

Supplementary Submission to Senate Environment and Communications References Committee Inquiry into Container Deposit Schemes including responses to questions on notice

Tuesday 13 November, 2012

Contents

1. APC goals, targets and links with the national waste policy 1

2. Industry Participation and Contributions to the APC 2

3. APC Transitioning under the *Product Stewardship Act 2011*..... 3

4. The benefits and costs of the APC to industry and the community 3

5. Littering rates in Victoria and South Australia 4

6. Littering rates nationally have decreased..... 5

7. Recycling Rates..... 5

8. Australian Packaging Covenant is world’s best practice..... 7

9. Appendices..... 7

1. APC goals, targets and links with the national waste policy

The Australian Packaging Covenant (APC) is the key national mechanism for implementing Strategy 3 of the National Waste Policy. It was endorsed in July 2010 by environment ministers as the best way to address the strategy.

“The Australian Government, in collaboration with State and Territory governments, industry and the community, will better manage packaging to improve the use of resources, reduce the environmental impact of packaging design, enhance away from home recycling and reduce litter.”¹

The APC is the third iteration of the National Packaging Covenant, which has been the leading instrument for managing the environmental impacts of consumer packaging in Australia since 1999. The objective of the APC is to minimise the overall impacts of packaging. It places an increased emphasis on improving packaging design, increasing recycling away from home and reducing litter².

¹ EPHC (2009) *National Waste Policy: Less Waste, More Resources*.

² Department of Sustainability, Environment, Water, Population and Communities, 2012. *Less Waste More Resources: Australian Packaging Covenant*
<http://www.environment.gov.au/settlements/waste/covenant/index.html>

While participation in the APC is voluntary, brand owners who do not become signatories or fail to comply with APC requirements will be regulated under the *National Environmental Protection (Used Packaging Materials) Measure 2011* (NEPM) in each of the states and territories within which the company sells its products.

The APC Strategic Plan (July 2010 – June 2015), ratified by environment ministers, enunciates the key targets the APC must achieve by 2015 in support of the APC objective and goals. This is at **Appendix 1**.

The APC and NPC have funded 128 projects from 2005 – 2012 with a total project value over \$126 million. The majority of APC and NPC projects since 2005 have targeted away from home recycling and recycling infrastructure. For a summary of types, value and number of projects funded please refer to **Appendix 2 Covenant (APC + NPC) Project Funding Summary**.

The APC draws no distinctions between packaging material types or uses and encompasses both current and emerging packaging and materials. Through collaboration with the supply chain, government and the community the APC aims to maximise recovery and recycling of all post-consumer packaging. It is not a scheme that hankers for past solutions, but it is a scheme that embodies a 21st century approach. It has the necessary inherent flexibility to address future packaging and materials.

2. Industry Participation and Contributions to the APC

Under the Australian Packaging Covenant, governments and industry have agreed that “the supply chain agrees to contribute a minimum of \$3 million per year.” “The NPCIA coordinates industry’s responsibilities under the Covenant, receives, manages and dispenses funds contributed by the members of the association, and carries out other functions to meet obligations under the Covenant”.³

The NPCIA levies industry signatories on the basis of their packaging related turnover as this provides the most equitable method of raising the minimum of \$3 million per year. Brand owners with an annual turnover of less than \$5 million are exempt from the NEPM obligations and the APC. This is to reflect the small business concession and the minimal contribution to the packaging waste stream of these businesses.

The NEPM regulatory underpinning minimises free riders.

Determining a dollar value of packaging across the packaging supply chain is not possible as the value of packaging related turnover (not a value add measure) varies depending where in the supply chain a company is operating. For instance, a raw material supplier or packaging manufacturer has a lower value of a unit of packaging than a retailer of a similar unit of packaging filled with product and the turnover being calculated on either a wholesale or retail value. The NPCIA experience is that larger operators in the supply chain pay larger amounts of levy.

In the last 2 years, the NPCIA has raised \$4million per annum from industry signatories.

³ *Australian Packaging Covenant: A commitment by governments and industry to the sustainable design, use and recovery of packaging*, 2010. Available at <http://www.packagingcovenant.org.au/>

3. APC Transitioning under the *Product Stewardship Act 2011*

The APC was endorsed by ministers prior to the *Product Stewardship Act 2011* (the Act) and is a model that has its regulatory underpinning via the NEPM. As States and Territories are responsible for waste management, they have enacted regulatory mechanisms to enforce the NEPMs as stated above. Non-compliant signatories or those who choose not to be signatories are regulated under the state based NEPMs in each of the state and territories in which the company sells their products. The NEPM is enforced by the relevant regulatory authorities in each of the states and territories. Decisions about the way the NEPM are implemented are made by each jurisdiction individually, usually in line with their state/territory base responsibilities for waste management.

The primary difference between the NEPMs and the Act, is that the latter will be brought under the single Commonwealth jurisdiction.

If the APC would be transitioned under the Act, in Victoria for instance this would involve a repeal of the *Waste Management Policy (Used Packaging Materials) No. G17*. Sections of the *Protection of the Environment Operations (Waste) Regulation* may also require repealing in New South Wales.

SA's CDL is a grandfather scheme for collecting beverage containers that preceded the introduction of the APC. We will continue to work with the SA government under the APC.

Repeal of CDL Schemes

To ensure the committee is fully informed we are aware that CDL schemes have been repealed:

- For PET bottles and cans in the Netherlands in 2015. Dutch municipalities will be given a special annual financial support from the packaging chain to finance new anti-litter measures agreed with industry⁴. CDL was not seen as a cost effective method of increasing recycling.
- Delaware, USA as plastic recycling rates were low⁵.

4. The benefits and costs of the APC to industry and the community

PricewaterhouseCoopers undertook a cost benefit analysis as part of the COAG Standing Council on Environment and Water's Packaging Impacts Consultation Regulatory Impact Statement (PICRIS). The executive summary of this analysis is attached at **Appendix 3**. This also lists the cost and benefit assumptions that were compared.

Benefits considered included the market value of resources, avoided regulatory costs, avoided landfill externalities, avoided operating costs of landfill, avoided costs of mixed waste contamination and avoided costs of litter clean up.

Costs considered included scheme design and implementation costs (regulation design/implementation, government participation and communications), scheme operation

⁴ Packaging Europe 11.06.12 *Dutch Parliament Scraps PET bottle deposit scheme*

⁵ State of Delaware, "The Bottle Bill" Information about Delaware's Beverage Container Law, <http://www.dnrec.delaware.gov/whs/awm/Recycling/Pages/BottleBill.aspx>

(government administration of regulations, scheme administration, scheme initiatives and infrastructure) and scheme compliance (reporting and labelling costs).⁶

WHAT ARE UNACCEPTABLE COSTS TO INDUSTRY?

The NPCIA is guided by a set of principles in evaluating regulation. These set of principles can be found at our website at <http://www.npcia.org.au/index.php/research-a-advocacy/australian-packaging-regulation> . We believe that regulation should be based on sound policy and science. In accordance with the COAG Principles of Best Practice Regulation, the NPCIA believes that only options with the highest net benefit should be pursued.

Further benefits of the APC Model

BENEFITS THE ENVIRONMENT...

The APC is adaptable to changes in packaging design and formats globally. Increasingly, packaging is being designed from a whole of lifecycle perspective. These can result in formats that are not recyclable by current means, but save energy and materials in the manufacturing stage that produce better overall environmental outcomes. APC projects have targeted some of these materials and facilitated recovery options. Current projects include recovery of flexible plastics and expanded polystyrene (EPS).

BENEFITS GOVERNMENT...

The APC assists governments in increasing resource recovery through capacity building, facilitating working groups, investing in projects and actions with signatories. The co-regulatory model requires industry to coordinate and manage the scheme, with government oversight. This means there are savings for government (less resources required) whilst enabling industry being held to account.

BENEFITS THE COMMUNITY...

The APC collaborative approach benefits business, the community and government, including local government, as all are represented in the Australian Packaging Covenant Council (APCC). In particular, the APC engages with and has arrangements in place with community groups Planet Ark and Keep Australia Beautiful.

APC Projects that have engaged with the community have led to improved community outcomes by promoting empowerment and community cohesion. An example of a current project is at Ascot Vale Housing estate, with a local Community Centre. It involves implementing a new kerbside recycling system with an associated education campaign in an area of community diversity.

5. Littering rates in Victoria and South Australia

The raw data from Keep Australia Beautiful's National Litter Index 2011-2012 indicates that Victoria shows better litter outcomes than South Australia.

⁶ Pricewaterhouse Coopers and Wright Corporate Strategy, 2011. Attachment C: Cost Benefit Analysis to the PICRIS.

The overall average number of items per 1000m² across all sites surveyed within Victoria during 2011/2012 was 36, whilst the overall average estimated volume per 1000m² was 3.67 litres.

The overall average number of items per 1000m² across all sites surveyed within South Australia during 2011/2012 was 57, whilst the overall average estimated volume per 1000m² was 5.53 litres.

Extracted pages from the full report can be found at **Appendix 4**. The full report is available publicly from the KAB National website at <http://kab.org.au/litter-research/national-litter-index-2/>

6. Littering rates nationally have decreased

The overall average estimated **number** of items per 1000m² across all sites surveyed nationally has decreased from 70 items in 2005/06 to 58 items in 2011/12.

The overall average estimated **volume** of items per 1000m² across all sites surveyed nationally has also decreased from 8.86L in 2005/06 to 6.24L in 2011/12.

It is important to note that this is the raw data, as we do not wish to enter into further debate in relation to the additional analysis on a per capita basis raised by the Total Environment Centre.

Beverages as a component of littered items

Based on our analysis of the national KAB NLI 2011/12 data, beverage containers comprised approximately 6.6% of total litter items and 37.1% total litter volume in 2011/12. By means of comparison, food containers and utensils (not covered by a CDS scheme) comprised approximately 10.5% of total littered items and 19.5% total litter volume.

7. Recycling Rates

The table below summarises the recycling rates for the packaging material types in 2011. The APC is required to report against all packaging material types and does not delineate beverage containers as a distinct category.

It must be reiterated that the methodology includes packaging only. Thus for material types such as paper and cardboard it excludes office paper. A full copy of the methodology is attached at **Appendix 5** for further information.

This data is independently collected by an external consultant according to established methodology. This methodology is also independently developed for the APCC and will be subject to its next review in 2013.

The APC has played an important role in achieving these numbers by facilitating recovery programs with local government, investing in recovery infrastructure, providing seed funding, providing the political will and educating the community about recycling and litter.

Covenant Performance Data for 2011

Material Type	Total Consumption (tonnes)	Total Recycling (tonnes)	Recycling Rate
Paper/Cardboard	2,602,000	1,960,000	75.3%
Glass	1,053,808	519,600	49.3%
Plastics	532,251	199,812	37.5%
Steel cans	127,601	43,583	34.2%
Aluminium cans	57,196	36,600	64.0%
TOTAL	4,372,856	2,759,595	63.1%
Aluminium all containers (cans and aerosols). Stated separately as this total tonnage is not included in the analysis for overall recycling rate above.	65,362	40,260	61.6%

Change in Packaging Recycling (by type, in tonnes), base year to current year

Material Type	2003	2011	Change %
Paper/Cardboard	1,211,000	1,960,000	61.8%
Glass	238,500	519,600	217.9%
Plastics	127,397	199,812	56.8%
Steel cans	29,871	43,583	45.9%
Aluminium cans	28,500	36,600	28.4%
TOTAL	1,635,268	2,759,595	68.7%

The APC has overseen a reduction in waste to landfill, despite a 5% increase in consumption between 2003 - 2011.

Total Packaging Consumption and Recycling (in tonnes), base year to current year

	2003	2011	Change %
Consumption	4,172,433	4,372,856	4.8%
Recycling	1,635,268	2,759,595	68.7%
Disposed to Landfill	2,437,165	1,613,261	-36.4%
Recycling Rate	39.2%	63.1%	

Product Materials Recycling Rates – base year to current year

Recycling Rate	Fibre*	Glass	Plastics	Steel Cans	Alum Cans	Overall**
2011 rates	75.3%	49.3%	37.5%	34.2%	64.0%	63.1%
2003 Baseline	49%	26%	20%	36%	63%	39%

* = paper and cardboard

** = after applying the agreed weighted volume of recycling methodology

The tables above are sourced from the APC's 2011 annual report, which is publicly available at www.packagingcovenant.org.au

The Packaging Stewardship Forum (PSF) commissions independent data collection of the nationwide recycling of beverage containers. Their 2010/2011 figures for consumption and recycling (tonnes and %) can be seen in the table below⁷.

