PACKAGING COUNCIL OF AUSTRALIA INC

Submission to the Productivity Commission - Waste Generation and Resource Efficiency Inquiry

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Executive Summary

Following are the major points made in this submission:

- This Inquiry comes at a time when the minimisation of waste generation is only beginning to be considered in its wider context as one step in the overall production and consumption chain of goods and services.

- The "waste hierarchy" reflects an over-simplistic, waste-centric policy approach. In many cases the generation of some waste may be the by-product of significant efficiency gains and waste savings further up the production chain. Incorporating this more complex approach is essential to developing an evolved and advanced waste management policy in Australia.

- The packaging industry has a long history of environmental achievement and solid credentials as a net waste reducer. Overall, about 50% of Australian packaging materials are recovered through recycling. "Away from Home" recycling offers the best opportunity for substantial increases in packaging recycling rates. This will be one of the major objectives of the second National Packaging Covenant.

- Packaging waste and recycling data is not comparable on an international basis. Australia has no reliable, uniform national measurement system in place. In Europe, methodologies differ and comparisons between individual countries can be highly misleading. The oft-quoted German recycling figures relate to materials collected and not materials that are actually recycled.

- Target setting for waste management and recycling is a complex task. It requires comprehensive and reliable national indicators as to where we are at the moment. Such indicators do not exist in Australia. For target setting to be credible, we need to develop a uniform nationally agreed packaging data reporting system.

- Garbage and recycling services are provided by more than 670 local government agencies in Australia. Given the strategic and technical complexity of domestic waste systems in the 21st Century, this is not the most efficient or effective way of delivering this household utility. There are few, if any, major public services that are handled in such an uncoordinated fashion.

- New technologies – e.g. bio-degradable plastic packaging and Remote Frequency Identification Devices (RFIDs) – will continue to change the parameters of policy debates concerning packaging.

- Container Deposit Legislation (CDL) continues to receive considerable attention as a waste policy option. Its importance is overplayed. It is an option which is relevant to less than 5% of the domestic waste stream.

- Adopting a nationally consistent approach to waste management policy is important to assist in ensuring the competitiveness of the packaged goods sector. Regrettably, it is still the case today that individual jurisdictions are considering implementing fragmented approaches which, if adopted, will damage the economics of the industry.

- Increasingly, packaging is an internationally traded commodity. Policy makers must ensure that there is a level playing field with all suppliers (domestic and importers) subject to the same requirements.

- Judging the environmental credentials of packaging is a complex business. It is not simply a case of recycling rates. Energy and raw materials consumption, emissions and effluents from production processes, transportation, litter and waste generation – as well as the wider social and health benefits of packaging – need to be factored into any discussion. But none of these are exclusive to packaging.

- A number of recommendations have been made including the following:

    - The provision of waste and recycling services need to be rationalised and better coordinated at the national (or at least State jurisdictional) level with clear structures, frameworks and guidelines to establish a network of utilities with strategic focus to guide system evolution.

    - A reliable national system of data reporting and audits for all waste streams is required and needs to be implemented by all States and Territories. This reporting should be conducted by an independent agency and not collected from contractors and operators.

    - The creation of a national waste and recycling system would also allow for the standardisation of materials recycled and the registration of a trademark or logo which assists consumers by indicating which packaging can be set out for recycling.

    - Increased cooperation is required between industry and governments to work together to ensure that there is consistency and coordination between the messages to the general community on the role of packaging.

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1. Introduction

This submission is made to the Productivity Commission (the Commission) by the Packaging Council of Australia (PCA) as part of the Commission's Inquiry into waste generation and resource efficiency.

The submission will address the terms of reference set out by the Commission with a particular focus on packaging and its prominent role in the evolution of sustainable domestic waste and recycling systems and the supply chain systems that these are part of.

1.1. The Inquiry - Terms of Reference

The terms of reference set out by the Commission in its Issues Paper made three claims:

1. Australians generate solid waste at a high rate compared with most other OECD countries.

2. Technologies and processes to avoid, reduce and recover waste are generally not used as extensively in Australia as in some other OECD countries.

3. Non optimal levels of waste represent lost value and opportunities, while imposing undesirable economic and environmental costs on society.

While supporting the third claim, the PCA will argue that the first two statements need to be assessed in an appropriate context and will be discussed in more detail later in the submission.

This submission will consist of three main sections:

- A background and history of waste systems and policy in Australia and overseas

- A review of the current state of domestic waste systems and policy in Australia, including identification of the major obstacles and barriers to improved resource efficiency and system operation

- Recommendations/actions arising from this review

1.2. Importance of the Productivity Commission Inquiry

The Productivity Commission Inquiry (the Inquiry) comes at an important stage in the policy development process for waste and recycling in Australia. After two decades of evolving strategy and policy in Australia and internationally, there is both improved co-operation between stakeholders and a growing recognition of the scale and complexity of the problem.

There is also the recognition that early gains have been relatively easy and that differing economic and physical conditions will result in varying policy settings for different economies and systems. "Visionary" policy documents outlining the need to reduce resource consumption by an order of magnitude and setting national targets and goals for waste reduction without any technical or analytical framework or specific strategies to achieve these ambit claims need to be replaced by more consolidated and comprehensive approaches.

Such approaches should consider the cost and value of achieving symbolic benchmarks in isolation of their position in the overall resource efficiency of production and consumption of all goods and services.

If the policy development process is allowed to stall then this symbolic rhetoric could drive the debate risking second or third best policy outcomes to create the impression of action, but at the expense of genuine and systematic environmental improvement.

The other challenge for Governments is how they will implement and drive any reforms identified as a result of this Inquiry. Historically the fractious nature of waste policy development in Australia has resulted in the policy process largely ignoring most major national strategic reviews, with various agents continuing to hand pick data, advice and policy direction.

1.3. The Packaging Council of Australia

The PCA was formed in 1978 as the national voice of the Australian packaging industry. The PCA's National Office is based in Melbourne. Funding for the PCA is substantially derived from membership subscriptions.

The PCA is a member and on the governing body of a number of related organisations. It also acts to co-ordinate other organisations, as appropriate, when responding to government inquiries and broad industry issues.

A core objective of the PCA is to lead and participate in the environmental debate concerning packaging, particularly in the areas of resource conservation, litter reduction, solid waste management, waste minimisation and recycling.

The PCA has been prominent in the debate over packaging and its relationship to waste generation, disposal, recovery and recycling in Australia. It has taken a particular leadership role in the development, implementation and re-negotiation of the National Packaging Covenant. The PCA is therefore well placed to provide an advanced and lateral perspective that will add value to the Commission's deliberations in this important, complex, and much misunderstood policy area.

The PCA supports the objective of the Inquiry to identify policies that will enable Australia to address market failures and externalities associated with the generation and disposal of waste, including opportunities for resource use efficiency and recovery throughout the product life-cycle (from raw material extraction and processing, to product design, manufacture, use and end of life management).

1.3.1. Improving community understanding

Despite the packaging industry's overall positive record in key areas such as recycling, lightweighting and minimising resources, the general community still has a less than complete understanding of the role and benefits of packaging and the industry's achievements.

To help overcome this shortcoming, the PCA recruited an Education & Community Awareness Manager in January 2005. In doing so, our main objective is to raise awareness amongst the school and wider communities about the proper role and wider benefits of packaging; ranging from its role in advancing public health, to its response to social and demographic issues, to facilitating transport and storage as well as recycling and waste management issues.

The PCA and companies in the packaging supply chain need to work harder to achieve a better and broader understanding about packaging thereby enabling users to make responsible and informed packaging choices, including purchasing, recycling, reuse and disposal.

With packaging being a vital component of modern, everyday life, the PCA is committed to educating school children and the general community, through specific programs such as:

- A PCA education website
- Curriculum materials for Australian schools on packaging
- Factory and plant tours
- Industry brochures etc.

While the focus at the moment is largely on Victoria, the PCA expects over the next few years that these programs will cover the Australian eastern seaboard (if not nationally).

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2. Background and History

This Inquiry comes at a critical time in the development of a coherent, effective and rational waste policy in Australia.

Waste streams have been generated and managed throughout the history of human activity. The development of a more evolved policy debate has emerged over the past three decades in response to issues of safety, amenity and environmental concerns over the resource use associated with increasing levels of solid wastes.

Until very recently, waste policy and the minimisation of waste generation have tended to be viewed in isolation from the overall environmental impact of the production and consumption of goods and services. This partial approach has therefore tended to favour the principle that less waste is an unambiguous environmental, economic and social improvement, an outcome which must be pursued at all costs.

The broadening of the debate to consider waste in its widest context has identified a complex interrelationship between waste generation and the overall environmental, economic and social efficiency of the supply chains for goods and services.

Therefore the waste hierarchy reflects an over-simplistic, waste-centric policy approach. In many cases the generation of some waste may be the by-product of significant efficiency gains and waste savings further up the production life cycle. Incorporating this more complex approach is essential to developing an evolved and advanced waste management policy in Australia.

2.1. The role of packaging

Environmental issues have been a major focus of activity for the packaging industry for a number of years. During this period, packaging has been under scrutiny as being “unnecessary” and “wasteful”. Packaging has also been criticised as a visible part of the litter stream.

Yet packaging is not a major contributor to the waste stream or Australia’s environmental problems. It comprises about 10% of the urban solid waste stream. Garden and food waste, industrial waste and builders rubble are significantly larger proportionally.

Overall, the Australian packaging industry has strong credentials as a net waste reducer. Packaging reduces food waste. By allowing centralised food processing it permits the efficient use of food ingredients and the large scale recycling of food residues. It contributes to an efficient and low cost materials handling system. By facilitating the efficient transportation and distribution of goods, it reduces truck movements and energy usage.

