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AUSTRALIAN PACKAGING CONSUMPTION RECOVERY DATA 2020-21

EXECUTIVE SUMMARY



AUSTRALIAN PACKAGING COVENANT ORGANISATION

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Disclaimer

The Australian Packaging Covenant Organisation (APCO) and the contributing authors have prepared this report with a high-level of care and thoroughness and recommend that it is read in full. This report is based on generally accepted practices and standards at the time it was prepared. It is prepared in accordance with the scope of work and for the purpose outlined in the project brief. The method adopted, and sources of information used are outlined in this report, except where provided on a confidential basis. This report has been prepared for use by APCO, and only other third parties who have been authorised by APCO. APCO and the contributing authors are not liable for any loss or damage that may be occasioned directly or indirectly using, or reliance on, the contents of this publication. This report does not purport to give legal or financial advice. No other warranty, expressed or implied, is made as to the professional advice included in this report.

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Authors

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Background

In 2018, all levels of Australian government, including representatives from local, state and territory and federal governments, came together with industry to launch Australia's 2025 National Packaging Targets (2025 Targets).

The Australian Packaging Consumption & Recycling Data 2020-21 report provides data for the 2021-21 financial year to inform the measurement of progress towards the 2025 Targets. This is the fourth iteration of the annual report, which began with a 2017–18 base year. The data in this report is also intended to improve the sustainability of packaging by supporting strategic planning across the lifecycle of packaging – design, manufacturing, use, disposal, and end-of-life.

Please note: In the tables presented in this report, minor discrepancies may occur between summed totals and the apparent sums of the component items in tables, as summed totals and percentage values are calculated using component item values prior to rounding





Packaging consumption 2020-21

Total packaging placed on market (POM) in Australia in 2020–21 is estimated at 6.74 million tonnes (±12%). POM means that the packaging has been made available to the end-consumer (including business users). It includes locally manufactured and imported packaging (filled or unfilled).

Of the 6.74 million tonnes of packaging POM in 2020– 21, around half was paper & paperboard packaging (50.3%), followed by glass packaging (19.0%), plastic packaging (17.5%), wood packaging (9.5%), and metal packaging (3.8%).

Estimates for packaging POM by material group are provided in **Table ES-1** and **Figure ES-2**. The aggregated accuracy range estimates for each of the material groups are also provided as error bars in **Figure ES-2**.

Table ES-1 – Packaging POM in 2020–21, by material group.

MATERIAL GROUP		ACCURACY RANGE		
	(TONNES)	(%)	(KG/PERSON)	(±%)
Paper and paperboard	3,387,000	50.3%	132	7%
Glass	1,283,000	19.0%	50	12%
Plastic	1,179,000	17.5%	46	16%
Metal	254,000	3.8%	10	9%
Wood	638,000	9.5%	25	34%
Total	6,740,000	100.0%	262	12%

The accuracy ranges are weighted sum averages of packaging manufacturer reported estimates of the level of accuracy (±%) of packaging POM.

The accuracy range provides an estimate of the range within which the true value can be found, with the reported value being the best estimate of the true value.



Figure ES-2 – Total tonnes of packaging POM in 2020–21, by material group.

In 2020–21, packaging POM increased by 8% compared to the 2019–20 estimate of 6.27 million tonnes.

The survey identified more business-to-business (B2B) wood packaging POM in 2019–20 and 2020–21, which has influenced the result. Excluding wood provides a more comparable trend estimate. This gives an estimated total packaging POM of 6.10 million tonnes in 2020–21, up 5% from the comparable estimate of 5.80 million tonnes in 2019–20.

The most significant trends in packaging POM, excluding wood, were increases in glass packaging (+11%) and plastic packaging (+5%).

Table ES-2 compares POM data by material groupfrom 2017–18 to 2020–21.