	Aluminium	Glass	LPB	PET	HDPE	TOTAL
Consumption	57 196	961 454	31 321	113 240	153 976	1 317 187
Recycling	36 600	498 660	18 575	63 063	66 690	683 588
Recycling rate	64%	52%	59%	56%	43%	52%

8. Australian Packaging Covenant is world's best practice.

The APC is a proven model that is best practice by international standards. Details on the APC's standing with the rest of the world, in respect to schemes managing the environmental impacts of packaging as well as recycling and recovery rates can be found at **Appendix 6 APC within a global perspective**. Australia performs strongly as our measure is on recycling only, not having energy recovery as an option as in the USA and Europe.

9. Appendices

⁷ Industry Edge and Equilibrium OMG, 2011. *Compilation of Contestable Data for 2010 – 11 on the Consumption and Recycling of glass, aluminium, LPB, HDPE and PET beverage containers, and in addition aluminium aerosol containers*. Available from <http://www.afgc.org.au/psf/psf-research-a-reports.html>

Australian Packaging Covenant

Smarter packaging, less waste, cleaner environment

Strategic Plan

July 2010 to June 2015

This work is copyright. Apart from any use as permitted under the *Copyright Act 1968*, no part may be reproduced without prior written permission of the Australian Packaging Covenant Council. Requests and enquiries concerning reproduction and rights should be directed to:

Australian Packaging Covenant Secretariat
PO Box 19016, Southbank Victoria 3006
apc@packagingcovenant.org.au
(03) 9861 2322

Produced September 2010

Edited, designed and produced by PB Publishing, Brisbane,
69 Ann Street, Brisbane, Queensland, 4000,
saanderson@pb.com.au

© Australian Packaging Covenant Council 2010

A commitment by governments and industry to the sustainable design, use and recovery of packaging.



Context

The Australian Packaging Covenant (the Covenant) is the voluntary part of an industry and government arrangement to reduce the environmental impacts of packaging by encouraging improvements in packaging design, higher recycling rates and better stewardship of packaging.

The Covenant is an agreement between the Environment Protection Heritage Council (EPHC), made up of state and federal Environment Ministers, and industries in the packaging supply chain. The Covenant is a collaborative arrangement with governments and industry working together to deliver its goals and targets. It is supported by national and state legislation that imposes obligations and penalties on non-signatories to the Covenant. This ensures that brand owners that are signatories to the Covenant and fulfil their obligations are not competitively disadvantaged by those that do not.

The Covenant requires signatories to prepare an action plan stating how they will contribute to achieving the objectives of the Covenant, implement their action plan, and report annually. Signatories that fail to act can be excluded from the benefits of the Covenant and be required to comply with the legislation in each jurisdiction.

Covenant signatories will measure and report on their performance through their annual reports to the Council. Council will measure and report on its performance against the strategic plan in its annual report to EPHC.

The Covenant is one mechanism that is contributing to the overall National Waste Strategy and State and Territory Strategies that seek to minimise the generation of all sources of waste and maximise its recovery and recycling.

Over the last ten years industry and governments have successfully collaborated in reducing the environmental impacts of packaging. In the first five years substantial progress was made through the implementation by local governments of kerbside recycling programs. In the second five years there has been substantial progress made through improved recovery of materials for recycling.

This 5-year strategic plan sets out the strategies and priorities that will be employed to deliver further progress with a focus on improved packaging design and use. The plan also takes into account the request from the EPHC, that the implementation of the Covenant give greater emphasis to the recovery and recycling of used packaging in away from home locations and to reducing littering, with the benefits of the Covenant being more equitably distributed across Australia, including to lower population centres.

Funding for the implementation of the strategic plan is provided by both industry and jurisdictions on an equal basis. Industry has committed \$3 million annually for the life of this strategic plan. This will be matched by jurisdictions. The strategic plan will be reviewed every five years.

The Australian Packaging Covenant Council

The Australian Packaging Covenant Council (Council) has overall responsibility for developing and managing policy, strategy and compliance arrangements for the Covenant and is accountable to EPHC.

The Council is comprised of senior representatives of the jurisdictions that make up EPHC, industry associations, local government associations and community organisations.

The Council is supported in its role by the National Packaging Covenant Industry Association (NPCIA) that provides the services that implement the Covenant arrangements.

The National Packaging Covenant Industry Association (NPCIA)

The NPCIA is the legal entity established to coordinate industry's responsibilities under the Covenant. The NPCIA provides services to implement the Covenant's arrangements in accordance with the contract between the NPCIA and the jurisdictions.

The NPCIA is accountable to the Council for the delivery of a rolling 3-year business plan through which this strategic plan is implemented.

Vision

A community that manufactures, uses, distributes, and recovers packaging materials in a sustainable way.

Mission

To provide a system through which users of packaging materials and participants in the supply chain can voluntarily demonstrate leadership in:

- sustainable packaging design
- recovery and recycling of used packaging materials resulting in reduced waste and litter
- the engagement of all participants in the supply chain in the sustainable use of packaging materials.

Values

Council values:

- working in partnership with Government, industry and community organisations
- gathering and using knowledge as an evidence base for action
- innovation and active promotion of solutions at the systems level
- transparency and efficiency in performance.

Strategies To Achieve Covenant Goals: July 2010–June 2015

Background

Each goal focuses on a key area for action that will ensure that the Covenant's objective of minimising the environmental impact of packaging is achieved. Strategies in relation to one goal will also produce outcomes relating to other goals. The strategies, outcomes and targets in the Strategic Plan are based on and contribute to the achievements of the outcomes and targets in the Covenant

Goal 1: Design — packaging optimised to achieve resource efficiency and reduced environmental impact without compromising product quality and safety

Priority	Strategy	Outcomes sought	Targets (by June 2015, unless otherwise stated)
Sustainable Packaging Guidelines used to guide packaging decisions.	1. Capacity Building — Develop and implement capacity building activities to ensure the adoption and use of the Sustainable Packaging Guidelines by Covenant signatories.	Increased capacity by signatories to apply the Guidelines in packaging decisions.	70% of Covenant signatories have documented policies and procedures for evaluating and procuring packaging using the Sustainable Packaging Guidelines or equivalent.
	2. Audit — Design, test and implement a program to audit the use of the Sustainable Packaging Guidelines by signatories to the Australian Packaging Covenant.	All signatories shown to be applying the Guidelines in packaging decisions.	70% of Covenant signatories assessing 100% of new packaging and 50% of existing packaging against the Guideline.
	3. Complaints — Develop, implement and communicate a process to enable the community and other stakeholders to report items of packaging that appear to be contrary to the Sustainable Packaging Guidelines.	A well-communicated complaints process in place. All signatories applying the Guidelines in packaging decisions.	
	4. Incentive and recognition — Develop and implement a program or use an existing mechanism to recognise and promote significant achievements by Covenant signatories in designing and procuring packaging to improve its resource efficiency and reduce its environmental impact.	High performing signatories recognised and accomplishments shared with other signatories.	

Goal 2: Recycling — The efficient collection and recycling of packaging

Priority	Strategy	Outcomes Sought	Targets (by June 2015, unless otherwise stated)
Improved recycling rates for used packaging.	1. Workplace and Public Place Recycling — Extend the availability of workplace and public place recycling through investment in infrastructure and capacity building.	Improved recycling of packaging from away-from-home sources and households.	70% recycling rate for used packaging materials.
Increased local secondary markets for used packaging materials.	2. Market Development — Identify barriers, encourage ways in which they might be removed and new business opportunities that add value to recovered used packaging materials.	Increased local secondary markets for recovered packaging materials.	Demonstrated increase in the diversity and scale of local markets for the conversion of recovered and recycled used packaging to new products.
	3. Procurement — Build the capacity of Covenant signatories to develop and implement formal 'buy recycled' policies and programs.	Increase the amount of recycled packaging materials being used in Australian product manufacture.	All Covenant signatories will have a formal, implemented policy of buying recycled materials or products.
Improved quality of data collection and reporting.	4. Data Management <ul style="list-style-type: none"> • Assess and implement all agreed recommendations from past data investigations to improve data quality and accuracy. • Maintain and improve methodologies for the collection, reporting and analysis of data. 	Sound knowledge of and confidence in performance data (including key issues and trends).	Annual acquisition of high quality performance data.

Goal 3: Product Stewardship — a demonstrated commitment to product stewardship by the supply chain and other signatories

Priority	Strategy	Outcomes Sought	Targets (by June 2015, unless otherwise stated)
Improved collaboration between the supply and recovery chains.	<p>1. Collaboration — Through communication and investment encourage collaboration between participants in the supply and recovery chains in the design, procurement, recovery and recycling of packaging materials.</p>	<p>Covenant signatories in the supply and recovery chains working together to improve design and recycling of packaging.</p> <p>Packaging materials designed for sustainability; recovered and recycled at all points in the supply chain.</p>	<p>70% of Covenant signatories implementing formal policies and procedures in working with others to improve the design, procurement and recovery of packaging.</p>
Reduction in packaging materials being littered.	<p>2. Litter Data — Measure the distribution and types of used packaging materials in litter through an annual national litter survey.</p> <p>3. Litter Mitigation Infrastructure and Systems — Through communication and capacity building encourage innovation in infrastructure and systems that recover used packaging that would otherwise be littered or find its way into the littered waste stream.</p> <p>4. Litter Mitigation Education and Behaviour change — Support the implementation of education and compliance activities to reduce littered packaging in identified hot spots.</p>	<p>Reduced presence of used packaging materials in the littered waste stream.</p>	<p>Annual acquisition of high quality data on the quantity, types and distribution of packaging in the littered waste stream.</p> <p>Continuous reduction in the number of packaging items in litter.</p>

Australian Packaging Covenant

A commitment by governments and industry to the sustainable design, use and recovery of packaging.

Level 15, 28 Freshwater Place, Melbourne, Victoria, 3006
www.packagingcovenant.org.au



Appendix II

COVENANT (NPC + APC) PROJECT FUNDING SUMMARY				PROSPECTIVE	ACTUAL PROJECTS FUNDED		
				APC - Current Pipeline (*)	TOTAL	APC	NPC
				Pending	2005-2012	2011-12	2005-2010
No. Projects				18	128	38	90
Total project value				\$60,163,627	\$126,085,928	\$39,866,600	\$86,219,329
Total APC funding							
Industry				\$4,409,908	\$15,841,838	\$3,705,797	\$12,136,041
Government				\$3,659,908	\$14,791,807	\$2,860,204	\$11,931,603
Total - APC Funding				\$8,069,816	\$30,633,645	\$6,566,001	\$24,067,644
Project Value - By Project Type (\$):				\$	\$	\$	\$
Away from home recycling				1,996,997	12,964,586	3,978,547	8,986,040
C&I				481,000	72,998,157	25,913,500	47,084,657
Data collection				0	1,045,860	150,852	895,008
Glass				8,360,000	19,925,474	2,818,000	17,107,474
Home recycling				130,400	2,151,533	1,004,300	1,147,233
Litter				0	1,565,350	0	1,565,350
Paper/Cardboard				0	1,012,640	529,250	483,390
Plastics				49,112,830	7,391,640	5,031,055	2,360,585
Research & Education				82,400	6,687,592	98,000	6,589,592
Capacity Building				0	308,836	308,836	0
Other				0	34,260	34,260	0
				\$60,163,627	\$126,085,928	\$39,866,600	\$86,219,329
No. Project Type:							
Away from home recycling				6	23	8	15
C&I				1	13	1	12
Data collection				0	22	9	13
Glass				3	22	6	16
Home recycling				1	2	0	2
Litter				0	8	0	8
Paper/Cardboard				0	4	2	2
Plastics				6	11	6	5
Research & Education				1	19	2	17
Capacity Building				0	13	13	0
Other				0	3	3	0
				18	140	50	90
* Projects recommended for APC funding. In principle approval by Industry to fund its share subject to final jurisdictional funding determination.							