Moroever, the basic functions of packaging – to contain, preserve, protect and provide information – are often taken for granted or not widely appreciated.

When we consume products we perceive them as a single entity: a tub of yogurt, a colour TV, a newspaper. Yet most goods consumed are made up of two parts – the product itself, and the packaging or container that comes with it. Through the process of consumption, we separate the product from its packaging, consume its contents and dispose of the packaging.

Packaging protects, contains and helps preserve the integrity of the goods being consumed. It plays a critical role in the overall supply chain of goods and services. Packaging can have a significant impact on reducing waste streams, while it also delivers major economic, environmental and social benefits by doing its job effectively and efficiently. These costs and benefits cannot - and should not - be separated in any meaningful policy debate about resource efficiency.

Packaging is not only used to manage the supply of physical goods – it is also a key component in the supply of information. The labelling on packaging provides important information for the consumer – the correct medicine dosage to dispense, instructions for use, ingredient lists, storage requirements etc.

The role of packaging varies significantly depending on the product. Packaging adds value by:

- protecting a product from damage
- extending shelf life
- complying with regulated health and safety requirements
- improving convenience to consumers
- providing a platform for information to consumers (ie. labelling requirements, contents, fat and sugar levels, safety, transport and hazard warnings); and/or
- enhancing brand and marketing.

Packaging is ubiquitous. It allows consumers to eat seasonal foods all year long in any climate. It aids the consumption of snacks and drinks for people on the go. It provides a container for liquids or difficult to hold products and preserves and protects what we eat and drink from contamination and tampering. We waste less at home because packaging lets us eat only the edible part of foods.

Packaging also protects expensive appliances on the trip from the retailers to the home.

Packaging saves lives and reduces infections. It protects sterile syringes in hospitals, provides important information on medications, and stops the spread of bacteria and disease.

Modern lightweight packaging systems improve the overall efficiency and environmental performance of almost all goods and services. The resource intensity of most packaging is a relatively small component of the total product - between 0.1% and 10% of the actual product.

Similarly, economic pressures lead packaged goods manufacturers to specify the least packaging needed to satisfy the needs of the customer (the retailer or business end-user) and the private consumer. Companies analyse social trends and consumer preferences and try to be the first to find new ways to meet a latent demand.

All of the key social trends – parents increasingly working in busy and time consuming jobs, the faster pace of life, smaller households consisting of young people or elderly people unwilling or unable to prepare food from scratch - have presented business opportunities, but they were not initiated by the packaged goods industry.

In short, consumers have come to expect that industry will supply whatever packaging formats they need to fit in with their lifestyles.

2.2. Understanding waste

Waste generation is a by-product of economic activity, specifically the consumption of goods and services. Solid waste generation can and should be reduced, but the nature of these reductions should be consistent with overall economic, environmental and social improvement in the product supply chain, and not simply as an end in itself or at the expense of the overall performance of these systems.

The environmental cost of waste generation is one part of the life cycle of the product disposed. The cost of landfill or other disposal options and the associated transport costs need to be measured against all other costs and benefits associated with the consumption of the product or service.

2.2.1. Pre-disposal vs post-disposal

While the waste hierarchy provides a linear approach to waste reduction policy, the process of waste generation creates a simpler watershed which defines how policies that reduce waste flows can be developed. Avoidance, reduce and re-use are all pre-disposal strategies, while recycling, treatment and disposal are all post-disposal strategies.

Significant pre-disposal waste avoidance and reduction already occurs in most developed economies. This includes not only the re-use of materials and products, but also the avoided waste of goods and services through efficiency gains in the product supply chain. It is estimated that up to 50% of food produced in developed countries is lost through spoilage. In Australia, this loss rate is estimated at around 7%, most of which is fresh produce[i].

It is useful to consider in each policy situation whether there is scope for further efficiency and waste reduction in the pre-disposal phase, or whether, as is the case for much of the packaging used, the appropriate emphasis should be on post-disposal waste reduction strategies.

2.2.2. Disposal is determined by value

What defines waste and what transforms useful, valuable, functional objects into waste objects? How and by what means does the value of something change so that it is discarded rather than used?

Two fundamental principles define a waste item. First, it must no longer be of sufficient practical use to its owner, and second it must have insufficient value to the owner at the point of disposal to warrant any application other than disposal. Both these decisions are unique to each owner or owners of an item. Another may value what is considered waste by one person (or site).

A diamond ring that is no longer wanted by its owner is rarely considered waste – it is on-sold, as are goods which have sufficient value to be re-sold or given as gifts (with some value).

The value of different waste materials also is a function both of their condition at the point of disposal and the nature of the market into which it is being disposed. An old washing machine may have no value to the household that wishes to dispose of it, but may have value to a white-goods recycler. The value of the old white-good will depend on the condition of the market for old white goods in that region. A white-goods recycler may be willing to pick up the washing machine for free, which would value it at $0 at the point of disposal. If there is no recycler present, then the local Council may collect it. While there may be no charge for this service, the cost is shared across the entire Council. Alternatively, it may cost the household $20 to get rid of the machine, giving it a negative value.

What this means in practice is that there are some wastes that are generated but their value to others is such that they are recovered before they formally enter the waste stream. Other wastes only have value once they are sufficiently aggregated and decontaminated.

Up until its disposal, the item has provided value to its user. Wastes are rarely created arbitrarily or for their own sake – they are a by-product in the production and consumption of goods and services. The environmental impacts of wastes therefore need to be considered against the entire production and consumption cycle of that good, and not just in isolation as part of a waste or recovery target.

Similarly, some materials are recovered after disposal, while others are not. While all materials can be recycled, in some cases the cost of recovering and reprocessing the material is much greater than its recovered value (see Section 2.6).

2.3. Categorising waste

Non-hazardous solid waste is generally categorised into three streams requiring related but distinct policy approaches:

- *Domestic wastes* include food and garden wastes, product packaging, newsprint and other board and paper products, clothing, electrical appliances. Domestic wastes are made up of around 50% of organic matter (garden and food wastes) and 50% of waste packaging and other materials. These two streams tend to be highly non-homogenous.

- *Commercial and industrial (C&I) wastes* include all wastes leaving manufacturing and other production sites, office wastes including computers and other equipment and their packaging. C&I wastes vary significantly from site to site, which can make it more difficult for systems to reduce and recycle these materials.

- *Construction and demolition wastes* include clean fill, concrete, aggregates, waste timbers and other related products and their packaging. While the nature of these streams can vary, larger sites have the capacity to generate large volumes of relatively uncontaminated material which, if managed on site, facilitates cost-effective recovery and recycling.

Waste refers only to waste products that leave the dwelling or site. On-farm disposal of materials and on-site disposal tends not to be measured and therefore included in the practical definition of waste.

Similarly, recycling is generally defined as the recovery or re-processing of materials *after* disposal. Re-working or re-processing of many products and materials occurs inside households, factories, offices and on building and mining sites. The scale of this type of re-processing is, in many cases, immense and may far outweigh the total waste stream for a given dwelling or site. It is essential that this type of re-use is not confused with re-processing. Including this type of activity in the definition of recycling (as a number of recent reports have recently done) can significantly over-state the scale of recycling.

These definitions tend to be driven by how they are measured and recorded, not necessarily by how they are generated. Household wastes include not only those items small enough to be included in domestic waste and recycling services, but also larger goods like motor vehicles, tyres and white goods. Because these goods are increasingly handled by the commercial sector (as part of the sale of new goods) they tend not be included in most domestic waste data.

2.4. The value of waste

Resource recovery from waste is based on the principle that materials which may have little or no value to an individual site or dwelling may have value when sufficiently aggregated and sorted. The US economist Talbot Page[ii] identified four factors which determine the value of any resource, including waste:

- Mass: A resource must be in sufficient quantity to be worth recovering.

- Dispersion: It must be sufficiently concentrated to warrant collection.

- Contamination: The acceptable level of contaminant will depend on how difficult it is to be separated out.

- Homogeneity: Material is easier to process when it is not continually varying in form or quality.

The value of a flow of waste materials, and therefore the efficiency and cost effectiveness of all recycling systems, depends on the condition of the material(s) being recovered according to these four criteria. Successful recycling systems are defined by their ability to collect sufficient scale of material with sufficient value, in a sufficiently concentrated form, with low enough levels of contamination and of sufficient consistency to make recovery economically viable.

Like other natural resources, those streams of material that do not sufficiently meet these four criteria, are either not recovered, or are recovered at such a high cost that artificial incentives must be provided. Any material in theory can be recycled. But in some cases the net cost of recovery far exceeds the value of the materials recovered. Pursuing recovery of such materials raises serious questions about efficient resource allocation and whether such resources could be spent better elsewhere.

Just as there are economies of scale in collection, so there are also economies of scope. The cost of collecting newspaper is offset by the parallel recovery of other materials like glass, metals and plastics. A collection trial by ACI Glass conducted in 1998 found it more expensive to operate a glass-only kerbside collection than to share the fixed costs with other materials in the recycling stream[iii].

Further reductions in the levels of domestic waste generated will be achieved by both reduced generation and increased diversion. The expansion of kerbside collections to separately include organic materials (eg. garden and food waste) which account for approximately 50% of the total domestic waste stream will almost certainly be a major factor in delivering this reform. This will require a strong and robust kerbside recycling culture and sustained household involvement.

2.5. Waste technologies

Landfilling and burning solid wastes are both ancient technologies. The advent of lining landfills to prevent or minimise leaching of heavy metals and the development of waste to energy technology, particularly in Europe, has influenced the policy discussion about the use of these technologies.

2.5.1. Landfill

Almost all solid waste in Australia is landfilled. The relative abundance of suitable landfill sites means the price is relatively low compared to highly urbanised and concentrated populations as in parts of Europe. Landfill technology has evolved significantly in the past 50 years. Landfills can now be carefully designed to prevent leaching of materials from the landfill and to maximise capture of landfill gases (particularly methane from the decomposition of organic matter).