MATERIAL GROUP	2017–18	2018–19	2019–20	2020-21	CHANGE
	(TONNES)	(TONNES)	(TONNES)	(TONNES)	(%)
Paper & paperboard	2,901,000	3,262,000	3,277,000	3,387,000	3%
Glass	1,273,000	1,283,000	1,156,000	1,283,000	11%
Plastic	1,067,000	1,000,000	1,124,000	1,179,000	5%
Metal	213,000	246,000	248,000	254,000	2%
Wood ^a	NR ^b	124,000	462,000	638,000	38%
Total (tonnes)	5,453,000	5,916,000	6,266,000	6,740,000	8%
Total (kg/person)	218	234	244	262	7%

Table ES-2 – Packaging POM from 2017–18 to 2020–21, by material group, including a change percentage between 2019-20 and 2020-21.

a) The apparent large year-on-year increases in wood packaging is due to improvements in survey coverage.
b) NR – Not reported.



Packaging recovery 2020-21

Total Australian post-consumer packaging recovery in 2020–21 is estimated at 3.79 million tonnes (±13%). This recovery estimate is measured at the out-going gate of the secondary processing facility for the used packaging.

Of the packaging recovered in 2020–21, nearly two thirds were paper & paperboard packaging (62.6%), followed by glass packaging (21.2%), plastic packaging (5.5%), wood packaging (6.9%), and metal packaging (3.9%).

Estimates for post-consumer packaging recovery by material group are provided in **Table ES-3** and **Figure ES-3**. The estimates include post-consumer packaging collected through municipal, commercial and industrial (C&I), and container deposit scheme (CDS) collection services.

Table ES-3 – Post-consumer packaging recovery in 2020–21, by material group.

MATERIAL GROUP		ACCURACY RANGE		
	(TONNES)	(%) ^a	(KG/PERSON)	(±%)
Paper & paperboard	2,370,000	62.6%	92	12%
Glass	805,000	21.2%	31	10%
Plastic	207,000	5.5%	8	14%
Metal	147,000	3.9%	6	17%
Wood	260,000	6.9%	10	21%
Total	3,788,000	100.0%	147	13%

a) Percent contribution to the total tonnes of packaging recovered, not the individual material recovery rate.



Figure ES-3 – Post-consumer packaging recovery in 2020–21, by material group in tonnes.

Packaging recovery in 2020–21 was 3.79 million tonnes, which was an 11% increase (+0.37 million tonnes) on the 2019–20 packaging recovery estimate of 3.42 million tonnes. Excluding wood, 3.53 million tonnes of packaging was recovered in 2020–21, a 9% increase on the 2019–20 estimate of 3.25 million tonnes.

Table ES-4 compares recovery data by material groupfrom 2017–18 to 2020–21.

 Table ES-4 – Post-consumer packaging recovery from 2017–18 to 2020–21, by material group, including a change percentage between 2019-20 and 2020-21.

MATERIAL GROUP	2017–18	2018–19	2019–20	2020-21	CHANGE 2019–20 to 2020–21
	(TONNES)	(TONNES)	(TONNES)	(TONNES)	(%)
Paper & paperboard	1,817,000	2,045,000	2,229,000	2,370,000	6%
Glass	582,000	574,000	699,000	805,000	15%
Plastic	173,000	182,000	179,000	207,000	16%
Metal	102,000	137,000	139,000	147,000	5%
Wood ^a	NR ^b	44,000	171,000	260,000	52%
Total (tonnes)	2,673,000	2,982,000	3,416,000	3,788,000	11%
Total (kg/person)	107	118	133	147	11%

a) The apparent large year-on-year increases in wood packaging is due to improvements in survey coverage.
b) NR – Not reported.



Packaging recovery rates 2020-21

The Australian post-consumer packaging recovery rate in 2020–21 is estimated at 56%. This is based on the recovery of each material group as measured at the out-going gate of the secondary processing facility for the used packaging, divided by the related packaging POM by material group. Paper & paperboard has the highest recovery rate at 70%, followed by glass packaging (63%), metal packaging (58%), wood packaging (41%), and plastic packaging (18%).

Table ES-5 - Post-consumer packaging recovery rates in 2020-21, by material group.