Standing Council on Environment and Water

Attachment C: Cost benefit analysis report

December 2011



Executive summary

Used packaging in Australia has a range of impacts such as imposing costs on third parties through litter and land filling and creating opportunity costs due to the embedded resources lost under current disposal methods. These problems were identified and discussed in the *Problem Statement for Packaging* compiled as part of this project.

Based on the market failures identified, a range of options to mitigate the impacts of used packaging were developed. These options are:

Non-regulatory:

- Option 1: National Waste Packaging Strategy

Co-regulatory:

- Option 2A: Co-regulatory Packaging Stewardship
- Option 2B: Industry Packaging Scheme
- Option 2C Extended Packaging Stewardship Scheme

Mandatory:

- Option 3: Mandatory Advance Disposal Fee (ADF)
- Option 4A: Boomerang Alliance (BA) Container Deposit Scheme (CDS)
- Option 4B: Hybrid CDS

Each option involves a range of initiatives or programs to address different problems within the packaging waste stream. Details of initiatives, regulatory arrangements and funding are detailed in the *Packaging Option Report*.

It is possible to combine the non-regulatory options (Option 1) with the co-regulatory (Options 2A, 2C and 2C) or mandatory options (Options 3 and 4), although this is a more complicated exercise than simply adding the costs and benefits of each option given diminishing marginal returns.

The *Problem Statement* also identified that recycling in Australia is already at relatively high levels, particularly for at home recycling. This means that further gains in increasing recycling will come at increasing cost. In other words, linear rates of increases in both the participation and recycling effort cannot be expected. Therefore, it is necessary to make trade-offs between the cost of a given option and the benefits, particularly the reduction in litter and increase in recycling, it could achieve. A Cost Benefit Analysis (CBA) has been conducted to assess these trade-offs and compare- indicative costs and benefits of each option. This report presents the assumptions and results of the CBA. The report has been prepared by PwC and Wright Corporate Strategy (WCS) based on advice provided by the Standing Council on Environment and Water (SCEW) Working Group (WG) and Packaging Waste Senior Officers Oversighting Group (SOOG).

A range of assumptions regarding the costs and benefits of each option have been made and are summarised in this report. The CBA compares each option relative to a 'business as usual' scenario (the base case). Economic costs and benefits will be measured from the perspective of society as a whole and where possible, they will be monetised and discounted to convert them to their net present value (NPV). To do this, the following key assumptions and estimates are required.

Table ES.1: Key assumptions and estimates

	Assumption type	Assumption
General assumptions	Base year of appraisal	2011
	Evaluation period	25 years ¹
	Real discount rate	7%
Projections	Consumption projections	Same for all options and based on historical growth of packaging consumption relative to population growth.
	Recycling projections	Recycling projections are based on the initiatives of each option and the maximum recycling rate that is considered feasible.
	Litter projections	Due to the lack of data on litter, a method to project litter under each option was developed which examines the 'packaging available to be littered'.
	Landfill projections	Landfill projections are iterated from the consumption and recycling projections
Cost assumptions	Scheme design and implementation costs	Regulation design / implementation costs, government participation costs and communications costs.
	Scheme operation	Government costs to administer regulations, scheme administration costs, scheme initiatives and infrastructure.
	Scheme compliance	Reporting and labelling costs.
Benefit assumptions	Use values	Market value of resources, avoided regulatory costs, avoided landfill externalities, avoided operating costs of landfill, avoided costs of mixed waste contamination and avoided costs of litter clean up.
	Non-use values	Society's willingness to pay for increased recycling.

There are already packaging recycling levels of 62.5% and any change from this will require cost outlays. The CBA allows us to compare the potential recycling levels against estimates of the likely costs that will be incurred by government, industry, households, businesses and other stakeholders.

Option 2A is the only option with a positive NPVs and BCRs of greater than 1 meaning that the benefits of this option are greater than the costs when non-use values are excluded. All other options have negative NPVs and BCRs meaning that the costs are greater than the benefits when non-use values are excluded. Options 2B has the second highest BCR and NPV, with a BCR of 0.91. Options 2C and 3 have the highest benefits, however also entail the greater costs than Options 1, 2A or 2B. Options 4A and B have relatively high benefits, however also have the greatest costs resulting in the lowest NPV and BCR of the options.

¹ All options are evaluated over the same 25 year period (2011-2035). This represents the longest evaluation period of all the options (Options 4A and 4B) as measured by 20 years from the first year of operation (2016).

Table ES.2: Results of CBA based excluding non-use values (\$2011 millions, discounted)

		Option 1 National Waste Strategy	Option 2A Co-reg Stewardship	Option 2B Industry Scheme	Option 2C Extended Stewardship	Option 3 Mandatory ADF	Option 4A Boomerang CDS	Option 4B Hybrid CDS
Costs	\$millions	\$311	\$258	\$554	\$984	\$981	\$2,125	\$2,471
Benefits	\$ millions	\$262	\$304	\$503	\$786	\$786	\$710	\$710
NPV	\$ millions	-\$49	\$46	-\$51	-\$198	-\$195	-\$1,414	-\$1,761
BCR	Number	0.84	1.18	0.91	0.80	0.80	0.33	0.29

Note: Real discount rate of 7% and evaluation period of 25 years (see table ES.1 for summary of general assumptions).

The table below summarises the key factors driving the results of the CBA, which include:

- Option 1 and 2A are relatively low-cost options, while Options 4A and 4B are relatively high cost options. This is driven by the higher household participation costs and scheme initiatives/infrastructure costs of Options 4A and 4B relative to other options. A CDS moves from a well understood and utilised, centralised kerbside recycling system offering substantial coverage to a decentralised system requiring significant behavioural change
- All options involve an overall increase in recycling by 2035, with Options 2C and 3 having the highest overall recycling rate in 2035 (4.5 million tonnes) and Options 4A and 4B having the highest beverage container recycling rates in 2035 (1.1 million tonnes).

Table ES.3 Summary of key factors driving the results of the CBA

Option	Costs (\$2011, PV, millions)	Benefits (\$2011, PV, millions)	2035 packaging recycling quantity (million tonnes)	2035 litter quantity (tonnes)	2035 landfill quantity (tonnes)
Option 1	\$311	\$262	4.22	30,300	956,000
Option 2A	\$258	\$304	4.20	31,000	977,000
Option 2B	\$554	\$503	4.26	28,900	915,000
Option 2C	\$984	\$786	4.50	21,700	689,000
Option 3	\$981	\$786	4.50	21,700	689,000
Option 4A	\$2,125	\$710	4.31	28,400	867,000
Option 4B	\$2,471	\$710	4.31	28,400	867,000

Table ES.2 presents the results of the analysis excluding non-use values. This analysis estimates a net benefit to society of up to \$46 million (2011, PV) for Option 2A to a net cost to society of \$1.7 billion (2011, PV) for Option 4B.

An additional measure of the increased value of recycling as a result of the options is the willingness to pay for recycling (incorporating non-use values), although the extent to which there is double counting of benefits of the use value benefits is unknown. Households place a value on increasing recycling that, to an unknown extent, includes the value of the embedded resources in recycled goods and a range of other 'non-use' components. These non-use components that lead households to value recycling could include the environmental benefits or a feeling of civic duty.

In 2010 PwC was commissioned by the EPHC to undertake a study of households' willingness to pay (WTP) for recycling. In the study it was found that households were willing to pay on average \$2.77 per year for every 1% increase of packaging recycled above current levels of tonnes.²

² PwC, 2010. *Estimating consumers' willingness to pay for improvements to packaging and beverage container waste management.*

The table below presents the present value of the willingness to pay benefits estimated using the 95% confidence interval lower bound of \$2.19 and upper bound of \$3.77 (in addition to the core point estimate of \$2.77). A 95% confidence interval means that there is a 95% level of confidence that the true, average value lies within this range.³

This analysis estimates that the present value of the willingness to pay benefits ranges from \$233 million for the lower bound estimate of Option 2A to \$1.2 billion for the upper bound estimate of Options 2C and 3.

Table ES.4: Summary of recycling willingness to pay benefits (incremental to base case, \$millions, PV)

		Option 1 National Waste Strategy	Option 2A Co-reg Stewardship	Option 2B Industry Scheme	Option 2C Extended Stewardship	Option 3 Mandatory ADF	Option 4A Boomerang CDS	Option 4B Hybrid CDS
Lower confidence interval	PV	\$234	\$233	\$422	\$689	\$689	\$465	\$465
Point estimate	PV	\$296	\$295	\$534	\$871	\$871	\$588	\$588
Upper confidence interval	PV	\$403	\$402	\$727	\$1,186	\$1,186	\$801	\$801

It is potentially misleading to include both estimates of the willingness to pay for increased recycling and the use value benefits given the possibility of double counting (i.e. if it was true that households considered market values of packaging materials when estimating their willingness to pay). It is not possible to disaggregate this WTP value into the use (i.e. the market value of materials) and non-use values of recycling, so the extent of this potential double counting is indeterminate. As such, it will be necessary for decision makers to make a judgment as to whether it is reasonable to expect that the society's willingness to pay for increased recycling (excluding any double counting) are likely to exceed the net cost estimated in Table ES.2 based on the market value of materials alone.

As well as placing a value on increasing recycling, society places a value on reducing litter. The 2010 PwC study conducted analysis of the extent to which households value decreases in litter. However, it was not possible to reliably include these WTP for reductions in litter in the CBA. This is because households were asked about their willingness to pay for a reduction in litter, but were not given units of measurement. It is therefore not known whether people were thinking about the number of littered items, their volume, weight, visual impact, environmental impact or some other measure when valuing litter reduction.

There are also likely to be 'co-benefits' associated with increased recycling and reduced litter of non-packaging products as a result of the proposed packaging options. These co-benefits could arise from the use of CDS collection infrastructure, increased awareness of recycling/litter more generally and reduced contamination of kerbside recycling. However, the complexity of quantifying these impacts in the tight timeframes associated with the Consultation RIS (especially given that there may also be additional costs required to realise these co-benefits which would also need to be quantified) has meant that these potential benefits have been discussed qualitatively.

³ *Ibid.*

4.6

South AustraliaAt a Glance

The overall average number of items per 1,000m² across all of the 151 sites surveyed within SA during the counts in the year of 2011/12 was 57, while the overall average estimated volume per 1,000m² was 5.53 litres.

The number of litter items per 1,000m² represents a marginal increase from the previous two years (up from 55 items in 2010/11 and 54 items in 2009/10), the same as 2008/09 (57 items) but lower than other previous monitors (down from 68 items in 2007/08, 61 items in 2006/07 and 60 items in 2005/06). The current year's volume of 5.53 litres per 1,000m² estimate represents a marginal increase from the 2010/11 (up from 5.36 litres) but is lower than all other previous years (7.13 litres in 2009/10, 8.02 litres in 2008/09, 9.55 litres in 2007/08, 11.08 litres in 2006/07 and 7.23 litres in 2005/06).

In South Australia the most littered sites were generally retail sites, they were associated with a larger number of litter items per 1,000m², however, they only contributed low volumes of litter to the litter stream. Industrial sites and car parks were associated the largest estimated volumes per 1,000m², and they also contributed an above average number of litter items per 1,000m².

Cigarette butts remained the most frequently identified litter item across all sites in South Australia during the 2011/12 counts, with 25 butts per 1,000m² (up from 23 butts in 2010/11, 21 butts in 2009/10, 19 butts in 2008/09, but down from 26 butts in 2007/08, the same as 2006/07 and up from 24 butts in 2005/06). Cigarette butts however, were associated with only a very small proportion of the overall litter volume (0.003 litres per 1,000m²).

Plastic litter objects contributed the largest amount of volume to the litter stream, adding 1.41 litres of volume per 1,000m², marginally higher than the recorded plastic litter volume in 2010/11 (1.31 litres) but lower than all other previous monitors. Paper/ paperboard objects contributed the second largest volume to the litter stream, with 1.28 litres of volume per 1,000m²,

At a Glance

The overall average number of items per 1,000m² across all of the 151 sites surveyed within Victoria during the counts in the year of 2011/12 was 36, while the overall average estimated volume per 1,000m² was 3.67 litres.