2.5.2. Waste to energy

Waste to energy technologies are generally more expensive to operate than landfill disposal, even when energy recovery is included. They are cost competitive, however, in economies with either/both high landfill prices (from scarcity) and high energy prices. In Europe, particularly northern Europe, many countries meet these criteria and have adopted extensive waste to energy programs.

The resource efficiency issues around waste to energy are mixed. At least in part, the waste materials act as a substitute for fossil fuels, including coal and gas. The combustion of solid waste is only a partial renewable resource, as it contains a range of renewable items (organic matter, paper fibre) and finite resources (plastics).

Bearing this in mind, there is a case for the energy recovery of solid waste once all recyclable materials have been recovered from the stream, particularly if this can be shown to be the most cost and environmentally efficient outcome.

This is likely to be the best outcome for those combustible waste materials for which the cost of recovery is clearly prohibitively too high. But such policy needs to be adopted with caution. There are reports from European jurisdictions of waste to energy facilities seeking to access sorted recycled materials (like newsprint) as feedstock for energy generation because there is insufficient flow of non-recyclable materials. This relationship of solid waste to energy policy reflects the complexities that exist in designing environmental policy which intersects with other key policy issues.

2.6. Understanding recycling

Recycling of waste is the broad term used to describe the various systems to recover and re-use materials after they have been disposed of.

The operation of recycling systems has expanded significantly in Australia over the past two decades. The range of materials recovered has also increased. The biggest rates of diversion have come from the development of kerbside recycling systems to reduce the domestic waste stream and the recycling of construction and demolition wastes, particularly from large building sites and projects where there is sufficient scale to warrant recovery operations.

Around 91% of households in Australia are now provided with a regular kerbside recycling service[iv]. This is a rapid expansion of a system which began in the late 1980s with the introduction of crate based recycling by some Sydney councils[v].

In NSW in 2001-02, around 89% of households were provided a kerbside recycling service. Kerbside collection of domestic recycling materials in Sydney has been stable relative to economic activity since 1994, following a substantial increase between 1991 and 1994[vi].

Paper accounts for about two-thirds of kerbside materials collected by weight, glass around 28%, plastic 6%, steel 1% and aluminium cans less than 1%. In 2000, each person in Sydney set aside about 84kg for recycling, compared with around 30kg per year in 1991[vii].

The new (second) Covenant recognises that the significant growth in consumption of packaging in "Away from Home" venues (pubs, clubs, workplaces, shopping centres, public venues etc) provides the major opportunity to increase the recycling of packaging. This will be a key focus for resource recovery and litter reduction initiatives under the Covenant.

2.6.1. Downcycling vs recycling

An important technical distinction needs to be made between recycling and downcycling. Recycling involves the re-processing of waste materials into products or uses of similar grade, for example, re-processing glass containers into new ones. Downcycling is the term used for some recycling practices which either by the nature of the recovery process or the nature of the recycled material, involve a degradation of the material to a completely different use (eg. park benches, agricultural pipes, carpets, road material).

Degradation is a feature common to many materials that are repeatedly recycled. While technology improvements continue to extend the capacity to re-use many materials, for some materials there are practical limits to their re-use and recycling. The natural fibres that make up paper and cardboard can be re-used around five times before they are too degraded to be re-used except as pulp. Glass manufacture still requires a small proportion of virgin sand mixed with recycled cullet to retain the physical specifications of glass packaging.

2.7. The economics of domestic waste and recycling

Commercially driven recycling existed in all economies long before the relatively recent evolution of domestic kerbside recycling systems. The economic re-use of materials both in production processes and after consumption has been the norm rather than the exception. The relatively low cost of labour and high value of manufactured and semi-manufactured goods drove high levels of re-use and waste prevention. These characteristics are still evident in the waste profile of many developing economies.

The acceleration of mass production, higher wages and increasingly inexpensive consumer goods has also accelerated total rates of waste generation. This is a function of increased commercial activity and the change in the opportunity cost of disposal versus re-use as the value of time (measured in wages) has increased.

Increases in real wages combined with higher disposable incomes, longer working hours and increased female participation in the workforce are just some of the factors which have contributed to consumers being increasingly time poor and choice rich. The provision of goods and services for these consumers has been driven by convenience which address these time constraints.

Total waste generation rates (including waste and recycling) continue to track GDP per capita rates in Australia. The NSW EPA normalises its total waste yields by comparing total waste generation with Gross State Product (GSP). When waste disposal is normalised on this basis, total waste disposed of in Sydney decreased by 24% between 1990 and 2000, even though total waste increased by 5%[viii].

While some have labelled the trend to increased per capita waste generation as a symptom of the "throw-away society", cost drivers and technology improvements mean most supply chains continue to become more efficient, not less, with continuous improvement in resource efficiency the norm rather than the exception. For example, since 1980, the amount of arable land globally has increased by 33%. In this time world food production has increased by 72%, reflecting significant efficiency gains in production, transport, processing and packaging of food.[ix]

The increased rate of waste generation has been driven by a combination of factors, including increasing personal wealth and higher disposable incomes. This has resulted in:

- A steady fall in the number of persons per dwelling in the last 100 years (from more than 5 per household in the late 1890s to less than 3 by 1986)[x] resulting in more waste generation per capita[xi]

- A commensurate increase in ownership per capita of basic household infrastructure (cars, white and brown goods, appliances)

- A wider range of packaged good sizes is now being offered to meet the requirements of these smaller households (with smaller serves having a higher packaging ratio than larger serves)

- Increased value adding in packaged goods, both in the semi-preparation of products and the development of convenience packaging to reduce preparation time and facilitate easier consumption in a time constrained lifestyle

- Increased turnover of consumer goods driven by swift technology changes, safety improvements and consumer fashion.

The key drivers to increased waste generation are a range of social factors. The challenge, therefore, for policy makers is to identify and implement strategies and policies which do not impose moral or pejorative values on consumers and does not constrain their ability to make necessary and responsible improvements in their own safety or well being. This needs to be done in a manner which encourages product design improvements which either slows the social or technical obsolescence of goods or reduces the cost of their recycling and re-use.

Equally, policies need to be developed that enhance efficiency and reduce cost, not simply create hundreds of low-skilled jobs as if this was some kind of social and economic improvement. If anything, we should pursue greater mechanisation and commensurately fewer jobs in recycling, not more.

To some extent, these issues are being solved in part by the adaptation of existing technology to improve markets for these goods (ebay, on line trading).

In relation to packaging and packaged products, any policy to reduce waste must also incorporate consumers priority for safety (in particular, for food and groceries) ahead of environmental performance and, in addition, the parallel evolution of technology changes expected in the next 10-20 years which may radically lower the cost of sorting and processing waste packaging [see section 3.6].

2.7.1. Externalities and the waste hierarchy

Basic economic theory recognises the presence of environmental and other negative externalities associated with the production and consumption of goods and services. Some environmental problems (like emission of pollutants) are thought to occur because the non-financial cost of this action is not internalised in the cost of production. This has led to the development of systems that seek to bring the cost of these externalities into the cost of production, encouraging producers to reduce the cost by reducing the externality.

Some critics of packaged goods suggest waste packaging is also a negative externality that should be “internalised” in the cost of production either through levies, taxes and or refund systems.

This perspective presumes that solid waste generation is the only negative externality in the production and consumption chain. Food poisoning is a negative externality. Efficiency losses in the transport system are a negative externality. Spoiled foodstuff and damaged goods are also materials wasted that make up part of the waste stream.

Virtually all production involves a range of external costs that are not captured in costs to producers. The externalities argument used against packaging once again focuses on waste disposal rather than total environmental impact.

And what of the external benefits of packaging – benefits for public health, more efficient transport and logistical systems – which are not reflected in the price of packaging?

In 1996 the Industry Commission Report on Packaging and Labelling found that the scale of the impact of waste packaging was, as a practical issue, insubstantial[xii].

The Boomerang Alliance, a grouping which consists of some Australian environmental, consumer and local government organisations, states that rate payers contribute some $294.5 million for kerbside recycling each year which equates to about $15 per person. Even if the accuracy of these figures is accepted, this is a remarkably low price to pay for a kerbside system that services approx 90% of the Australian population and amounts to a recovery cost of around one cent per packaging item collected.

Estimates suggest that the average person buys about 1500 packaged items a year, which gives you a kerbside cost of, less than a cent per packaged item. So even if consumers and ratepayers aren't quite the same thing, who is going to quibble over a cost of less than a cent per item. And if somebody has to pay that cent who didn't before, will it really make them think twice about what they are buying?

The other main risk with using levies or charges to internalise costs is that Governments will set charges far in excess of the actual environmental costs to be internalised. That is, the levy will be used for general revenue raising purposes. In the case of packaging taxes this risk would be greater as the charge and cost would be allocated to different jurisdictions - a levy would need to be raised at the Commonwealth level whereas the costs would be borne at the State and local level.

2.8. Evolution of (kerbside) recycling systems

Social recycling systems relate to the mass collection and recovery of materials from the domestic waste stream. Prior to the evolution of organised kerbside recycling systems in Australia in the 1980s, this type of recycling was conducted informally by charity collectors.

The shift to formal kerbside recycling schemes was driven by a combination of factors: both stewardship from industry and individual local government authorities as a local adaptation of domestic waste recycling developing in Europe at this time.

Faced with increasing waste disposal costs, municipalities sought alternative methods to process the waste stream. This was coupled with growing community awareness of the finite nature of many of the earth's resources.

By 1989, 61% of Councils in Australia provided some kind of kerbside recycling service. By 2004 the ratio was 91%.