MATERIAL GROUP	РОМ	RECOVERY	RECOVERY RATE
	(TONNES)	(TONNES)	(%)
Paper & paperboard	3,387,000	2,370,000	70%
Glass	1,283,000	805,000	63%
Plastic	1,179,000	207,000	18%
Metal	254,000	147,000	58%
Wood	638,000	260,000	41%
Total	6,740,000	3,788,000	56%



Figure ES-4 – Comparison of packaging POM, packaging recovery and post-consumer packaging recovery rates in 2020–21, by material group.

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Table ES-6 and Figure ES-5 compare recovery ratesby material group from 2017–18 to 2020–21.

In 2020–21 there were consistent increases in packaging recovery rates compared to 2019–20.

Table ES-6 – Post-consumer packaging recovery rates from 2017–18 to 2020–21, by material group, including a change percentage between 2019-20 and 2020-21.

MATERIAL GROUP	2017–18	2018–19	2019–20	2020-21	CHANGEª 2019–20 TO 2020–21
	(%)	(%)	(%)	(%)	(%)
Paper & paperboard	63%	63%	68%	70%	2%
Glass	46%	45%	60%	63%	2%
Plastic	16%	18%	16%	18%	2%
Metal	48%	56%	56%	58%	2%
Wood	NR ^b	36%	37%	41%	4%
Average percentage (%)	49%	50%	55%	56%	2%

a) Percentage (%) change values are calculated prior to rounding the annual values. See Section 1.4 of the full report for more details.
b) NR - Not reported.

The underlying accuracy ranges for the packaging POM and recovery estimates mean that it is not possible to state with certainty whether real changes in the recovery rates have occurred between the two years. However, the increases since 2017–18 are generally significant, with the exception of plastic packaging.



Figure ES-5 – Post-consumer packaging recovery rates (%) from 2017–18 to 2020–21, by material group.

Packaging recycled content 2020-21

Estimates of the recycled content incorporated into packaging POM in 2020–21, by material group, are provided in **Table ES-7** and **Figure ES-6**. The post-consumer recycled (PCR) content across all packaging

was 2.4 million tonnes, or 39% of total packaging POM (excluding wood). The pre-consumer recycled content was 0.7 million tonnes (11%), and 3.1 million tonnes (50%) was sourced from virgin (primary) feedstocks.

 Table ES-7
 Packaging POM in 2020–21, by material group (excluding wood) and content source.

MATERIAL GROUP	POST-CONSUMER PRE-CONSUMER SOURCE SOURCE		VIR SOU	TOTAL			
	(TONNES)	%	(TONNES)	%	(TONNES)	%	(TONNES)
Paper & paperboard	1,801,000	53%	497,000	15%	1,089,000	32%	3,387,000
Glass	480,000	37%	114,000	9%	689,000	54%	1,283,000
Plastic	36,000	3%	22,000	2%	1,121,000	95%	1,179,000
Metal	37,000	15%	61,000	24%	156,000	61%	254,000
Total	2,354,000	39%	695,000	11%	3,054,000	50%	6,103,000



Figure ES-6 – Packaging POM in 2020–21, by material group (excluding wood) and content source (tonnes).

Table ES-8 compares the PCR content of packaging bymaterial group from 2017–18 to 2020–21.

The PCR content of packaging, excluding wood, was steady at 39% in 2020–21 compared with 2019–20.

In 2020–21 the total quantity of PCR material in packaging increased by an estimated 94 kilotonnes (kt) (4%) compared to the previous year.

 Table ES-8 – Packaging PCR content from 2017–18 to 2020-21, as a percentage of packaging POM, by material group (excluding wood).

	2017–18		2018–19		2019–20		2020-21	
MATERIAL GROUP	(TONNES)	(%)	(TONNES)	(%)	(TONNES)	(%)	(TONNES)	(%)
Paper & paperboard	1,421,000	49%	1,667,000	51%	1,768,000	54%	1,801,000	53%
Glass	407,000	32%	474,000	37%	428,000	37%	480,000	37%
Plastic	23,000	2%	37,000	4%	36,000	3%	36,000	3%
Metal	64,000	30%	59,000	24%	28,000	11%	37,000	15%
Total	1,915,000	35%	2,237,000	38%	2,260,000	39%	2,354,000	39%

a) NR – Not reported.

