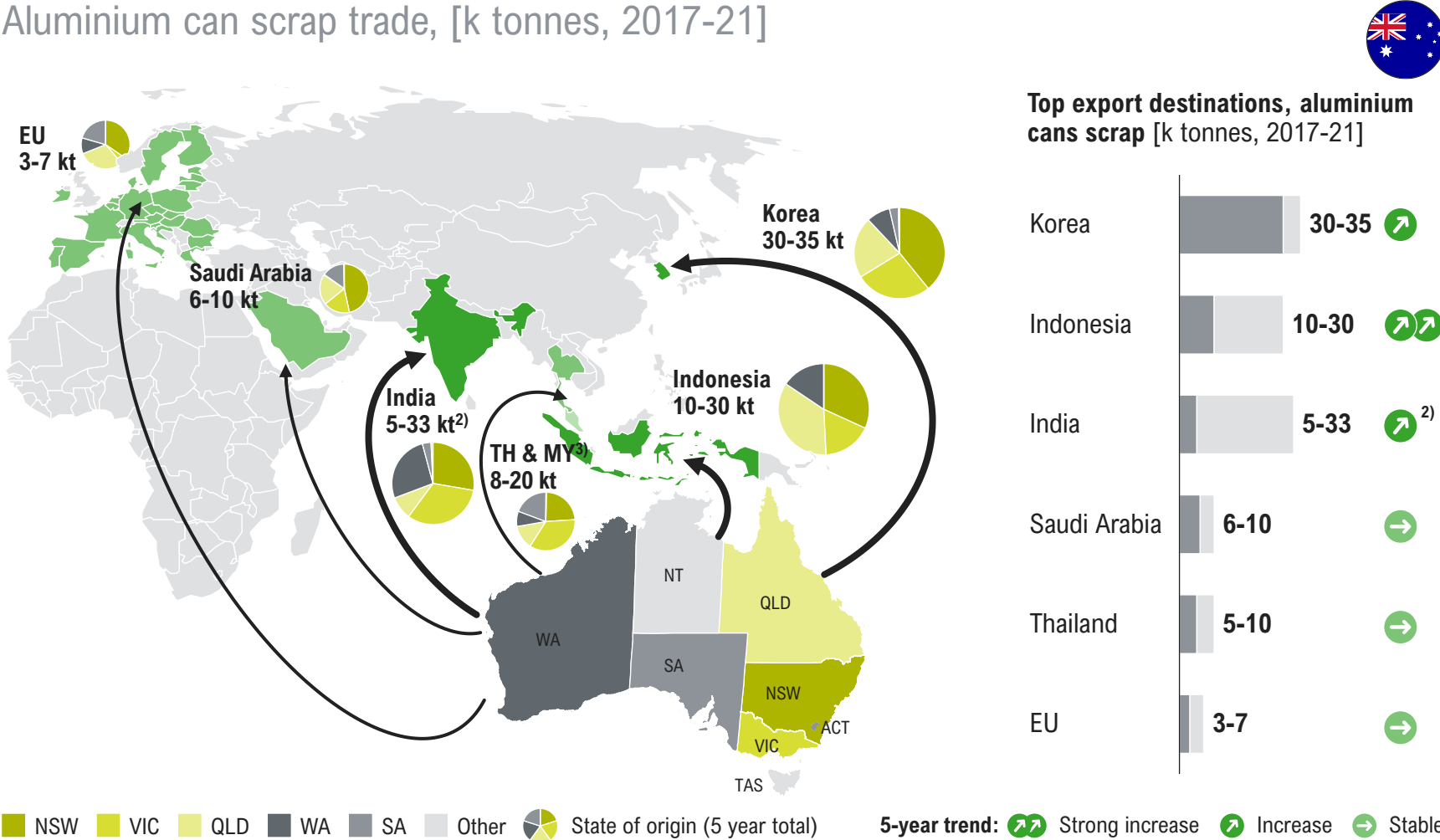
Metals are a minority of the materials going to landfill, being one of the most recycled materials (~87% in Australia).

Landfill fees are lower than many European countries (>EUR 100/ tonne in many regions of Western Europe).