Kerbside recycling involves households sorting out recyclable materials from their waste and placing them out separately for collection. The core materials collected in kerbside are newspaper and cardboard, glass, aluminium cans, plastic bottles, liquid paperboard (milk cartons) and steel cans. A few Councils also collect compostable green wastes, engine oils and old batteries on a less regular basis.

The motivation for providing kerbside recycling was both political and economic. Councils who commenced kerbside services identified high levels of recognition and support from ratepayers, reflecting the high visibility and "retail" nature of waste management as an environmental issue.

While the provision of an extra waste service imposed a higher cost on Councils (and therefore on ratepayers), initial operating costs for kerbside tended to be kept down by the low capital operators initially providing this service – many of whom had simply adapted from the provision of charity collections. There was also the perception among some in local government that kerbside recycling could provide a net profit to council through the sale of recycled materials to end markets. This perception was fuelled by a temporary spike in recycled paper and cardboard prices in the mid 1990s, which lured a number of Councils into providing the service.

As recycling rates increased and services expanded, it became apparent that the low capital systems were simply unable to cope with the volumes. Labour intense practices also raised OH&S concerns. Councils began to shift to the major garbage contractors to provide more expensive, but more reliable, recycling services.

Kerbside recycling services are now standard practice across virtually all urban and many regional Councils in Australia. Councils continue to complain about the cost of the service (borne by ratepayers, not Councils) but despite occasional threats to withdraw the system, they continue to provide the service because of the strong community support. Voluntary participation in kerbside recycling is around 85% or higher for most schemes diverting nearly 50% of all recyclable waste from the domestic waste stream.

2.9. The role of local governments in waste collection

Local government agencies (LGAs) have been the historic provider of domestic garbage and more recently recycling services. There are more than 670 LGAs in Australia. The provision of a localised utility provider evolved from when garbage collection was the only service provided. With the evolution of waste minimisation strategies and more complex services integrating waste recovery, using 670 independent service providers to deliver this evolving utility to Australian households poses a number of difficulties.

Most LGAs have also shifted towards the contracting out of waste and recycling services. While this has helped to encourage some competition between major waste contractors, these negotiations are conducted at the distinct advantage of the contractor. While each Council will negotiate their waste contract once every seven years (the normal period for a waste contract) the contractors are involved in ongoing contract negotiations as part of their business. It is common to find Councils awarding a contract to the lowest price bidder, only to find the cost of the contract has increased significantly by the end of the first year as the contractor exercises variations and clauses in the contract.

Numerous attempts have been made to better co-ordinate LGA activity, particularly the development of regional forums designed to standardise contracts and share resources. However regional political constraints and the nature of such a large number of highly politicised organisations has made such co-ordination nearly impossible on any meaningful scale.

2.10. International systems

The levels of domestic waste recycling in specific European countries (including Germany, Sweden, Switzerland and Austria) are repeatedly held up as the benchmark against which Australia should measure itself. This argument ignores both their differing political, geographic, economic and social conditions and the nature, integrity and definitions used to record and report waste and recycling data.

Recycling of domestic waste in Europe has been driven by the German Duales (DSD) system. The DSD system introduced in 1991 was both politically and economically motivated. It reflected the need for visible environmental actions in the late 1980s as well as a genuine scarcity of landfill forcing up the cost of disposal. The system is process driven: it uses levies from signatory companies to provide recycling bins and collections.

The system levies material-specific charges on fillers, packers and importers of packages, based on the type of package and its recyclables. The DSD system then claims to guarantee recycling rates for these materials. The system is both complicated and expensive. It creates flow of recycled waste material irrespective of the nature of markets for their end use, and therefore relies upon exporting some of this material outside of Germany to find markets.

"In Europe, the EU member states started collecting data at different times, and none of them used the same methodology. Methodologies have been improved over time, but they are still very different and comparisons between individual member states' performance are highly misleading. The danger of switching from one methodology to another in a given country is that you lose the ability to analyse trends over time, so it would be better for Australia to start with a uniform system." David Perchard, 2004.[xiii]

EU recycling data is inflated by estimates based on the total amount of material collected, not the quantities actually recycled. The initial investment to set up to the DSD system was estimated at $AUD 6 billion with annual running costs of $AUD 1.7 billion. This proved a huge underestimate. Even now, with the system mature and costs savings being made year by year, DSD's annual spending is around 1600 million euros ($AUD 2.7 billion) – that's $AUD 39 per head, equivalent to $AUD 790 million per annum for Australia[xiv].

In 1997, the year after the 15 EU member states were required to transpose the Packaging and Packaging Waste Directive into national law, the recycling rate in EU-15 was 47%. In 2001, it was 55%. The European Environment Agency has been conducting a study on the effectiveness of packaging waste management systems in five member states, and has concluded that recycling is reaching its upper limits in some countries.[xv]

3. State of Play – Domestic Waste in Australia

Domestic waste management in Australia is largely the responsibility of State and Territory Governments, rather than the national (Commonwealth) government. But companies in the packaging supply chain produce for a national market and for export – not for State based markets. It is essential, therefore, that Australia adopt a consistent national approach. That has not always been the case. Indeed, it is not the case today. Currently, there are waste management policy options being considered and contemplated by individual jurisdictions.

Failure to achieve national consistency will only undermine both environmental outcomes and the competitiveness of Australian produced packaged products.

3.1. Cost of garbage and recycling services

The provision of regular domestic garbage collections is a utility provided by local government authorities. The service is provided in modern cities to reduce the spread of vermin and disease and to responsibly manage and dispose of materials that could not otherwise be managed by urban households.

The shift to the now conventional collection of waste in rigid frame "wheelie" bins in Australia evolved in the late 1970s and early 1980s. Local government authorities switched to these systems to reduce the OH&S risks associated with the manual collection of 55 litre garbage bins. Changes in air quality regulations around this time also led to the prohibition of backyard incineration which had been a factor in reducing volume and mass of domestic waste streams. To compensate households, councils provided large 240 litre wheelie bins which are collected weekly.

This base level of service has been refined and further mechanised. National surveys of garbage collection services in 1997[xvi] estimated the average cost of this type of service at around $110 per household per annum, although this figure will vary depending on collection costs and type and scale of waste flow.

Domestic recycling services divert a proportion of this garbage stream for recovery and re-processing. Fitting a kerbside collection on top of an existing garbage collection system imposes both costs and savings. The costs come from the provision of extra recycling containers, trucks to collect them and staff to operate the collection. Some systems which collect co-mingled recyclables also incur sorting costs (as opposed to other more labour intensive schemes which sort at the kerbside).

These costs are offset by the sale of the recycled material, avoided disposal charges and savings in the cost of providing the garbage collection service (because less garbage is collected).

The average value of a tonne of recycled material is around $63, although this will clearly fluctuate with changes in raw material prices and composition of recycled materials. It costs around $227 per tonne to collect and sort this material[xvii]. The difference is paid by ratepayers as part of their annual garbage service fee.

Analysis of this cost under the National Packaging Covenant in Victoria estimated the recycling service fee (the average annual cost per tenement of providing the service) in metropolitan Melbourne was around $31.97 in 2003-04[xviii] yielding around 222 kg of recycled material each year (at an average of 4.28 kg/hhld/week).

These costs are consistent with estimates made of similar systems in the greater Sydney area in 1998 by the NSW EPA[xix]. These costs vary from municipality, region to region and State to State depending on a range of factors: frequency of collection, type of containers used, quantity and range of materials collected and the distance between each dwelling.

A breakdown of these costs was conducted by the NSW EPA in 1998 and summary results are presented in the table below.

Breakdown of recycling costs for crates and wheelie bins, Sydney region, 1998

$ / household / annum	Crate / kerbside sorted $	Wheelie bin collected weekly sorted mechanically $
Cost of bin	2.30	8.10
Cost of truck	7.80	15.00
Cost of labour and other operations costs	29.90	12.70
Sorting costs	-	16.50
Cost recovery of recycled materials	12.30	10.40
Other avoided costs (landfill, garbage collection)	10.10	8.70
Total financial cost of recycling	27.70	41.90
Total economic cost of recycling	17.60	33.20

Source: EPA NSW, 1998

While the avoided garbage collection and disposal costs do not fully offset the cost of kerbside recycling systems, modelling of increasing yields of kerbside indicates once recycling is established, total waste and recycling service costs remain stable as operating costs transfer from garbage to recycling as the flow of materials shifts from garbage to recycling.

In broad terms, around two thirds of the cost of kerbside recycling are fixed system costs (provision of trucks and bins, weekly drive past) while the remaining one third is variable cost (cost of stopping and emptying bin, cost of relaying to transfer facility, re-sale value of recycled material). If a recycling service was provided to a community and not one household set out material to be recovered, it would still cost around $20 per household per annum to operate.

3.2. Current performance of domestic recycling systems

The composition of domestic waste streams varies significantly from dwelling to dwelling but, in aggregate, forms a relatively consistent profile across most major metropolitan regions in Australia. Most kerbside recycling systems have been in operation for some time and yields and performance have tended to stabilise.

Recent audits of domestic waste and recycling indicates around 50% of the contents of domestic garbage bins is food and garden waste, 30% is other material that is not recoverable (including nappies, ceramics, dog excrement and other miscellany). Only about 20% of the domestic garbage stream is recyclable cardboard, paper and containers[xx].

While this indicates there is still room for further diversion of recyclable packaging and paper, it does indicate the remaining fraction is increasingly small and diffuse. Given that recycling relies on the voluntary behaviour of households to operate in the first place, and that they are diverting around the first 50% of material, it suggests the opportunity cost for households to increase their rates of diversion is likely to be very high.

Kerbside recycling systems are underpinned by cardboard, paper and glass. There are generally large, bulky and relatively heavy parts of the domestic waste stream. Recycling of cardboard, newsprint and glass has a strong cultural history in Australia. It takes relatively fewer actions and less time to set these items out and still divert a fair proportion of the recyclable materials in a household.