Packaging recyclability

Estimates of packaging recyclability by recyclability classification and material group are provided in **Table ES-9** and **Figure ES-7**. Throughout the report the term packaging recyclability is used as an umbrella term for reusable, recyclable, or compostable packaging.

The method for determining packaging recyclability uses a scoring framework based on three criteria:

- The availability of a collection system.
- Whether the material is technically recyclable, i.e., it can be sorted and recycled.
- · The availability of end markets.

2020-21

It is estimated that 5.8 million tonnes (86%) of packaging POM in 2020–21 had good recyclability. This was dominated by paper & paperboard (of which 93% had good recyclability) and glass (of which 100% had good recyclability). Effectively all metal packaging (99.9%) was classified as having good recyclability, but only 60% of plastic packaging was classified as having good recyclability (steady from the 60% in 2019–20). Wood packaging had 67% classified as having good recyclability. Using this framework, each packaging format was classified as having either good recyclability, poor (limited) recyclability or being not recyclable. Packaging classified as having poor recyclability, does not meet or only partially meets, one or more criteria.

Around 0.8 million tonnes (12%) of packaging POM was classified as having poor recyclability or not being recyclable. Around 42% of this was plastic packaging, and another 31% was paper & paperboard packaging.

The recyclability status of another 0.1 million tonnes of packaging, almost entirely plastic packaging, could not be determined. It is likely that most of this packaging would tend towards having poor recyclability or not being recyclable.

GOOD POOR MATERIAL GROUP RECYCLABILITY RECYCLAB		POOR RECYCLABILITY	NOT RECYCLABLE	UNKNOWN	TOTAL
	(TONNES)	(TONNES)	(TONNES)	(TONNES)	(TONNES)
Paper & paperboard	3,147,000	180,000	60,000	0	3,387,000
Glass	1,283,000	0	0	0	1,283,000
Plastic	710,000	168,000	159,000	141,000	1,179,000
Metal	253,000	0	0	0	254,000
Wood	427,000	79,000	132,000	0	638,000
Total (tonnes)	5,820,000	428,000	351,000	141,000	6,740,000
Total (%)	86.3%	6.3%	5.2%	2.1%	100.0%

Table ES-9 – Packaging POM in 2020–21, by recyclability classification and material group (tonnes).



Figure ES-7 – Total tonnes of packaging POM in 2020–21, by recyclability classification and material group.

Progress from 2017–18 to 2020–21

Table ES-10 compares the 2017–18 to 2020–21quantities of packaging with a good recyclabilityclassification. There were some changes in thepercentages of packaging with good recyclabilitybetween 2019–20 and 2020–21, with the most

noteworthy being an increase in the paper & paperboard good recyclability percentage value, due in most part to an update in the recyclability classification of kraft paper.

Table ES-10 – Packaging POM with a good recyclability classification from 2017–18 to 2020–21, including a percentage of the total tonnes of the material group POM, by material group.

	2017–18		2018-	2018–19		2019–20		2020-21	
MATERIAL GROUP	(TONNES)	(%)	(TONNES)	(%)	(TONNES)	(%)	(TONNES)	(%)	
Paper & paperboard	2,682,000	92%	2,962,000	91%	2,961,000	90%	3,147,000	93%	
Glass	1,273,000	100%	1,283,000	100%	1,156,000	100%	1,283,000	100%	
Plastic	627,000	59%	663,000	66%	676,000	60%	710,000	60%	
Metal	201,000	95%	243,000	99%	240,000	97%	253,000	100%	
Wood	NR^{a}	NR^{a}	121,000	98%	359,000	78%	427,000	67%	
Total	4,783,000	88%	5,273,000	89%	5,392,000	86%	5,820,000	86%	

a) NR – Not reported.

Packaging projections

As part of the study, projections of the following have been undertaken:

- Annual packaging POM estimates from 2020–21 to 2024–25 by material type – These projections are generally based on manufacturer reported market growth estimates by packaging material type and component group. Population growth estimates have been adopted where survey data was not available.
- Annual recovery estimates from 2020–21 to 2024– 25 by material type – These projections are based on reprocessor reported (spare) capacity and committed new capacity.