The number of litter items identified per 1,000m² is lower than previous counts (down from 39 items in 2010/11, 50 items in 2009/10, 43 items in 2008/09 and 48 items in 2007/08, 80 items in 2006/07 and 71 items in 2005/06). The current year's volume per 1,000m² also decreased in line with the lower count (down from 3.99 litres in 2010/11, 4.91 litres in 2009/10, but up from 2.87 litres in 2008/09 and down in comparison to 4.19 litres in 2007/08, 7.74 litres in 2006/07 and 7.87 litres in 2005/06).

The most littered sites surveyed within Victoria per 1,000m² were retail sites, industrial sites, beaches and shopping centres. Retail sites and beaches contributed large numbers of litter and moderate volumes of litter, industrial sites were associated with large volumes of litter and large numbers of litter items, while retail sites contributed large numbers of litter items and lower volumes of litter to the litter stream.

Cigarette butts were the most frequently identified item across all sites in VIC, with 19 butts per 1,000m² recorded in annual figures for 2011/12 (up from 18 butts in 2010/11, but lower than those recorded for all other previous monitors). Cigarette butts were however, associated with only a very small proportion of the overall litter volume (0.002 litres per 1,000m²).

Plastic litter objects contributed the largest amount of volume to the litter stream, and were associated with 1.52 litres of volume per 1,000m², up from the plastic litter volume recorded in 2010/11 (1.05 litres). Paper/ paperboard objects contributed the second largest volume to the litter stream, with 0.84 litres of volume per 1,000m² lower than the recorded paper/ paperboard litter volume in 2010/11 (1.15 litres).

National Packaging Covenant Council

Packaging data collection methodologies

Final



April 2009

CONTENTS

1	Introduction.....	1
2	Paper and cardboard.....	2
	2.1 Data collection methodology.....	2
	2.2 Data collection flow chart.....	4
	2.3 Summary of data coverage.....	5
3	Glass.....	6
	3.1 Data collection methodology.....	6
	3.2 Data collection flow chart.....	7
	3.3 Summary of data coverage.....	8
4	Plastic.....	9
	4.1 Data collection methodology.....	9
	4.2 Data collection flow chart.....	11
	4.3 Summary of data coverage.....	12
5	Steel.....	13
	5.1 Data collection methodology.....	13
	5.2 Data collection flow chart.....	15
	5.3 Summary of data coverage.....	16
6	Aluminium.....	17
	6.1 Data collection methodology.....	17
	6.2 Data collection flow chart.....	18
	6.3 Summary of data coverage.....	19

1 Introduction

The National Packaging Covenant Council has a target to increase the recycling rate for packaging to 65% by 2010. The National Packaging Covenant Council (NPCC) is responsible for the collection of packaging recycling data and reporting against this target.

The NPCC has been working to improve the quality and accuracy of the data. In order to identify and evaluate opportunities for further improvement, it is important that the data collection methodologies and the associated terminology are documented clearly and concisely.

A number of the datasets within the various packaging material types are based on estimates, as actual data is not collected and is therefore unavailable. In these cases, any estimates are based on information provided by relevant industry experts and verified or supplemented where possible using independent sources such as the Australian Bureau of Statistics (ABS).

For each material type there is a Data Collection chart to indicate the flow of material from consumption through to disposal and recycling. Although not shown on these charts, it must be acknowledged that Litter is a disposal destination for some packaging materials.

This document has been produced to explain how packaging data is collected and the respective material recycling rates calculated and will be the basis for ongoing improvements as deemed necessary by NPCC.

The process of documenting the methodology is completed however the data working group of the Covenant will continue to investigate the issues such as plastic film and non food aluminium packaging and consider any reasonable options to improve data around these and other packaging data.

Definitions for terms used throughout this report

- *Packaging - means all packaging products made of any material, or combination of materials, for the containment, protection, marketing or handling of retail consumer products. This also includes distribution packaging*
- *Distribution Packaging - means packaging that contains multiples of products (the same or mixed) intended for direct consumer purchase.*
- *Consumption – means the amount of packaging on products sold to consumers in Australia.*
- *Recycling - means to recover the product and use it as a raw material to produce another product.*
- *Recovered - means used packaging materials that have been separated from the waste stream for reprocessing and used in the manufacture of consumer packaging or other products.*
- *Reprocessing – means the process of converting waste material into reusable raw material.*
- *Pre-consumer waste – means scrap off-cuts and off-specification material from manufacturing that are not used by the consumer and which is collected for reprocessing at a different site.*

2 Paper and cardboard

Paper and cardboard packaging data is collected and reported on a financial year basis. Paper and cardboard packaging consumption and recycling is measured as part of a broader project covering all paper and cardboard applications. This work has been undertaken each year, since 1989, by IndustryEdge.

IndustryEdge is a leading provider of market intelligence on the pulp and paper industry throughout Australasia and works closely with both local and overseas manufacturers.

Amcor and Visy are the only major reprocessors and manufacturers of paper and cardboard packaging in Australia. The majority of products exported with paper and cardboard packaging are primary produce and wine.

Paper and cardboard packaging makes up the greatest proportion of all packaging and is inherently complex due to the broad range of grades used. Considerable resources have been invested into developing a methodology that produces reliable and accurate data.

2.1 Data collection methodology

2.1.1 Paper and cardboard packaging consumption

Paper and cardboard packaging consumption includes only those grades used for packaging, as listed in Table 2-1 below.

Table 2-1 Paper packaging grades included in consumption calculations

Material	Examples
Kraftliner	Primarily cardboard boxes (exterior)
Multiply / whitetop	Primarily cardboard boxes (interior)
Corrugated medium	Cardboard boxes
Coated packaging	Cereal boxes, aseptic pkg (eg. juice boxes)
Sack kraft	Paper sacks eg. cement, milk powder, flour.
Other kraft paper and board	Cardboard boxes, industrial wrapping
Other uncoated paper and board	Wine carton dividers, low value containers

The consumption of paper and cardboard packaging includes:

- The imports and local production of the materials included in Table 2-1
- An estimate of the packaging on imported goods.

Paper and cardboard packaging on imported products is calculated using a comprehensive method that was developed by IndustryEdge for the 2002–03 financial year. This baseline figure was arrived at in consultation with manufacturing and retail industry experts and has formed the basis for paper and cardboard packaging on imported products for subsequent years, adjusted according to a number of factors. These factors include:

- inflation
- reported levels of discretionary expenditure
- the value of imported consumables
- buying power of the Australian dollar
- input from manufacturing and retail industry experts

The amount of packaging on exported goods is estimated by IndustryEdge, in consultation with the major manufacturers, to be 5% of total local packaging consumption in each year.

2.1.2 Paper and cardboard packaging recycling

The recycling figure includes cardboard boxes and carton board only. White paper, magazines and newsprint are not included. Paper and cardboard packaging recycling includes both locally recycled material and material exported for recycling.

Locally recycled paper and cardboard packaging is based on the actual usage of recovered material as reported by Amcor and Visy.

Exports of recovered paper and cardboard packaging are provided by Amcor and Visy, and verified and supplemented using Australian Customs Service export data, provided by the Australian Bureau of Statistics (ABS).

2.2 Data collection flow chart

The material flow of paper and cardboard packaging from consumption through to disposal and recycling are presented in Figure 2-1.

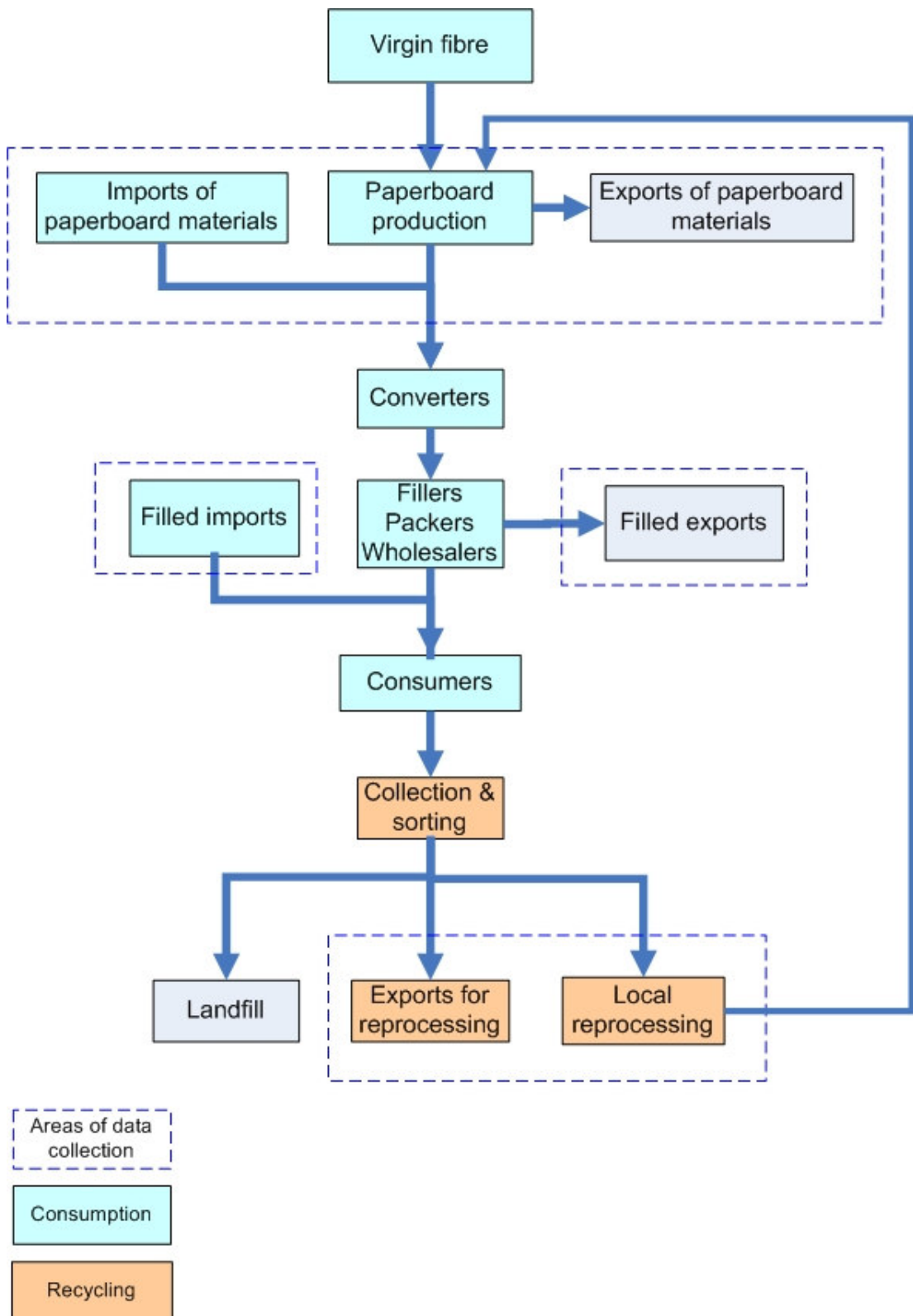


Figure 2-1 Paper and cardboard packaging material flows

2.3 Summary of data coverage

Table 2-2 Summary of data included in paper and cardboard packaging consumption and recycling figures.

Consumption					
Local production	Imported packaging (formed or unformed)	Imported filled product	Exported empty packaging	Exported filled packaging	All Packaging Grades
Yes	Yes	Yes	No	No	See Table 2-1
Recycling					
Local recycling	Exported for recycling	Imported for recycling	Pre-consumer waste	All packaging grades	
Yes	Yes	No	No	See Table 2-1	

Consumption = local production of packaging grades + imports of packaging grades + estimate of packaging on imported goods – exports of packaging grades – estimates of packaging on exported goods.

Recycling = local reprocessing of recovered packaging grades + exports of recovered packaging grades.

The overall **recycling rate** for paper/cardboard is calculated by taking the total amount recycled as a percentage of total consumption.

3 Glass

Glass packaging data is collected and reported on a financial year basis. Owens-Illinois (O-I) and Amcor are the only manufacturers of glass packaging in Australia.

Visy accounts for the vast majority of glass packaging prepared for recycling in Australia. Glass packaging recovered and stockpiled, rather than reprocessed, is not included in the recycling data. Such stockpiles are presently estimated to be in excess of 200 000 tonnes.