Further diversion requires recycling of smaller and lighter containers made from plastics, steel, aluminium and liquidpaperboard. While aluminium beverage containers are widely recognised as recyclable, many of these others are newer to the waste stream and are only collected by some Councils. While the number of items may increase, the light weight of some (particularly plastics) means that the overall yield changes little.

The area of greatest diversion by material is the collection of organic material, which makes up around 50% of the domestic waste stream. A number of Councils have successfully established recycling schemes for this material. Apart from the cost of providing an extra collection service, the key barrier to organics is managing contamination and quality control. Almost all collections are restricted to garden waste, because of significant health and quality management issues of collected putrescible food waste.

Given the high value add of organic material to Australia's relatively dry and weak soils, the recovery and re-use of this biggest fraction of the domestic waste stream may deliver considerably higher environmental and economic value than pursuing marginal increases in progressively more diffuse and lightweight packaging materials.

3.3. Barriers

3.3.1. Institutional and regulatory barriers

There are four main utility services provided to domestic dwellings in Australia: Supply of electricity, gas, water, and waste collection. That one of these utilities – waste collection - is still provided as a monopoly service by more than 670 local government authorities is remarkable.

While local government has played an important role in establishing and evolving waste recycling and recovery, the efficient and environmentally optimal provision of this service is beyond its operational and statutory capacities. Local government authorities have an important role to play in enhancing the welfare and quality of life of local communities. Managing utilities should not be part of this role.

Local government both likes and dislikes its involvement in waste and recycling. It likes it from a political perspective – garbage and recycling are clearly the most visible and relevant service to their rate payers. In an environment of rate capping, Councils can load the flexible waste charge to top up income.

But most Councils are uncomfortable with the commercial uncertainty that comes with collecting and on selling recycled resources. In many cases they accept higher contract prices to offset this risk. While a number of specific Councils have demonstrated leadership and genuine commitment to resource recovery and waste minimisation, as a whole, most Councils are legally and politically constrained from taking a more aggressive stance with their residents.

Councils are constrained in the way they can set charges, raise revenues and charge for services by the various Local Government Acts around Australia. As a general rule, these provisions prevent councils implementing fully commercial and flexible charging arrangements for waste services. These limit the flexibility of Councils to implement differential charges for garbage and recycling services, and then only through rates notices, not to the occupant or tenant.

These constraints result in important price signals being masked to households. Garbage and recycling services are still offered as a flat annual fee for service, regardless of the rate at which garbage or recycling is set out. Local rivalry between Councils constrains or slows strategic alliances and consistent collection services. Political pressure means some Councils can be reluctant to refuse contaminated bins and take other necessary steps to improve operational and environmental efficiency.

3.3.2 Systemic/operational barriers

Increasingly, waste and recycling services have been contracted out to waste contractors. Their overriding aim is to obtain a satisfactory return on their investment, not to minimise waste. Garbage and recycling contractors are, by and large, specialists not at resource recovery but at transporting waste goods quickly and efficiently. Increasing collection speed and ramping up compaction (to fit more in a truck before unloading) is critical to driving down the cost of kerbside recycling services. Some drivers/contractors regularly exercise their commercial incentive to collect materials as quickly as possible ignoring the consequences for resource recovery.

A number of jurisdictions have been reviewing the contractual relationships through the recycling system to improve operational efficiency. Previously, if contractors also owned the materials collected, cost drivers drove accelerated collection and low recovery rates as a result of high speed collection and high compaction settings in collection vehicles (after sorting, much of the material was broken, contaminated or too fine to be recovered).

One proposed solution was the introduction of separated contracts for materials and recycling where councils retained ownership of the materials and hired waste contractors to collect it to specification. Despite the change, the value of material loss from damaged recyclate is generally more than offset by the cost savings of speedy collection. Some Councils have had difficulty enforcing these contract specifications with continuing high materials loss rates from collection reflecting the disparity in market power between contractors and many councils.

There have been cases where such high loss rates have been disguised, because they would be in breach of contract Key Performance Indicators (KPIs) with local government and other contracting agents and/or because of the potential negative impact on community attitudes to recycling. Making these processes transparent and nationally consistent would aid considerably in the delivery of data which was reliable, regular and publicly available and be an important contributor to the evolution of effective waste policy in Australia.

3.3.3. Role of education in recycling

The Australian take-up and participation rates in kerbside recycling is very high by world standards. The provision of simple and effective information to households has been important both in promoting recycling and in sustaining yields for the past decade.

While education to sustain systems is important, research conducted as part of the National Packaging Covenant suggests the role of education is effective primarily at the point of disposal, not the point of purchase. Research by the NSW Covenant Group involved the surveying of around 1200 supermarket shoppers who indicated no measurable interest in environmental factors of the packaging or the products themselves at the point of purchase[xxi].

Increasing diversity in packaging materials, formats and design will continue to limit the ability of education programs to match both diverse recycling systems and a wider range of packaging materials.

Given the time-poor and choice-rich nature of consumers, it suggests the role of education in recycling should communicate a simple core series of messages and not be promoted as the basis for some perceived social revolution in consumer purchasing patterns.

3.3.4. International trade

Brands and products - and their packaging - are becoming increasingly global. This trend will continue and strengthen.

The key consequence for policy makers is to ensure that there is a level playing field in the establishment and operation of waste management policies. All suppliers (domestic or importers) of empty or filled packaging products onto the Australian market must be subject to the same requirements. There is some industry concern that, with regard to the National Packaging Covenant, importers are generally falling through the net.

Packaging and other materials entering the waste stream can be manufactured in Australia, imported as empty packaging and filled in Australia or imported as already packaged goods. Tracking these discrete and complex flows of materials is increasingly difficult and raises questions as to the validity of the waste and recycling data.

Regulations to ban or prohibit certain packaging types or to mandate specific recycled content levels run the risk of being seen by importers not as legal non-tariff measures but as non-tariff barriers (NTBs). Environmental standards are one of the central areas of ongoing review to this aspect of the trade law. Providing all standards are applied to both imported and domestic goods, they should be compliant with WTO provisions.

The likelihood is that there will be continuing growth in the export market – particularly to Asia – for certain types of used packaging materials (paper/board, PET etc). That growth is price driven. The impact of this is that the users of recycled material may be forced into more marginal positions with the possibility of reduced investment in local reprocessing capacity. So if and when commodity prices fall to a level that makes exports marginal/unviable, the question is whether Australia will have the capacity to use those materials.

3.4. The National Packaging Covenant

The National Packaging Covenant was established in 1999 between all levels of government - Federal, State and Local – and companies and organisations in the packaging supply chain. The Covenant provides a national framework to reduce the environmental impact of packaging.

A second five-year Covenant was approved by Ministers in the Environment Protection and Heritage Council (EPHC) in July 2005 and is now operative.

The Covenant is based on the idea that companies should identify how they can best contribute to environmental improvement, document the way forward by their Action Plans, implement those Plans and report the results. The fundamental policy principles underpinning the Covenant are those of mutual co-operation between all the players – governments, local government and companies – and continuous improvement.

There is another important point to be made here. The Covenant with its mix of voluntary and regulatory instruments offers a far more imaginative, innovative and useful policy option than alternative legislative approaches. Legislation inevitably focuses on bans, taxes, levies and targets – "the most you can expect is the least that is required". Invariably, legislation and regulation adopts a "one-size-fits-all" approach which is unlikely to produce optimum environmental outcomes.

The Covenant, by contrast, allows a focus on sustainable design, production and distribution issues where real environmental gains are possible, as well as the recovery and reduction aspects. Moreover, the Covenant gives scope for influence to be exerted and pressure to be applied throughout the entire packaging supply chain to ensure that all components practice product stewardship.

The available indicators suggest that Australia is recycling about 50% of its used packaging waste through kerbside and various other systems. The EU recycling target **for 2008** is a minimum 55%. In short, the recycling outcomes in Australia are comparable with Europe as a whole but are achieved at a substantially lower cost to business, consumers, taxpayers and governments. Moreover, we have achieved these outcomes without the excessive and costly bureaucratic infrastructure that is in place in Europe.

The first Australian Covenant had over 600 signatories, a record for an environmental agreement covering packaging. For the first time, company signatories covered the entire packaging supply chain – raw material suppliers, packaging manufacturers, packaging users and retailers.

At the time of writing there are over 350 signatories to the second Covenant. This lower number reflects, in part, the internal processes some companies are still going through to seek approval as well as changes to the definition of exempt small businesses, changes that have still not been finalised. Leaving aside the two major supermarket chains – an important omission - most of the major brand owners are now signatories.

The Covenant requires company signatories to develop and report against Action Plans indicating what steps they have taken to improve or reduce the amount of product packaging used. It also has created a national policy forum to develop and exchange data and information to develop a national policy framework to a debate which has tended to be localised and fractured.

The Covenant process has also used funding made available by company signatories to research social behaviour and enhance recycling systems, work towards establishing a more consistent, effective and regular data framework and identified and addresses specific questions and market failures arising within the packaging supply chain and kerbside system.

The new Covenant, which expires in 2010, contains a number of modifications and changes to improve and deliver quantifiable outcomes. These include a more outcomes focused policy process with a national, rather than State-based emphasis, better co-ordination of company action plans and the development of specific KPIs to help measure performance and drive outcomes.

Perhaps the most important outcome from the Covenant process is the clear recognition by all major stakeholders involved in the process of both the complexity and scale of the issues being addressed. There has been a clear recognition from within the process that simplistic and symbolic regulations are not appropriate solutions. One of the challenges of the second Covenant is to communicate this better to other stakeholders, some of whom still take a relatively unsophisticated approach to the issues at hand.