These baseline POM and recovery projections quantify the impact of planned infrastructure changes reported by packaging manufacturers and reprocessors during the surveys undertaken for this project.

Packaging consumption

Presented in **Table ES-11** and **Figure ES-8** are annual packaging POM estimates from 2020–21 to 2024–25 by material group. The compound annual growth rate

(CAGR) for packaging POM over this period is estimated to be 3.6% per year.

Table ES-11 – Estimated annua	l packaging POM from 2019–20	to 2024–25, by material group
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MATERIAL GROUP	2019–20 ª	2020-21	2021–22	2022-23	2023–24	2024–25	5-YEAR CAGR [♭]
	(TONNES)	(TONNES)	(TONNES)	(TONNES)	(TONNES)	(TONNES)	(% PER YEAR)
Paper & paperboard	3,277,000	3,387,000	3,492,000	3,600,000	3,711,000	3,826,000	3.1%
Glass	1,156,000	1,283,000	1,313,000	1,345,000	1,377,000	1,409,000	4.0%
Plastic	1,124,000	1,179,000	1,202,000	1,226,000	1,251,000	1,277,000	2.6%
Metal	248,000	254,000	259,000	265,000	270,000	276,000	2.2%
Wood	462,000	638,000	653,000	669,000	687,000	705,000	8.8%
Total	6,266,000	6,740,000	6,919,000	7,104,000	7,295,000	7,493,000	3.6%

a) 2019–20 and 2020–21 data is actual year data. Data for 2021–22 to 2024–25 are projections. b) CAGR – Compound annual growth rate.



Between 2020–21 and 2024–25 there is projected to be 753 kt (11.2%) of growth in packaging POM, based largely on packaging manufacturer estimates of prospective market growth. Of this, 439 kt (58%) is projected to be paper & paperboard packaging, 126 kt (17%) glass packaging, 98 kt (13%) plastic packaging, 22 kt (3%) metal packaging and 67 kt (9%) wood packaging.



Figure ES-8 – Annual packaging POM from 2019–20 and 2020-21, and estimated annual packaging POM from 2021-22 to 2024–25, by material group (tonnes).

Reprocessing capacity

Presented in **Table ES-12** and **Figure ES-9** are packaging reprocessing capacity projections (assuming there are no further interventions) from 2019–20 to 2024–25 by material group. The 5-year CAGR for reprocessing capacity growth over this period is 8.5% per year (compared with 2.8% per year in the 2019–20 report), which is now notably higher than that for packaging POM. The estimated increase in capacity over the 5-year period is now 1.7 million tonnes (compared with the 0.5 million tonnes identified in the 2019–20 report), with the most significant increases for glass (790,000 tonnes), paper & paperboard (420,000 tonnes), and plastics (410,000 tonnes). A significant proportion of the glass capacity relates to glass crushing into aggregate and sand products only.

The projected reprocessing capacity for 2024–25 is equivalent to around 69% of projected POM in the same year. The projected reprocessing capacity for plastic packaging is equivalent to 46% of projected packaging POM.



MATERIAL GROUP	2019–20	2020-21	2021–22	2022-23	2023-24	2024-25	5-YEAR CAGRª
	(TONNES)	(TONNES)	(TONNES)	(TONNES)	(TONNES)	(TONNES)	(% PER YEAR)
Paper & paperboard	2,229,000	2,370,000	2,439,000	2,509,000	2,579,000	2,649,000	3.5%
Glass	699,000	805,000	976,000	1,147,000	1,318,000	1,489,000	16.3%
Plastic	179,000	207,000	303,000	399,000	496,000	592,000	27.1%
Metal	139,000	147,000	147,000	148,000	148,000	148,000	1.2%
Wood	171,000	260,000	260,000	260,000	260,000	260,000	8.8%
Total	3,416,000	3,788,000	4,126,000	4,463,000	4,801,000	5,139,000	8.5%

Table ES-12 – Annual packaging reprocessing capacity projections from 2019–20 to 2024–25, by material group.

a) CAGR – Compound annual growth rate.



Figure ES-9 – Annual packaging reprocessing capacity projections from 2019–20 to 2024–25, by material group (tonnes).