3.1 Data collection methodology

3.1.1 Glass packaging consumption

Glass packaging consumption includes:

- Local glass container production
- Imports of empty and filled glass packaging.

The quantity of local production is obtained directly from O-I and Amcor, as is the proportion of glass packaging destined for export. This gives the net local production of glass packaging. O-I and Amcor account for all local glass packaging manufacturing, at five sites around Australia.

Imports of empty glass packaging are calculated from data provided by O-I and ABS, while imported filled glass packaging is based on estimates derived from ABS data only.

O-I and Amcor provide details on exports of empty glass packaging. Exports of filled glass packaging are based on estimates of exports of bottled wine reported annually by the Australian Wine and Brandy Corporation. Therefore any exports of products packaged in glass, other than wine, are not accounted for and will be included in local consumption.

3.1.2 Glass packaging recycling

Glass recycling includes glass packaging that is recycled for local manufacture as well as secondary markets. Glass packaging recovered and stockpiled is not included in the recycling data, until such time as it is reported as being reprocessed and sold to end markets. Recycling does not include non-packaging glass or glass recovery from New Zealand.

The glass recycling figures only include confirmed usage by packaging recyclers and other secondary market users of recovered glass. Recycling data is based on the actual usage of recovered material as reported by O-I and Amcor. Visy also provides independently verified recycling volumes. Sales to confirmed secondary users of recovered glass are provided by Visy as well as other recyclers.

Confirmed secondary markets include :

- Sand/soil substitutes
- Fibreglass
- Reflective paints
- Powders/coatings
- Blasting & Filter media
- Road surfacing

3.2 Data collection flow chart

The material flow of glass packaging from consumption through to disposal and recycling are presented in Figure 3-2.

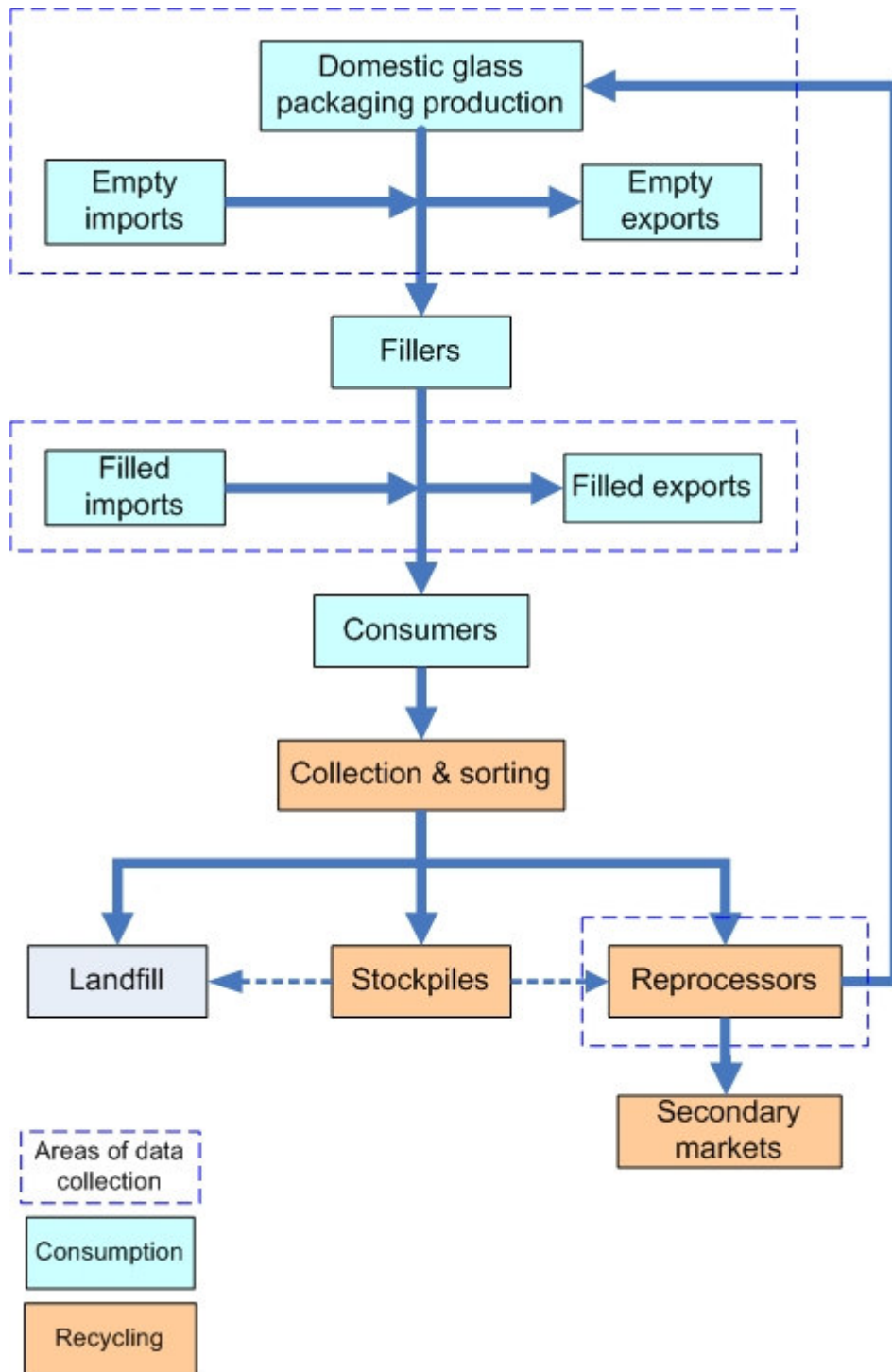


Figure 3-2 Glass packaging material flows

3.3 Summary of data coverage

Table 3-3 Summary of data included in glass packaging consumption and recycling figures.

Consumption					
Local production	Imported packaging	Imported filled product	Exported empty packaging	Exported filled packaging	All packaging types
Yes	Yes	Yes	No	Not wine, but possibly other	Yes
Recycling					
Local recycling	Exported for recycling	Imported for recycling	Pre-consumer waste	All packaging types	
Yes	N/A	N/A	N/A	Yes	

Consumption = local container production + container imports + packaging on imported goods – container exports – packaging on exported goods.

Recycling = glass packaging re-processed for local container production + confirmed secondary markets.

The overall **recycling rate** for glass packaging is calculated by taking the total amount recycled as a percentage of total consumption

4 Plastics

Plastics packaging data is generated and reported on a calendar year basis. Plastics packaging consumption and recycling is measured as part of a broader survey covering all plastics commissioned by the Plastics and Chemicals Industries Association (PACIA). The survey has been undertaken annually by Hyder Consulting since 2002.

The plastics recycling survey covers plastics that are mechanically recycled. Recovery through energy from waste (EfW) is not currently significant in Australia.

4.1 Data collection methodology

Plastics are manufactured from resins and include a number of polymer types as listed in Table 4-4.

Table 4-4 Polymers included in plastic packaging consumption and recycling

Polymer	Plastics code	Common uses
PET	1	Beverage bottles
HDPE	2	Pallets, film, blow moulded containers
PVC	3	Pipe, floor coverings
L/LLDPE	4	Freight packaging, shrink wrap
PP	5	Crates, boxes
PS	6	Industrial packing trays, industrial spools
EPS	6	Waffle pods for under slab building construction
ABS/SAN	7	A range of moulded products
Other plastics	-	-

4.1.1 Plastic packaging consumption

The data for plastics consumption includes:

- local resin production (sales)
- imported resin
- plastic recyclate (local use)
- scrap import,

The data for plastics consumption excludes exported locally produced resin.

Plastics recycling by plastics recyclers are included in consumption if the recyclate is reused locally (in Australia). There are seven major local resin producers manufacturing plastics 1–7, with the exception of ABS/SAN and nylon.

Data on national local production of plastic resin and the export of resin is obtained from Australian resin producers, with the exception of PET resin. Local PET resin production is based upon the estimated manufacturing capacity available in Australia. Local resin producers provide estimates of the packaging/non-packaging resin consumption split. PET packaging manufacturers provide an estimate of PET resin consumption into packaging applications.

Local recyclate consumption data is obtained from plastics recyclers. This data is split according to polymer type, polymer source (state and market sector) and destination (export, local use or internal use).

Data on the importation of plastic resin and scrap plastic is obtained from the ABS. Consumption does not include plastic packaging on imported and exported finished goods, or empty rigid packaging imported for local filling (however this is regarded as negligible).

The import of filled rigid plastic packaging (e.g. PET and HDPE beverage) is not significant relative to the local markets for these types of packaging types. However, this is not the case for some plastic films destined for local packaging applications (e.g. composite films for food packaging and bulk LDPE film for applications such as pallet wrap). While significant quantities of these types of films are manufactured locally, and will be captured in consumption data, unknown, and potentially significant quantities of plastic films (for local packaging operations) are likely to be imported, but are not accounted for in plastics packaging consumption.

4.1.2 Plastic packaging recycling

The plastics recycling rate includes pre-consumer scrap received by local recyclers, and also recovered packaging plastics exported for recycling.

Local plastics reprocessing is calculated from figures provided by local recyclers.

4.2 Data collection flow chart

The material flow of plastic packaging from consumption through to disposal and recycling are presented in Figure 4-3.

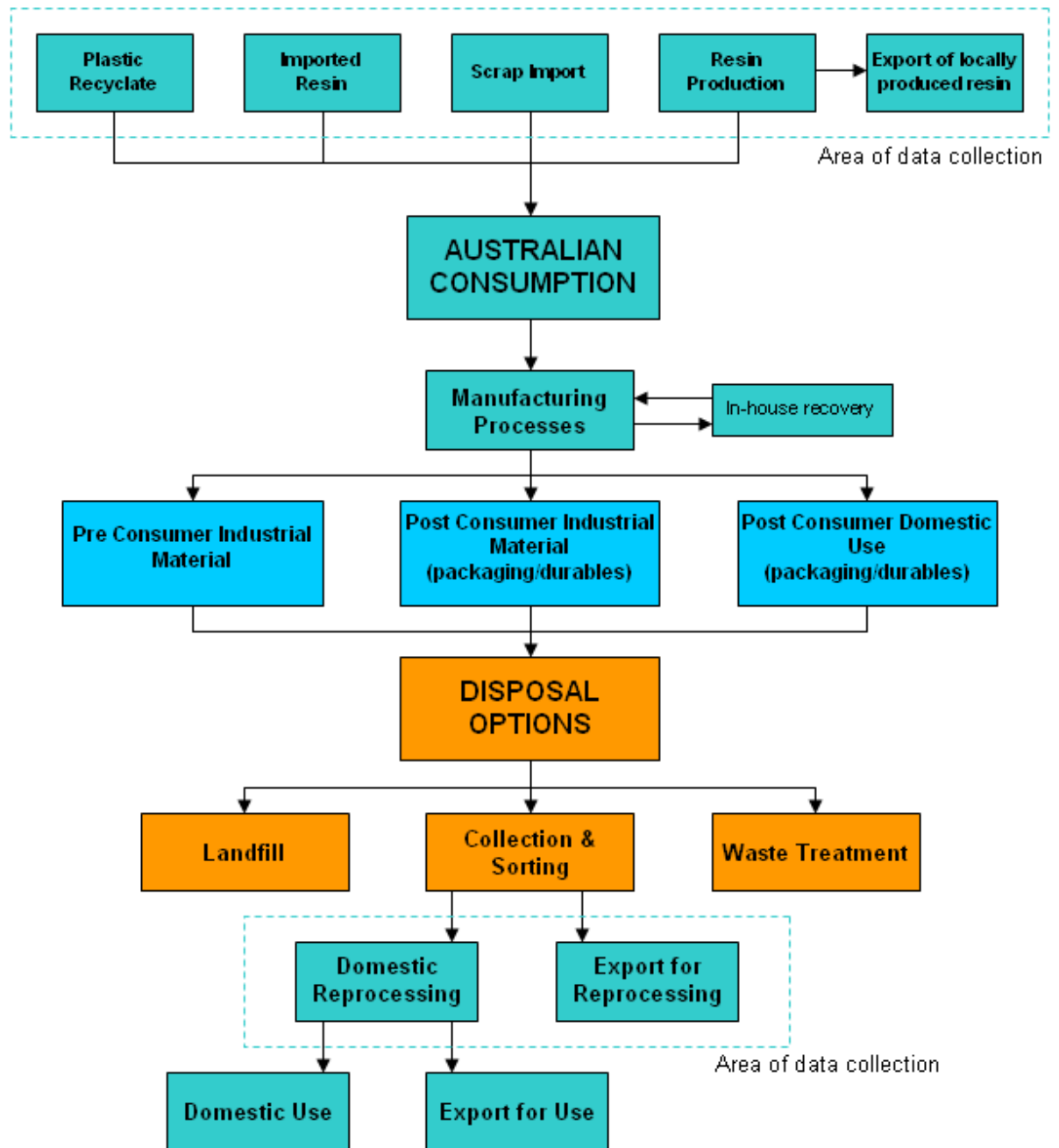


Figure 4-3 Plastic packaging material flows

4.3 Summary of data coverage

Table 4-5 Summary of data included in plastic packaging consumption and recycling figures.