3.4.1. Setting recycling targets

Target setting is not new. Various targets have been set for packaging by Government bodies since the early 1990's. Targets have been seen as a major driver to reduce the amount of waste going to landfill and to increase the level of recycling.

Targets can help focus public attention on particular issues and be the catalyst for change.

The negotiation of the second Covenant resulted in Ministers agreeing to (and setting) recycling targets. The revised Covenant commits signatories to a national recycling target of 65% for packaging, a set of material specific targets and no further increases in packaging waste disposed to landfill by the end of 2010.

The setting of appropriate recycling targets is a complex matter requiring a great deal more information than currently exists in Australia.

Australia has no reliable, national system for measuring what is happening now. Some States collect some packaging data but these are incomplete and there is no consolidated data on the amounts of empty or filled packaging imported. How do you set appropriate targets if you do not have a reliable national measure of where we stand at the moment. And if you cannot measure it, how do you enforce it?

For credible target setting, it is essential that we develop a uniform, nationally agreed packaging data reporting system as quickly as possible and that all States and Territories commit to adopting it.

Setting a recycling target requires recognition of the "leakage" that occurs at every stage in the process. Analysis of recycling shows how sensitive recycling rates are to changes at any stage:

RECYCLING – INPUT SENSITIVITY

Total waste		Targeted materials		% of households served		Households Cooperating		Capture by households served		Quantity collected for recycling
100,000 t	x	90%	x	90%	x	90%	x	90%	=	65,610t **65.6%**
100,000 t	x	75%	x	100%	x	80%	x	90%	=	54,000t **54%**
100,000 t	x	70%	x	95%	x	70%	x	80%	=	37,000t **37%**
100,000 t	x	65%	x	85%	x	70%	x	80%	=	31,000t **31%**
100,000 t	x	50%	x	50%	x	70%	x	80%	=	14,000t **14%**

The achievement of a 65% recycling target through the kerbside system involves some heroic assumptions that, in practice, will not be fulfilled. The message here is not that we shouldn't recycle but, rather, that we should not put all our eggs in the one basket and allow recycling to be the sole measurement of the environmental attributes of packaging.

In short, the use of targets in this policy area tends to be politically motivated and symbolic rather than strategic and comprehensive. For recycling, the underlying approach often seems to be no more scientific than "recycling is good, more recycling is better and 100% recycling is environmental heaven". Yet recycling is an industrial process like any other and has its own environmental impacts.

For the second Covenant our concerns about the appropriateness of the targets are as follows:

- They are not based on any scientific, research or other data which indicates that such diversion rates would be optimal from a wider resource efficiency, environmental, social or economic outcome.
- They focus solely on waste recovery at point of disposal, and not on the overall resource efficiency of the product supply chain.
- The danger exists that such targets could consume resources which could be better allocated delivering greater environmental improvements in other parts of the production and consumption system.

3.4.2. Zero Waste initiatives

A number of jurisdictions around Australia are evolving "Zero Waste" targets as part of a largely retail policy approach to waste management with little foundation in environmental, economic or social research.

The relatively obvious problem with zero waste targets is that the marginal cost of diversion or avoidance increases as the rate of waste generation approaches zero. The resources spent eliminating the diminishing remnants of waste would almost certainly be better allocated to other initiatives.

While any object or material can be recycled or recovered if money is no object, recycling is an industrial process with its own environmental impacts, and it is worth doing only if there is a net environmental gain.

In this respect a more useful policy signal is the setting of meaningful KPIs for waste and recycling systems based on a combination of waste diversion, economic efficiency and social benefit. While lacking the aspirational political cache of "Zero Waste", KPIs provide a more useful and practical measure of systematic improvement.

Recycling has environmental impacts like any other industrial process. To meet an 80% recycling rate, Australia would either have to waste resources recycling packaging not suited to recycling, or use thicker and heavier recyclable packaging where it is not necessary, or try to eliminate packaging in some cases, with a consequent increase in food wastage.

3.5. The importance of reliable data

Forming effective and efficient policy in the absence of reliable and comprehensive data is at best risky and at worst irresponsible. Consistent, independent and accurate data is essential to forming good policy.

There are two key challenges required for data reporting:

- to improve and standardise waste and recycling data collection in Australia, and

- to establish and extend data collection for resource use across the full production cycle.

Collecting regular and reliable data on waste is considerably more difficult than for most other stages of the production and consumption cycle. European experience suggests it takes 3-4 years for credible statistics to be gathered. Most data generated in developed economies relates to goods and services with positive values. Collecting data on these flows is built upon existing commercial systems of inventory and stocks management. Their relationship to closely scrutinised profit-loss and taxation systems means data reliability is high.

Almost no solid waste collection services to household or the commercial sector (excluding construction and demolition) are based on the quantity or composition of the material collected. Most are still on a pay per lift basis. Measuring total waste flows is improving but still partial as weighbridges are still being installed at landfills.

While the capacity to measure total waste flows is becoming more accurate, collecting reliable data on the composition of waste is extremely difficult and expensive. Yet this information is essential if we are to make reliable estimates of waste diversion from landfill. Currently virtually all estimates of waste diversion rates published by the OECD are based on estimates of material flows into economies (using trade and other data) net of material collected by recycling systems.

While the body of knowledge and data on waste and recycling in Australia has improved significantly in the past decade, there is still no single standard of reliable, national data collection and reporting. Data collection methods for waste and recycling vary significantly and can deliver significant differences in results.

In many cases waste and recycling data still depends on reporting by contractors who are required by contract to meet performance standards in a situation where there is no standard method used to obtain this information.

Recent research into the full product life cycle of waste materials has identified the need for similar data sets across the production and consumption cycles, as well as even more partial and limited data available in many of these areas.

3.5.1. Recycling data integrity

Data collection on recycling, at least in aggregate terms, is easier in that (in theory) the materials collected have intrinsic commercial value which will be required by parties in the transfer of these materials. Variability in data quality depends significantly on the type of commercial arrangements in place for each Council.

There are three stages in the recycling process at which recycling data can be collected:

- First, the set out rate, or the amount set out for recycling.
- Second, the quantity delivered to a recycler for sorting.
- Third, the most meaningful measure is the quantities actually recovered for re-processing after all contaminants and other losses have been removed.

Reporting of recycling varies according to these criteria within Australia and overseas. A number of jurisdictions prefer to report quantities early in the recycling process as the reported yields are higher. For example Germany reports a recycling rate of 82%, but in Europe “recycling” only means delivery to a recycler[xxii]. There may be a difference of 30% between what is collected and what is recovered. While the German DSD system means a wide range of materials are collected, there is a high level of missorting and limited markets for a number of materials. Consequently about a quarter of the material delivered is rejected by the recycler and sent for disposal by other means.

Perchard points out that DSD data shows that for it to achieve its 78% recycling rate it claims to have recycled (delivered for recycling) 161% of the paper and board packaging licensed to it, 128% of the aluminium, 121% of the steel, 99% of the glass and 97% of the plastics.[xxiii] Clearly, something is wrong with the data!

EU law required the development of a Europe-wide packaging ordinance to establish policy parity within the EU. This was introduced in 1996. Since then the high cost of implementation has led to a review of EU waste policy at a time when critics of the Australian Covenant based approach are still pursuing prescriptive European-style legislation focusing almost exclusively on waste minimisation.

The European Commission is now saying there is no point setting prevention targets unless there is robust data to underpin them, and a clear idea of the measures needed to achieve them.

3.5.2. Comparability of international data

International recycling diversion statistics are based on models which estimate the amount of waste generated for each material type. Accurate reporting of garbage and recycling is also unreliable in Australia, although there have been significant improvements over the past decade to remedy this.

Variance in definitions and data collection methodologies poses practical difficulties in comparing international waste and recycling statistics. In countries like Japan and some European countries municipal solid waste is defined as including only those materials sent to waste treatment or disposal facilities.

In June 2005 a study prepared for the European Commission came to the following conclusion:

"Member States have only harmonised their data collection methodologies to a limited extent, so these national returns are not necessarily comparable with each other.

Because of the methodological differences, the data are not a reliable indicator of the relative per capita consumption of packaging across the Member States, and should not be used as such."[xxiv]

Local economic drivers also create different incentives to invest in recovery systems. In Japan the lack of timber resources for paper production makes paper relatively expensive providing a high cost incentive to reuse and conserve paper. Highly urbanised economies with high-density dwellings produce very little garden waste whereas countries like Australia, Canada and the US tend to generate more waste per household because of the high proportion of larger dwellings.

3.5.3. Difficulties in collecting waste and recycling data

Collecting waste and recycling data is more complex than it appears. While some jurisdictions (especially Victoria) have made a concerted effort to develop and standardise at least minimal reporting standards, detailed data collection in this area is still more conducted as a one-off project than an annualised approach.

The reasons for these difficulties are numerous:

- **Garbage**: Total flows of garbage are still distributed to hundreds of landfills all over Australia. Not all have weighbridges. Many garbage trucks are still charged per load. Information on the origins of the truck is not reliably collected. There is an incentive for garbage contractors to overfill trucks (saving time and money) and therefore under-report actual loads. Commercial garbage collection comes from a wide range of different sites and industries with no means of breaking down sources and contributions (sites are charged by volume (i.e. per bin lift).

- **Recycling**: There are a number of different ways of reporting recycling rates - by the amount set out for recycling, by the amount delivered for sorting or the amount actually recovered. Breakage and contamination in the collection and sorting processes can significantly alter these values (with reports of up to 50% materials losses through some collection and sorting processes).

The most relevant recycling rate for each material is the diversion rate. Reporting the diversion rate requires accurate knowledge of the flow of material in to the system (both through imports and domestic production) and/or the quantity in the garbage stream. Genuinely, accurate and consistently reliable reporting of either of these is variable across OECD countries. Such data generation requires detailed and year round auditing across statistically significant samples from a wide cross section of collections.