Packaging reuse

The flows of eight reusable packaging systems have been quantified as part of the project, which are the same eight that were quantified in 2019–20. These reusable packaging flows are:

- Kegs Beer kegs only.
- Drums (200–205 litre) All reusable steel and plastic drums in the 200–205 litre volumetric capacity range (44-gallon UK or 55 gallon US).
- Intermediate bulk containers (IBCs) All rigid IBCs are assumed to be reusable (rather than single-use) packaging.
- Milk crates Non-collapsible plastic crates. Limited to dairy applications only.
- **Pallets** Reusable timber and plastic pallets only, including display pallets. Single-use pallets are excluded.
- Returnable plastic crates (RPCs) Collapsible plastic crates. Limited to major supermarket systems only (e.g., ALDI, Coles and Woolworths).
- Reusable shopping bags Reusable non-woven PP (NWPP) bags, and reusable HDPE and LDPE bags (supermarket type).
- **Reusable coffee cups** Reusable coffee cups used in an away-from-home (AfH) setting where they could be reasonably expected to have avoided the use of a single-use coffee cup.

The quantified reusable packaging systems avoided the use of 2.6 million tonnes of single-use packaging. Approximately 92% of the avoided singleuse packaging consumption benefit is provided by reusable pallets and plastic crates. The net theoretical reduction in packaging use was 2.4 million tonnes, as there were 0.2 million tonnes of reusable packaging inputs in 2020–21.

APCO

Progress towards the 2025 National Packaging Targets

Table ES-13 provides a summary of the 2025 Targetsand the 2017–18 to 2020–21 results against each.

 Table ES-13 – Summary of the 2025 Targets and progress to 2020–21.

TARGET	TARGET	2017–18 Result	2018–19 Result	2019–20 Result	2020–21 Result
100% of all Australia's packaging will be reusable, recyclable or compostable by 2025 or earlier	100%	88%	89%	86%	86%
70% of Australia's plastic packaging will be recycled or composted by 2025	70%	16%	18%	16%	18%
50% average recycled content will be included across packaging by 2025ª	50%	35%	38%	39%	39%
Problematic and unnecessary single-use plastic packaging will be phased out ^{b.c}	Reduction in priority items	Baseline	-41%	-31%	-28%

a) Post-consumer recycled content only. Does not include wood or manufacturing scrap (pre-consumer) recycled content.

b) Priority items considered include PVC, PS, EPS, oxo-degradable plastics, and retail shopping bags POM.

c) These estimates are subject to a relatively large accuracy range and high year-on-year reporting volatility. Estimated value is relative to the previous year.



Figure ES-10 – Summary of the 2025 Targets and progress to 2020–21.

Project method

Consumption quantification

Locally manufactured Australian packaging consumption was determined through a national survey of packaging manufacturers and importers. Data was estimated for all survey non-respondents based on publicly available data or through consultation with others in the industry.

Imported and exported new packaging has been determined through analysis of Australian Harmonized Tariff Item Statistical Code (HTISC) data.

Packaging consumption is measured in terms of packaging POM.

Recovery quantification

Australian packaging recovery was determined through a national survey of packaging reprocessors, with recovery data estimated for all significant survey nonrespondents.

Exported scrap packaging was determined through analysis of Australian Harmonized Export Commodity Classification (AHECC) data, and the survey of reprocessors and exporters. Recovery is measured at the out-going gate of the secondary processing facility for the used packaging. This is the point at which the processed material is typically 'input ready' for the manufacture of new packaging or other products. Examples of secondary processing facilities include paper mills, glass beneficiation facilities, plastics flaking and washing facilities, and metal smelting facilities.

The overseas processing losses associated with the export of sorted but unprocessed materials have been estimated based on the losses reported by local operators of secondary processing facilities.

Survey response rate

Across the five main cohorts of those surveyed for this study, a total of 75% of those contacted responded to the survey request. Responses for another 13% were estimated based on publicly available data or through consultation with others in the industry. Refer to Section 1.2 of the full report for more details on response rates and on the management of data gaps.

For the Australian Packaging Consumption & Recovery Data Report 2020-21, please *click here.*







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