# Most used aluminium can exports go to South Korea and increasingly (South)East Asia, traded through LME<sup>1)</sup>

Aluminium can scrap trade, [k tonnes, 2017-21]



1) London Metal Exchange; 2) India exports are likely overestimated due to nomenclature; 3) Thailand & Malaysia



## Key takeaways

- Novelis are the largest global consumer of UBCs in the World (also present in Korea and importing from Australia)
- UBC scrap is sold at ~50-75% of London Metal Exchange trading price
- Larger companies are trading through large trading houses like LME, looking for long-term contracts
- Some smaller companies might make spot transactions, with the price tied to LME

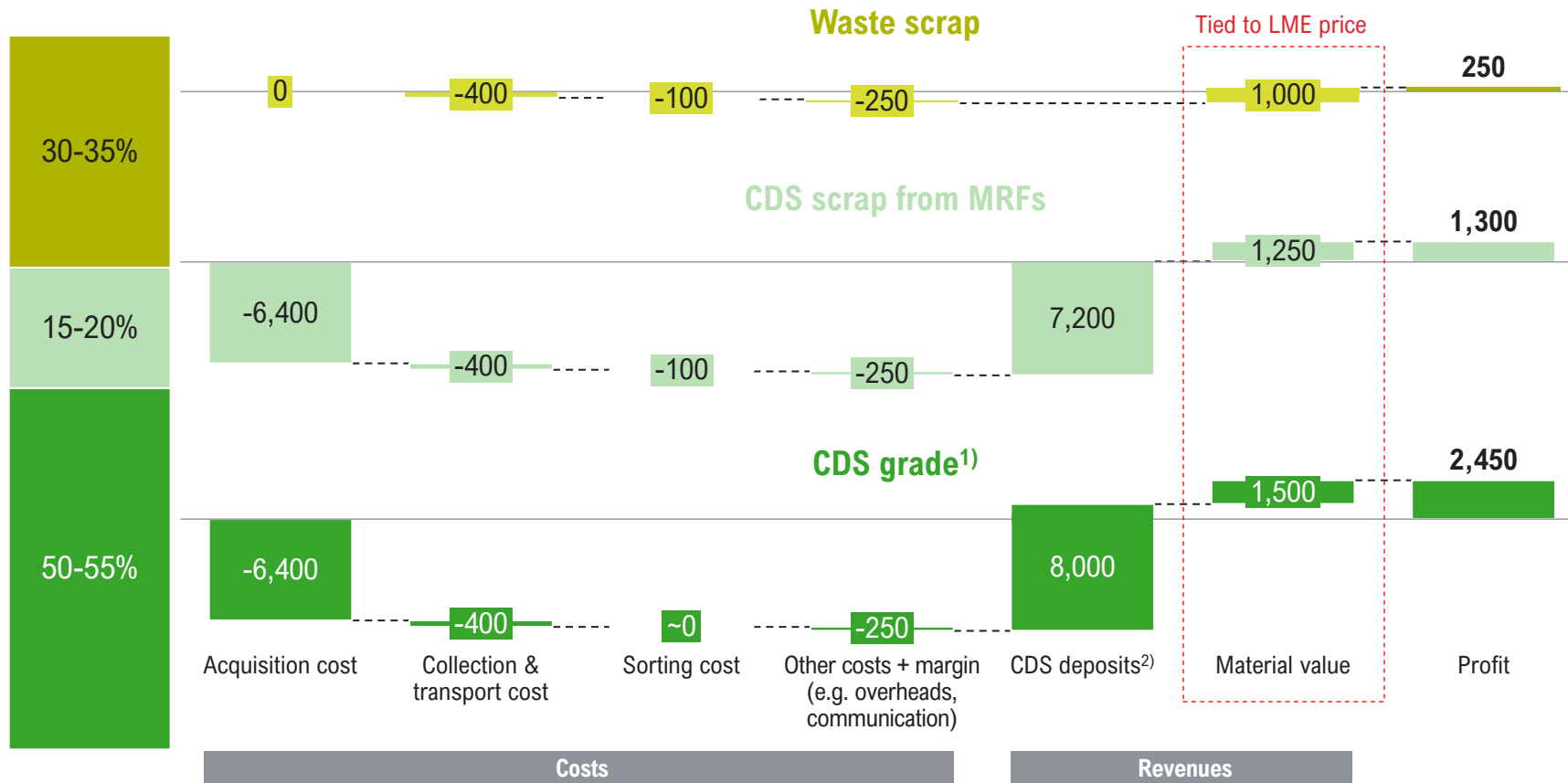
*"Used beverage cans would most likely go directly to re-melt; recyclers want to preserve their value"*

– Recycler



# Aluminium cans collection is economically viable across both streams, due to their high material value

Aluminium cans material value [AUD/ tonne]



## Key takeaways



- CDS material is of higher value and is very clean – typically trades on the international market at 65-75% of LME
- Can recyclers are often willing to pay an additional 5-7% premium over “downcyclers” for the material of higher quality
- The material collected in curbside does not incur a collection fee but is eligible for deposit return; it is, however, of lower quality than CDS material

*“There is often the argument about who owns the material, especially for aluminium, since it has significant value”*

– Industry association expert



1) Aluminium can waste from CDS collection points

Roland  
Berger