This is because:

- *Waste and recycling rates vary with incomes and seasons*. While diversion rates appear to be relatively consistent across most lower to upper middle class groups in Australia (with the exception of very poor performance in very low socio-economic groups), the levels of waste and recycling generation vary seasonally according to consumption patterns. Summer has higher levels of glass and beverage containers, but lower levels of newsprint. Key calendar dates like Easter and long weekends have a significant effect on set out rates.

- *Reliable data requires a combination of regular detailed audits and systematic flow of landfill and recycling receipts*: The only way of reliably reporting the diversion rates (performance) of recycling systems is with garbage and recycling audits underpinning a comprehensive, independent and audited system of full reporting from landfills and recycling facilities. Bin audits are carried out using established methodologies and teams who sample domestic garbage and recycling from dwellings at random and hand sort all materials to establish a meaningful cross sample of the contents of garbage and recycling steams in a given region. Similar detailed audits need to be conducted within recycling facilities to measure quantities delivered, sorted and final product. This process will provide detailed and necessary information on the breakdown of waste streams - but it is expensive.

Given the seasonal and demographic inconsistency, this should be done frequently and throughout the community. Ideally, this data should be matched with survey data from the households audited, although it is important the households do not know they are being audited until after the survey has been completed (to prevent survey bias).

3.6. Impact of technologies on waste policy

New technologies continue to change the parameters of most policy debates in the world. Environmental problems and solutions are both evolving with the development of new technologies.

New food preparation and packaging technologies mean lighter and more functional packaging systems with lower resource intensity to produce. Some of these new materials and formats are also difficult or very costly to recycle.

Technologies to lower the cost of recycling a wider range of materials are also evolving. In 2000, Coca-Cola Amatil developed world-first PET plastic recycling technology. These will continue to evolve and change the scale and nature of waste and recycling operations.

3.6.1. Bio-degradable plastics

The development of biodegradable plastics technologies has been mooted by some in the waste debate as a solution for many packaging and recycling problems, including plastic bag use. Biodegradable plastic technology will continue to find suitable applications, however there are a number of policy risks which need to be considered in the context of this type of technology. As a result, the appropriate environmental use of degradable plastics is likely to be limited.

Most degrading plastics break down in one of three discrete conditions:

- Sunlight
- Water
- Soil

A plastic bag designed to degrade in sunlight will not degrade in the ocean. Implementing these technologies, even with extensive communication and education, poses a number of behavioural risks which may result in adverse environmental outcomes.

As a 2002 report to the Commonwealth Department of Environment and Heritage revealed[xxv], these risks include:

- Pollution in waterways due to high BOD concentrations resulting from the breakdown of starch-based biodegradable plastic.
- Migration of plastic degradation by-products, (such as plastic residuals, additives and modifiers such as coupling agents, plasticisers, fillers, catalysts, dyes and pigments), via run-off and leachate from landfills and composting facilities to groundwater and surface water bodies.
- Trauma and death of marine species resulting from only partial or slow degradation of biodegradable plastic products in marine environments.
- Possible increase in the incidence of littering due to the belief that biodegradable plastics will disappear quickly.
- Soil and crop degradation resulting from the use of compost that may have unacceptably high organic and or metal contaminants derived from biogegradable plastic residuals, additives and modifiers such as coupling agents, plasticisers, fillers, catalysts, dyes and pigments.

3.6.2. Remote Frequency Identification Devices (RFID)

Over the past decade scientists have been looking at ways of improving the efficiency of the packaging supply chain, particularly for Fast Moving Consumer Goods (FMCG) generally supplied to and sourced from supermarkets and route trade retailers.

RFID technology describes a family of micro-chip technologies developed for this purpose that can be used for contactless identification of almost any object. Using tiny inexpensive microchips, products can be identified by scanners at a range of up to a few metres. This is expected to transform a wide number of day-to-day activities, including supermarkets where the widespread application of this system will revolutionise supermarkets and retail shopping.

RFID technology is already in use in many Australian supermarkets as a security system for high value products. An indirect benefit of this technology expanding into all FMCG (as the price per chip falls) is that the microchips embedded into the packaging is likely to facilitate lower cost mechanical separation of waste packaging.

The technology is being aggressively pursued in the US by retail giant Wal-Mart, who have set a target of 2006 as the time for RFID chips in all transport packaging.

Australian supermarkets have followed suit with a joint project to implement RFID in local supply networks. The cost per chip is still around 20 cents, and will need to come down to below 5 cents to evolve as a barcode replacement system.

The consequences of evolving low cost separation for almost all post-consumer packaging is profound. This technology in individual packaged goods is still years away, but its evolution reflects the need to develop policy and systems in a constantly evolving economy. The European packaging standards committee is about to start looking at this issue.

3.7. Litter and Container Deposit Legislation

Litter is a serious problem in Australia. It is a social problem. Littering is the result of behaviour by people in the community. They litter a wide range of goods, not just packaging waste. Litter management takes basically two forms – preventing littering and cleaning it up. Preventing 5% of littering in a park does little to change either the need for, or the cost of, cleaning it up. Prevention programs need to be comprehensive to be effective.

'Litter' is defined by the Beverage Industry Environment Council as any solid waste object (disposable item or resource) that can be held or carried in a person's hand that is left behind or placed in an inappropriate location. Any such material or item disposed of in an inappropriate manner is to be regarded as litter – the end outcome of an environmentally undesirable disposal action.

Litter includes a wide variety of solid waste materials including cigarette butts, cigarette packaging, chewing gum, confectionery wrappers, glass and soft drink containers (both plastic and metal).

Defining, measuring and categorising litter is complex. It can be measured by weight, by volume, by disameninty, by environmental hazard or by safety hazard. All of these measurements have some relevance, but no single measure fully describes the impact of litter.

The cost of littering can be allocated a number of different ways:

- the status quo, where the financial burden falls on local government;
- imposing a clean-up tax or levy on products likely to be littered;
- requiring operators to undertake litter abatement actions at their own expense; or
- placing an artificial value on the litterable product to encourage its return.

The whole community benefits from litter pickups, not only because of the immediate visual improvement, but also because there is evidence that people are less likely to litter in places where there is no rubbish on the ground already. So there is much to be said for the present policy of imposing the cost on the community through local government, particularly since this avoids costly financial transfers.

Imposing a cost burden on the products most often found in litter would be no fairer. Most people who consume packaging and other littered products away from home dispose of them thoughtfully, so a litter tax on these products would be inequitable. Moreover, it would not solve the behavioural problem.

Since litter is so heterogeneous, it is doubtful whether market restrictions, taxes or mandatory deposits on particular types of packaging would have much effect on the overall litter problem. Litter is a behavioural issue that needs to be addressed holistically through continuous public education, concerted action by governments and the State and local level and by producers and retailers of products likely to be littered.

3.7.1. Container Deposit Legislation

The scale of the debate about Container Deposit Legislation (CDL) far exceeds its significance as a meaningful policy tool to address domestic waste in the 21st century.

The three fundamental problems with seeking to apply CDL systems as a realistic policy tool to reduce domestic waste are:

- the relatively high cost of materials recovery per tonne compared to other systems like kerbside recycling,
- the limited scope of the system as a tool to reduce domestic waste (if this is its primary objective),
- Its impact on overall recycling when operated alongside kerbside recycling systems.

These are discussed in greater detail in Appendix A.

Analysis of best practice kerbside recycling under the National Packaging Covenant in 2002 estimated an average yield of 4.37 kg/household/week in metropolitan Melbourne. Similar yields are consistently reported in Sydney. Audits of both CDL and kerbside collection combined produced around 2.93 kg/household/week in metropolitan Adelaide [xxvi](around 33 per cent lower total recovery rate).

It is also worth noting that in virtually all CDL systems, there is a clear incentive for collectors to over-report recovery rates. The time cost of counting individual containers for collectors is high. There is also a clear incentive to over estimate yields as income is derived from both claiming deposit fees and handling fees. Many systems have evolved a culture of generous over-estimation, which would require an expensive and ongoing audit process to address.

The systematic auditing of a diverse network of CDL collection facilities is prohibitively high and never included in any operating cost estimates for such systems.

The national adoption of CDL has become a populist campaign slogan for those pursuing political rather than environmental agendas. Many of its supporters believe industry should be held more "accountable" for its environmental impacts and therefore if CDL has a cost then this is borne by industry, making it not only acceptable, but desirable (ignoring that any cost will be passed on to consumers).

3.7.2. Extended Producer Responsibility

Proponents of the concept of *Extended Producer Responsibility* (EPR) claim this is a relatively new approach to reduce waste from consumer goods by requiring producers to take sole and complete responsibility for managing the environmental impact of their products throughout their life.

Most product manufacturers already take significant responsibility for their products in the consumer stage. In many cases all that is materially left after consumption is the product packaging which has ensured the safety and integrity of the product and the wellbeing of the consumer.

While producers clearly have an environmental responsibility it is part of a total shared responsibility. All participants in the supply chain, from production to consumption, are responsible for the environmental impact occurring in their part of the chain. Littering is an individual act of anti-social behaviour and it is the litterer who should be held responsible.

The Organisation for Economic Co-operation and Development (OECD) defines EPR as 'an environmental policy approach in which a producer's responsibility for a product is extended to the post-consumer stage of the product's life cycle.'

By requiring producers to extend such responsibility beyond consumption does two things.

- First, it flags an important, but flawed, attitude held by proponents of EPR. Namely, that blame or responsibility for environmental problems can always be sheeted home to industry, and large industry in particular, avoiding any personal responsibility that individuals or other agents in the process may have in practice.