Consumption						
Local pre-consumer waste	Filled product	Imported packaging (formed or unformed)	Imported filled product	Exported empty packaging	Exported filled packaging	All polymer types
Yes	Yes	Yes	No	Yes	Some	Yes
				Small quantities of film may be exported		
Recycling						
Local recycling	Exported for recycling	Imported for recycling	Pre-consumer waste	All polymer types		
Yes	Yes	Yes	Yes	Yes		

Consumption = local resin production (sales) + imported resin + plastic recyclate (local use) + scrap import – export of locally produced resin.

Recycling = locally recycled resin + resin exported for recycling + resin imported for recycling.

The overall **recycling rate** for plastics packaging is calculated by taking the total amount recycled as a percentage of total consumption.

5 Steel

Steel can data is collected and reported on a financial year basis. Impress, Visy and National Can Industries are the major manufacturers of steel cans in Australia.

5.1 Data collection methodology

Data collection includes applications as outlined below. Steel cans with a capacity of 20 litres and above are not included on the basis they are almost entirely going into industrial applications.

Steel packaging types included in the consumption and recycling figures are as follows:

- steel cans with a capacity of less than 20 litres
- paint packaging used in local and light commercial applications
- consumer aerosols
- steel closures (lids)
- steel beverage packaging
- steel can packaging of locally produced food (human and pet)
- A10 food cans (consumer and food service).

5.1.1 Steel packaging consumption

Consumption is calculated as the sum of two components: local steel can manufacture (based on imported tin plated steel sheeting) and imported filled packaging.

The figures for steel can consumption do not account for any packaging exports, either filled or empty. In the absence of verifiable figures it is assumed that all steel cans manufactured in Australia remain in the Australian market. This may contribute to an overstatement of local consumption.

Local steel can packaging manufacture is provided by local steel can manufacturers. Local steel packaging filling line operators provide estimates of line losses. Consumption of locally manufactured steel cans is calculated as the manufacturing volume excluding line losses from filling line operators.

The weight of steel cans entering the Australian market via filled imported food product is established through an analysis of Retail World's Australasian Grocery Guides (Retail World) for the major products sold in the Australian Grocery market in steel cans, and the total market quantity (tonnes) for each product and supermarket surveys.

The total imported weight (identified from Retail World) is divided by packaging size to obtain the number of cans imported per product. Empty cans are then weighed and a packaging to product ratio applied to obtain the weight of imported steel cans.

5.1.2 Steel packaging recycling

All recycling quantities and rates do not include losses from local steel packaging manufacture or losses from steel can filling line operators. Recycling figures include only steel packaging recovered by materials recovery facilities and estimated recovery for councils with over 8,000 households.

MRF (Material Recovery Facility) operators provide the following information:

- total quantity of steel can material recovered by each of their facilities
- sources (council areas) of the steel can material sorted by the MRF
- destination of recovered steel cans (e.g. recycling facility, export, landfill).

Based on industry practice, it is assumed that negligible quantities of steel cans are recovered through scrap metal merchants, but almost entirely through MRFs.

The estimated recovery for councils with over 8,000 households is only for those where the local MRF operator has declined to provide any information.

Steel can filling line operators provide data on the losses and recovery rates that occur during the filling process. They provide:

- the percentage of cans lost during the filling process
- the destination of steel can losses (recovered or landfill).

Data collected is averaged and applied to the full steel can filling market.

5.2 Data collection flow chart

The material flow of steel packaging from consumption through to disposal and recycling are presented in Figure 5-4.

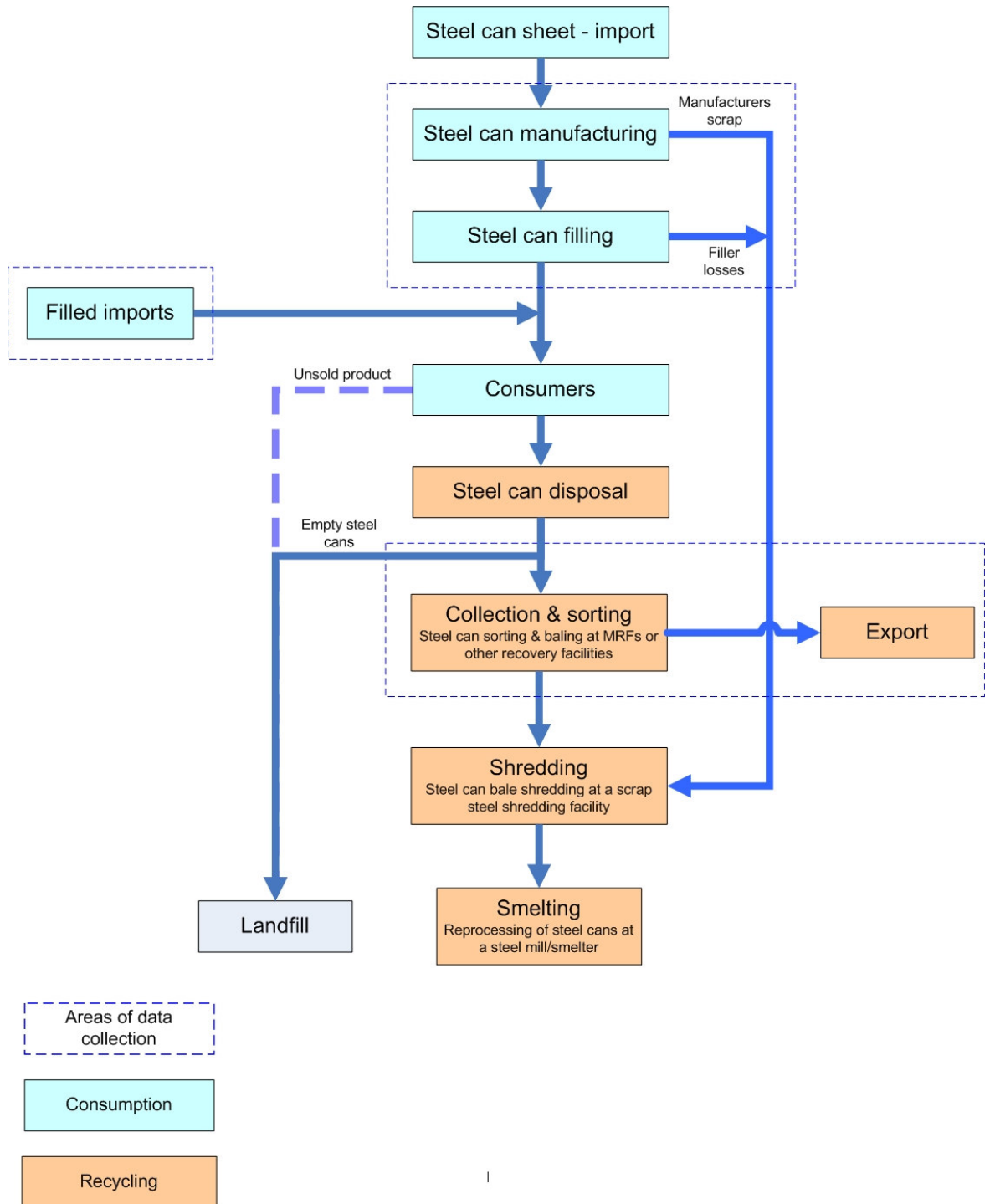


Figure 5-4 Steel packaging material flows

5.3 Summary of data coverage

Table 5-6 Summary of data included in steel can consumption and recycling figures.

Consumption					
Local production	Imported packaging (formed or unformed)	Imported filled product	Exported empty packaging	Exported filled packaging	All packaging types
Yes	Yes	Yes	N/A	Yes	Yes (<20 L)
Recycling					
Local recycling	Exports for recycling	Imported for recycling	Pre-consumer waste	All packaging types	
Yes	Yes	N/A	No	Yes (<20 L)	

Consumption = local steel can production + imported filled products + some exported filled packaging.

Recycling = local recycling + exports for recycling.

The overall **recycling rate** for steel packaging is calculated by taking the total amount recycled as a percentage of total consumption.

6 Aluminium

Aluminium packaging data is collected and reported on a calendar year basis. The data is compiled by the Aluminium Can Group (ACG), an industry body representing the three companies involved in aluminium beverage can production in Australia – Alcoa ARP, Visy and Amcor.

ACG subscribes to AC Nielsen and ABS data and is a member of the Australian Beverage Council.

Amcor and Visy are the only aluminium beverage can manufacturers in Australia.

6.1 Data collection methodology

Aluminium packaging consumption and recycling includes only aluminium beverage cans, and does not include aluminium packaging for other products, such as aerosols. The beverage categories covered in the calculations include beer, soft drink, energy drink, and ready-to-drink alcoholic beverages.

6.1.1 Aluminium can consumption

Aluminium packaging consumption comprises local beverage can manufacture and imported filled cans but does not include filled aluminium beverage cans destined for export.

Local manufacturing figures are obtained from Amcor and Visy. Packaging on imported beverages is based on estimates from sales figures provided by AC Neilson.

The amount of packaging on exported goods is provided by the ABS and is cross-referenced to data provided by Amcor and Visy.

6.1.2 Aluminium can recycling

Aluminium packaging recycling includes aluminium beverage cans recycled for local production as well as recovered cans exported for recycling.

The volume of locally recycled aluminium beverage cans is obtained from all known re-melters in Australia. They are asked to provide data on the total re-melt, and imported and exported aluminium beverage cans.

Export figures are based on ABS data. These figures are cross-referenced against the data provided by re-melters.

Export data does not include aluminium that is exported as 'general aluminium scrap', as it is not currently possible to estimate the proportion that is beverage cans.

6.2 Data collection flow chart

The material flow of aluminium beverage packaging from consumption through to disposal and recycling, is presented in Figure 6-5.

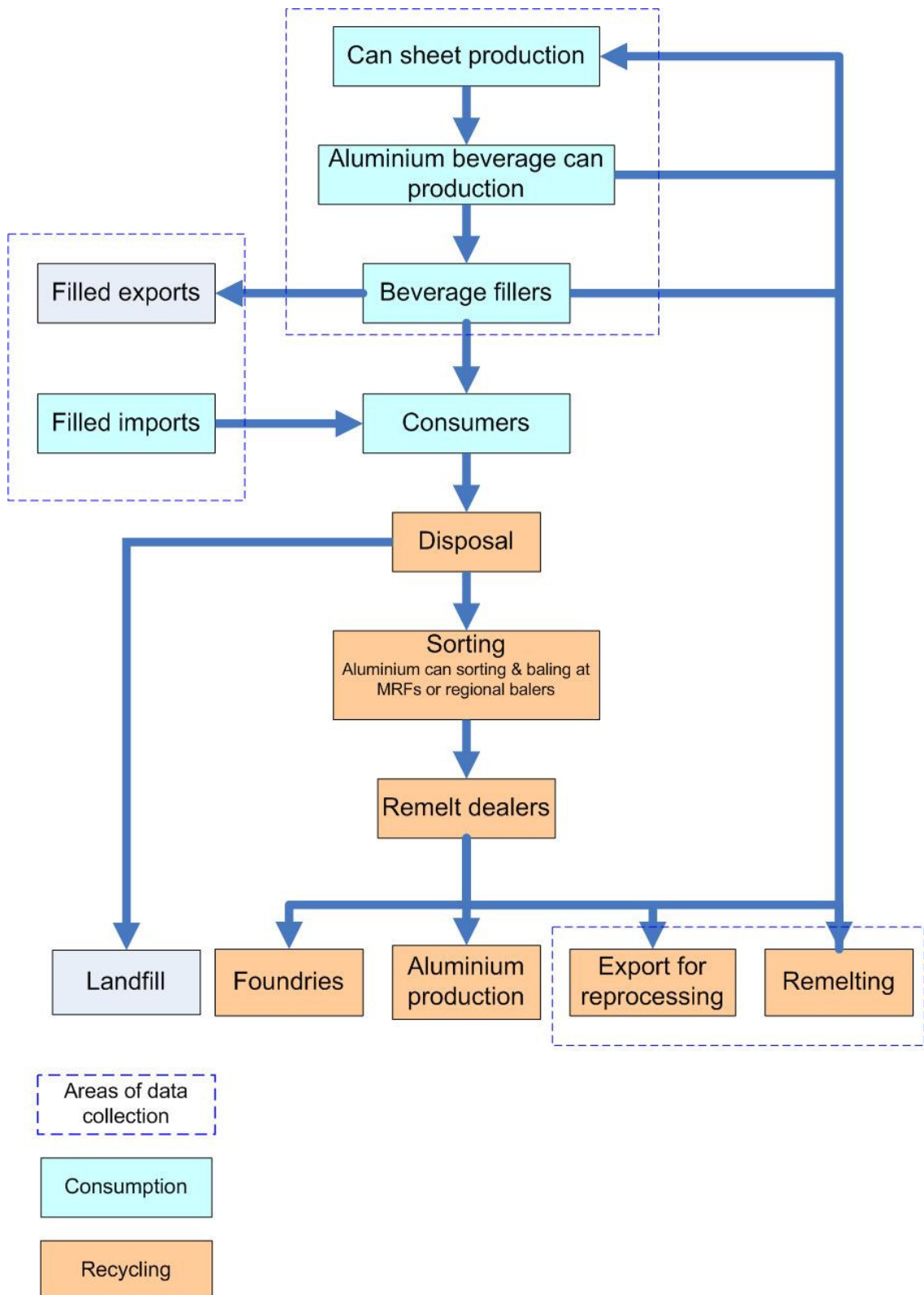


Figure 6-5 Aluminium beverage can material flows

6.3 Summary of data coverage

Table 6-7 Summary of data included in aluminium beverage can consumption and recycling figures.

Consumption					
Local production	Imported packaging formed or unformed)	Imported filled product	Exported empty packaging	Exported filled packaging	All packaging types
Yes	Yes	Yes	NA	No	No (beverage only)
Recycling					
Local recycling	Exported for recycling	Imported for recycling	Pre-consumer waste	All packaging types	
Yes	Yes	No	No	No (beverage only)	

Consumption = local container production + packaging on imported goods – packaging on exported goods.

Recycling = aluminium beverage cans re-processed for local production + exports of recovered aluminium beverage cans.

The overall **recycling rate** for aluminium beverage cans is calculated by taking the total amount recycled as a percentage of total consumption.



Australian Packaging Covenant

within a global perspective



GLOBAL REGULATORY APPROACHES TO PACKAGING & RECYCLING

The **Australian Packaging Covenant provides a harmonised NATIONAL FRAMEWORK**, where industry and all levels of government collaborate. It encompasses all packaging materials, for any packaging use, through a variety of collection and recovery services at household, business and other away-from-home places, starting with sustainable packaging design. EU UK and USA do not take this approach.

AUSTRALIA	EUROPE	UK	USA
<p>National Waste Policy to 2020, esp Strategy 3. Product Stewardship Act 2011. Principles of Best Practice Regulation (COAG Commonwealth of Australian Governments).</p>	<p>European Union. EU Waste Framework Directive 2008, for implementation at community level, ongoing targets to be agreed by 2013. EC Packaging and Packaging Waste Directive 2004. EC includes the European Single Market which provides legal basis for EC Packaging Directive.</p>	<p>European Union. The implementation of the EU Waste Framework Directive will bring UK obligations by 2015, although implementation across the UK will vary. EC Packaging and Packaging Waste Directive 2004. Advisory Committee of Packaging (ACP) (constituted March 2010, operating since 1996) with members from each element of the supply chain & moving from a technical focus on packaging to a delivery focus on reduction & recovery to 2020; C'tee has made recommendations to government (DEFRA) including targets for 2020.</p>	<p>Environmental Protection Agency (EPA) produces statistical reports on recovery and recycling activity annually.</p>
<p>Australian Packaging Covenant, a co-regulatory arrangement between industry and government commenced 1999 as NPC, revised 2005, revised as APC commencing 1 July 2010 (open-ended). A centralised, nationally co-ordinated approach, administered by industry under a service agreement with governments, encompassing all consumer packaging materials and use.</p>	<p>EC Packaging and Packaging Waste Directive commenced 1994, revised 2004. Targets only, no centralised approach. Mandatory determinations at country level.</p>	<p>Producer Responsibility Obligations (Packaging Waste) Regulations 2007 cover recycling and recovery. Statutory producer responsibility, which places a legal responsibility on businesses in the supply chain to share responsibility & contribute proportionally to meet financial obligations - companies can choose to do this individually or through a compliance scheme (PRN and PERN); targets for 2013-17 have been set.</p>	<p>Most organisations and interest groups focus on a single material type, packaging format or recovery regime eg industries within glass, plastics, paperboard, collaborate on initiatives; a number of organisations work across packaging materials - SPC, Earth911, Ameripen (see below).</p>
<p>Encompasses all collection methods & processes - household, commercial & industrial and away-from-home places (shopping, sporting & recreation places & events). Initial focus on household kerbside has resulted in a solid foundation for recycling initiatives such that 97% of Australian households have access to kerbside recycling, current recycling focus on away-from-home services; as well as litter initiatives. Provides a national co-regulatory framework for industry & governments at all levels (commonwealth, state, territory & local) to work collaboratively on implementation of solutions.</p>	<p>For specified collection processes only eg CDS (container deposit schemes), ADF (advanced disposal fees), PRS (producer responsibility schemes). Mandatory schemes administered by individual country's government or industry (Extended Producer Responsibility EPR).</p>	<p>44 compliance schemes registered in 2011; plus a PAYT (pay as you throw) scheme - a fee based on the waste generated at local level; some drop off schemes but no CDS. Packaging waste is organised at local level (433 local authorities in 2008, 403 in 2011) - where service levels, materials collected, bin types, frequency of service, collecting & sorting of waste, etc, is determined by provider of service. 94% of UK population has access to some form of kerbside recycling but not a consistent approach.</p>	<p>PAYT measures in place in some states - some 26% of communities; some CDS initiatives. Waste has been traditionally managed at local level, each community has developed different priorities and practices, resulting on conflicting infrastructures, interests, and incentives; considerable single stream with sorting at local MRF. Current infrastructure a barrier to effective recovery systems.</p>
<p>Strategically driven by 4 principles - fit-for-purpose, resource efficiency, low-impact materials, resource recovery; and Includes 3 goals - design (packaging optimised), recycling & litter, product stewardship. Achieved through utilisation of Sustainable Packaging Guidelines, by collective and individual actions.</p>	<p>Two goals: 1. Aims to harmonise national measures: to reduce the overall impact of packaging on the environment & to bring national measures closer together in order to remove obstacles to trade & distortions of competition; 2. Packaging must be suitable for re-use, material recycling, energy recovery, or composting.</p>	<p>Advisory Committee on Packaging (ACP) has identified six key items in their 2011 annual report to government - optimising packaging, optimal recovery of material, funding transparency, systems for delivering improvement, advice & monitoring of legislation, communications.</p>	
<p>National targets for overall recycling. APC actively seeks to measure specific materials to ensure appropriate management.</p>	<p>EC targets. Each individual country sets own targets for specified materials under specific schemes.</p>	<p>EC targets. Advisory Committee on Packaging have made recommendations to government for 2020 UK targets.</p>	<p>A draft Bill was released in June 2012 that could significantly change how recycling data is recorded by the EPA - whilst this information is for analysis & understanding, it does not give any authority to regulate recycling goals, energy use goals, or recycling and collection programs.</p>
	<p>EUROPEN, the voice of industry for packaging and the environment, encourages its members (currently 41) to take their share of responsibility in minimising the environmental impacts of packaging and packaging waste.</p>	<p>Courtauld Commitment (WRAP) - innovative industry agreement to reduce packaging waste, reduce food waste & increase recycled content in packaging - 53 signatories at March 2012, with Dec 2012 targets set.</p>	<p>Sustainable Packaging Coalition, a project of GreenBlue, is an industry working group dedicated to a more robust environmental vision for packaging ie a true closed loop system for all packaging. Earth911 has partnerships working closely with decision-makers to strategize direction for product stewardship and address specific challenges facing their members. Ameripen proactively influences public and policy issues related to packaging and the environment.</p>

A global approach to packaging is hampered by differing emphasis on different stages in the packaging life-cycle, with associated variations in policy and legislative frameworks. To support global discourse and in an effort to drive global change, a revised version of The Global Protocol on Packaging Sustainability 2.0 (GPPS) was released in September 2011, to provide a set of common definitions and principles for packaging (consisting of framework and measurement system), in the context of environmental, economic and social impacts of packaging.

WASTE HIERARCHY

The Waste Hierarchy has evolved from the three R's of the seventies - reduce, re-use, recycle.

Advances of the past three decades have brought more stages and more controlled options within each of those steps; grouping of stages is common.

Whilst the model below represents a common view across Australia, the EU UK and USA have created their own models and terminology, reflecting their specific views for treatment of packaging waste.

EUROPE	5 STAGES	prevention, reuse, recycling, recovery, disposal
UK	5 STAGES	prevention, preparing for reuse, recycling, other recovery, disposal
USA	4 STAGES	source reduction & reuse, recycling /composting, energy recovery, treatment & disposal

Solutions for treatment of waste options must respond to financial, social, environmental and management considerations.



TOWARDS C2C & SUSTAINABILITY

Sustainable Approach – highly integrated, cradle-to-cradle (C2C)

Product Stewardship – life-cycle-analysis (LCA), collaboration & partnerships

Management System – moving towards better integration

Proactive Compliance – programs introduced without co-ordination

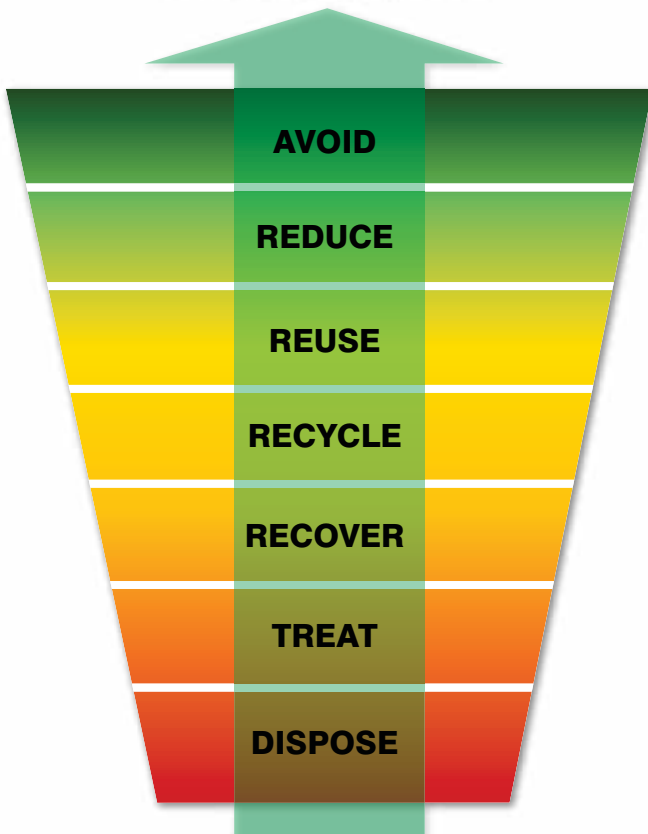
Reactive Compliance – awareness & reaction, upwards reporting

End-of-Life – unprepared, some collection & diversion

A Sustainable Approach creates a framework for decision-makers to consider a broad range of factors - the effect of the entire life cycle of packaging from acquisitions of raw materials, manufacture, transportation and consumption, through to disposal and/or reuse and recycling for future packaging and other products eg energy from waste (EfW).

WASTE HIERARCHY MODEL

MOST PREFERABLE



LEAST PREFERABLE



RECYCLING & RECOVERY

Australia has increased its overall recycling rate each year since targets were set in 2003, by utilising a collaborative and flexible national approach that sets targets, identifies and addresses weaknesses in infrastructure, services, education and research and actively seeks to measure performance against targets annually.

In Europe, UK and USA, the use of terms 'recovery' and 'recycling' are used interchangeably, and inclusions vary, making it difficult to provide an accurate comparison.

TARGETS & ACTUALS	AUST.	AUST.	EUROPE	EUROPE	UK	UK	USA	USA
	Targets & Year	Actuals & Year	Targets & Year	Actuals & Year	Targets & Year	Actuals & Year	Targets & Year	Actuals & Year
Current Recycling/ Recovery Targets	70% in 2015 ¹		60% ongoing ²		70.8% in 2015 ⁵		NO TARGETS	
	overall recycling target for household, business & away-from-home		recovery target		recycling target for obligated business			
2010 Recycling Targets & Actuals	65% in 2010	62.5% in 2010	60% in 2010	NYP ³	60% in 2010	60.7% in 2010 ⁶	NO TARGETS	48.5% in 2010
		57.2% in 2008	55% in 2008	67% / 51% in 2008 ⁴	60% in 2008	62.0% in 2008		44.9% in 2008
	BASELINE	39.0% in 2003		57% in 2003		46.8% in 2003		39.6% in 2003
Specific Targets & Actuals	NO TARGETS						NO TARGETS	
Glass		49.3% in 2011	60% in 2008	69% / 48% in 2008	60% in 2010	60.7% in 2010		33.4% in 2010 ⁷
PaperBoard		75.3% in 2011	60% in 2008	82% / 73% in 2008	60% in 2010	81.9% in 2010		71.3% in 2010
Plastics		37.5% in 2011	22.5% in 2008	31% / 27% in 2008	22.5% in 2010	24.1% in 2010		13.5% in 2010
Aluminium		64.0% in 2011			50%	40.9%		35.8% in 2010
Steel		34.2% in 2011			15%	59.3%		69.0% in 2010
Metal (steel & alum comb)		NA	50% in 2008	70% / 49% in 2008	50% in 2010	55.9% in 2010		
Wood	Not Included in APC	NA	15%	41% / 24% in 2008	15% in 2010	75.4% in 2010		23.1% in 2010

¹ Australia measures recycling rates as a percentage of total consumption ie households, business & away-from-home collections; there are no separate statistics for recovery; ² EU 2010 target to be maintained whilst newer EU members 'catch up' to older member actuals; 60% target comprises recycled 20%, composted 17% and WtE 20% combined as recovery target; ³ EU 2010 Targets are reported as 'largely reached or surpassed by older members', but detail not yet published; ⁴ Two figures in Europe represent two groups being measured, older (1994) & newer (2004) EU members working towards different targets; ⁵ UK recycling targets apply only to obligated businesses in packaging supply chain for 2013-2017; overall national recycling targets will be lower according to ACP recommendations to Parliament (which are not yet announced); ⁶ UK 2010 obligated business result of 60.7% includes recycling, reuse & composting (incl wood) for obligated business; 2010 recycling rate for general household, business & public place (local authority) was 40.1%; ⁷ USA specific material percentages above are packaging recovery rates as reported to EPA (statements within report suggest recycling rate is 3-5% lower);

A lack of global consistency in definitions makes quantitative comparative analyses of data sets difficult. In addition, data collection methodologies vary with no single standard or comprehensive system to measure and monitor performance. Measuring a broad recovery rate masks specific recycling efforts as recycling composting and incinerator stages can be reported as one recovery figure. Compounding the problem are some simpler aspects - mass vs volume, imperial ton vs metric tonne, tonnes delivered to a re-processor vs output from the re-processor, with no reporting of what happens to the resultant un-processed packaging (landfill or EfW).

ENERGY-FROM-WASTE or WASTE-TO-ENERGY

	AUSTRALIA	EUROPE	UK	USA
ENERGY FROM WASTE (EFW & WtE)	Australia currently does not have a nationally developed EfW scheme for packaging waste.	EU Packaging Directive includes a 20% EfW target, augmenting their recovery & recycling initiatives EU Waste Incineration Directive (WID) in place; incineration seen as part of recovery in EU. EU Waste Framework 2008 (5 stages). 420+ WtE plants in operation across 25 EU member states (out of 27) in 2011.	As for EU Directive. The Waste (England and Wales) Regulations 2011 (5 stages). 8.6% of municipal solid waste (MSW) was reported as combusted for energy recovery in 2010. however this includes household & garden waste, plus other general waste from parks and other places; packaging is reported as being around 30 - 40% of the MSW.	11.7% of MSW was combusted for energy recovery in 2010; however this % includes food scraps, yard trimmings & other durable/non-durable goods. Containers & packaging account for 30.3% of total combusted.



AUSTRALIA'S APPROACH

The co-regulatory model of the APC where governments and industry work together, acknowledges that product stewardship of consumer packaging requires integrated thinking. It recognises that responsible behaviour is required, individually and collectively. It establishes targets to measure performance.

The APC with its **national framework** takes a holistic view, where infrastructure, services, education and research provide platforms to achieve the **APC Vision** – *a community that manufactures, uses, distributes and recovers packaging materials in a sustainable way.*

Taking an **integrated approach** to value recovery can bring order and coherence to fragmented material flows. This integrated approach looks at all materials, packaging formats, and end-of-life options both within and across supply chains and recycling platforms; this approach addresses specific Australian conditions like the tyrannies of distance and population spread.

Substantial **project funding** is contributed towards solutions developed in response to identified problems. Over \$30M has been contributed to past and current projects worth more than \$100M. An enquiries and complaints service **PACK-LINE** is co-ordinated by the APC for the community to assist understanding of consumer packaging designed by APC brand-owner members.

Can we rest on our laurels? No, there is still much to do. The APC is serious about identifying and addressing its shortcomings. Research findings as well as advancement in packaging materials and technological innovation need to be incorporated into current operations to improve performance.

The APC's national framework provides the **flexibility within its co-ordinated approach. It provides a strong foundation to build for the future.** It recognises that different solutions may be appropriate in different locations, that trade-offs may be necessary when environmental, social and economic factors are assessed.

CHALLENGES & OPPORTUNITIES

Four challenges for post-consumer packaging in Australia are:

- Energy from waste (EfW) – investigate overseas practices to assist in future planning
- Steel recovery is down on other countries – understand reasons for the variance
- Strengthen commitment to education in support of litter & recycling initiatives
- Flexible plastics - trials underway to test recovery & treatment options for the future

WORLD'S BEST PRACTICE in ACTION

Australia's strength is its commitment to the big picture, to strategic integration at a national level. Ad-hoc activities as evidenced in other regions, address one packaging material, one material use, one part of the supply chain, often start at end of life and not the beginning, and definitely do not encompass the whole life-cycle.

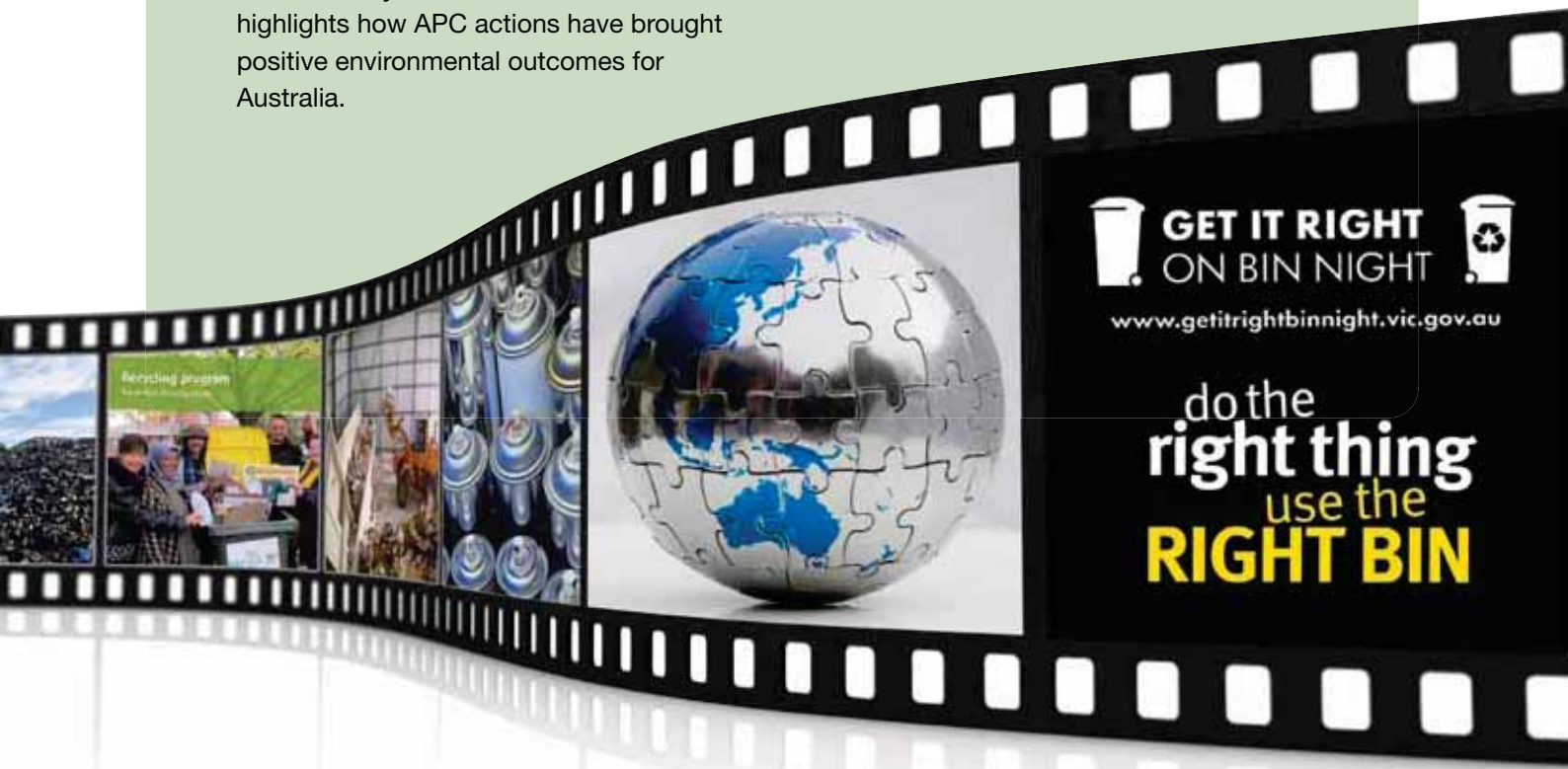
The Australian Packaging Covenant (APC) takes a life-cycle approach that starts with design and utilises the Sustainable Packaging Guidelines (SPG) to assess packaging. It covers all packaging materials, does not discriminate on use and ensures action is effective and proportional to the issue being addressed.

The APC is innovative in problem solving, uses trials and pilots to test solutions, creates technological efficiencies eg. using optical equipment (infrared, laser) in automated processes VS hand sorting and addresses all stages of the packaging life-cycle.

APC twelve years of achievements highlights how APC actions have brought positive environmental outcomes for Australia.

The Australian Packaging Covenant is:

- unique
- national & proactive
- co-regulatory with government & industry working together
- light touch vs draconian
- shown to be cost effective
- responding to Australia's National Waste Policy to 2020
- using principles of models described under the Product Stewardship Act 2011
- able to measure positive environmental outcomes with independent analysis
- meeting government objectives & targets
- relevant & effective over time
- flexible and proven, and
- world's best practice in action.*



Material sourced from published documents and statistical tables of the following: European Union (EU), European Commission (EC), EC Eurostat, EUROOPEN, UK Department for Environment, Food and Rural Affairs (DEFRA), UK Advisory Committee on Packaging (ACP), UK Courtauld Commitment (WRAP), US Environmental Protection Agency (EPA), USA Sustainable Packaging Coalition.