- Second, by attempting to do this, proponents of EPR transfer the cost of recovery focussed more on blame and responsibility than resource efficiency. The cost would be transferred in such a way that companies made liable for such recovery would simply pass the cost back to consumers, but in such a way that competitive pressures ensure that any price signal will be minimised.

Focussing solely on the post-consumer waste aspect of a good or service is consistent with the increasingly outdated and over-simplistic waste-centric policy paradigm of the 20th century. There is and will continue to be improvements in packaging and product design that produce less waste, use fewer resources, and contain more recycled and less toxic components. This is part of an evolving packaging industry, and not the result of any EPR initiatives.

The NSW Department of Environment and Conservation (DEC) has identified a very broad suite of policy tools which it considers all fall under the EPR umbrella[xxvii]. They include advance recovery/disposal fees, (where a fee is levied on certain products to fund their collection), compliance measures including material bans and/or restrictions, deposit/refund schemes, eco-labelling, extended product ownership, levies or taxes on particular materials, performance standards and take-back schemes.

The introduction and current use of the term EPR is little more than re-branding. It is a rhetorical term used to create the impression of a new approach to waste policy when it is, in reality, underpinned by the same flawed waste reduction strategies that have delivered at best limited success and at worst a deterioration in overall environmental performance and resource efficiency.

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4. Key Points and Recommendations

4.1. Key points:

- In Australia there is a need for a nationally consistent approach to waste policy issues - an approach to which all States and Territories commit themselves. Companies in the packaging supply chain produce for a national market and for export. Fragmented approaches will undermine the domestic and international competitiveness of companies involved with producing packaged goods.

- Policy makers need to ensure that there is a level playing field in the establishment and operation of waste management policies. All suppliers (domestic or importers) of empty or filled packaging products onto the Australian markets must be subject to the same requirements.

- The packaging industry has a long history of environmental achievement. It has solid credentials as a net waste reducer. Nearly 50% of packaging in Australia is recycled. Industry is working to increase recycling. The major opportunity for an increase lies with "Away from Home" recycling which will be a focus of attention for the second Covenant.

- Waste and recycling policy needs to be developed as one stage in the overall resource efficiency of goods and services. Recycling is a means of achieving a goal and should result in some measurable environmental benefit. Recycling is not always economic and is not necessarily a hallmark of environmental superiority.

- The environmental, economic and social applicability of packaging systems should be assessed both on its value add, the functional and preservative role the packaging plays and its resource intensity. It should not be assessed solely on its recyclability, although this is a component of the overall assessment.

- Whether increasing recycling will reduce the overall cost of managing waste depends on whether outlets can be found for the collected material. There is no point collecting, sorting, transporting and reprocessing waste if industry can find no further use of it.

- Current price signals for waste and recycling services are weak. The market for these services provides little incentive to minimise waste. If waste and recycling services are to operate more efficiently and encourage greater diversion of recyclable materials from the waste stream, then households need more direct price signals to reward responsible behaviour and penalise those who do not wish to reduce their waste stream.

- Evaluating Australia's waste and recycling performance based on a comparison of data from other countries is inappropriate. There is insufficient consistency in methodologies and reliability between many OECD countries.

- Effective and reliable data collection is integral to long term improvement in any system, including waste. Australia still does not have a reliable national system for measuring what is happening now. Some States collect some data, but these are incomplete, and there are no data on the amounts of empty or filled packaging imported.

- Even then, collecting reliable data on garbage and recycling systems is only one part of the overall system that needs to be assessed in order to drive systemic economic, environmental and social improvements. Data also needs to be collected in a consistent manner from the entire production and consumption supply chain.

- The policy process needs to resist the repeated calls for symbolic quick-fix solutions (like mandatory recycling targets or container deposit legislation) which may have adverse impacts and reduce environmental performance, add cost or both.

- The process also needs to avoid pointless regulations that seek to impose cost on companies – these are only passed on to consumers indirectly, weakening rather than strengthening the price signals needed to influence behaviour.

4.2. Recommendations

Establish a national network of state-wide waste utilities

The provision of waste and recycling services need to be rationalised and better coordinated at the national (or, at least, State jurisdictional) level with clear structures, frameworks and guidelines to establish a network of utilities with strategic focus to guide system evolution.

Rationalising waste and recycling services into co-ordinated utilities would achieve three key outcomes:

- Facilitate standardisation of collection across Australia. This will both create a direct incentive to packaging manufacturers and brand owners to try and incorporate their products inside the recycling system, if applicable, and provide greater clarity to householders about what is and is not recyclable.

- Allow the introduction of direct price signals to households, possibly charging a nominal annual service fee for recycling services and an annual fee for garbage plus a fee-per-pickup (using bin reading technology widely available).

- Better balance the negotiations between utility providers and waste and recycling contractors by giving the waste utility greater market power in negotiations and ability to better co-ordinate contracts based on performance and efficiency rather than political boundaries.

The utilities would take the place of local government as the primary waste service co-ordinator in each State and introduce pricing and charging systems to actively promote waste minimisation and more efficient collection systems. They would negotiate all new service contracts with waste contractors and establish optimal contract terms and boundaries based on economic, social and environmental outcomes rather than political boundaries.

Establish a national data collection and reporting systems for solid waste flows, recycling and key inputs including packaging production and imports

A reliable national system of data reporting and audits for all waste streams is required and needs to be implemented by all States and Territories. This reporting should be conducted by an independent agency and not collected from contractors and operators.

This data flow should target the entire supply chain to identify the greatest areas of environmental, social and economic efficiency gain. This nationally coordinated database on resource inputs would work to include all stages of production and consumption processes with particular focus on establishing methodologies and data collection in primary production systems. This data should be compatible and able to be used to build whole of lifecycle reporting for all major goods and services which can then be used to drive optimal packaging, waste and recycling policy in Australia.

Development of a national recycling logo which indicates to consumers that packaging is able to be recycled in Australia and that a system exists to recycle it.

The creation of a national waste and recycling system would also allow for the standardisation of materials recycled and the registration of a trademark or logo which assists consumers by indicating which packaging can be set out for recycling. Such an approach is constrained by the Trade Practices Act (because of the inconsistency or recycling systems around Australia).

Increased cooperation is required between industry and governments to work together to ensure that there is consistency and coordination between the messages to the general community on the role of packaging.

There is a need for increased communication and information to be provided to the general community about the role of packaging. The PCA and other industry groups are seeking a coordinated national approach to convey the appropriate messages. The information must be factual and consistent, particularly in regards to recycling activities.

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5. Appendix A – Container Deposit Legislation

Container deposits were introduced by beverage manufactures as the essential adjunct to the heavy, older refillable beverage packaging technology. For the first three-quarters of the 20th century, beverage manufacturers offered a voluntary deposit on their containers to recover them and therefore increase the efficiency of their working capital. Some refillable milk bottles were reported to make more than 200 trips while refillable soft drink containers even in the late 1980s were required to make a maximum average of five trips per container to recover the cost of the investment in the heavy glass bottle.

The demise of refillable containers was driven by consumers, not industry. The evolution of lighter packaging formats – first thinner glass then plastics and other formats – eroded the market share of the refillable containers. Declining market share translated into fewer returns, fewer trips and a higher cost per container. This demise was accelerated with the phase out of some key supporting systems and cultural behaviour (milkmen, local shopping). The phase-out of home delivered drinks and milk only accelerated the demise of refillable containers and therefore of voluntary deposits.

Container Deposit Legislation (CDL) was introduced into South Australia in the mid-1970s as an anti-litter mechanism, not a recycling system. It was designed to reduce the hazard of beverage containers in public places and reduce the visual disamenity of these containers being left in public places. It was a novel regulatory tool. At the time there was no other system of recovery – CDL pre-dated any sort of kerbside recycling system in Australia by a decade, although there was ad-hoc scout and other charity collection of bottles, newspapers and other items.

When CDL was introduced into South Australia, there were still voluntary deposits on most soft drink beverage containers. However there was a much lower value applied to beer bottles and no deposits on wine bottles. Aluminium cans were increasing in market share at this time. By the 1970s consumer trends were on the move. Beverages were increasingly being consumed away from home, as cans expanded the single serve beverage market.

The mechanics of CDL

In South Australia CDL operates with a mandatory 5-cent deposit on smaller glass, PET and aluminium beverage containers. Liquid paperboard (milk), fruit juice containers and a range of other products were included in the system on 1 January 2003. Wine bottles continue to remain exempt on the curious grounds that they are generally consumed in the home and therefore do not contribute to the litter stream.

The new extension adds considerable complexity to the original CDL legislation introduced in 1974. Whereas the original Act applied to a relatively homogeneous type of aluminium cans and glass bottles and affected a more easily defined group of brand owners, the new regulations affect a much wider range of beverage container types. There are now more than 700 new SKUs required to be compliant and more than 500 companies responsible with this compliance.

The deposit can be recovered at a network of around 120 collection depots operating across the State. The depots receive around 3 cents per container handling fee from industry. The containers are separated by brand and returned to one of three super collectors operating under contract for each major brand. The process of separation is still relatively labour intensive because of the need to allocate deposit and handling fees to brand owners.

CDL schemes operate variously in other jurisdictions around the world. Variances include the size of the deposit, recovery technology (reverse vending machines, retail take back), handling fees and the range of containers and other packaging incorporated under the system.

Benefits of CDL

CDL delivers two direct benefits: lower levels of beverage container litter and higher levels of recycling for those containers attracting a deposit.

It is generally recognised that CDL reduces the levels of beverage container litter in South Australia compared to other States. The rate of this litter reduction is difficult to estimate exactly because of the difficulty of reliably comparing rates and types of litter in matching locations in each State.

According to Keep Australia Beautiful, cigarette butts make up 50% of all litter in Australia. Other key items in the litter stream are take-away food containers, plastic bags, confectionery wrappers, straws and bottle and can tops. In NSW, beverage containers make up less than 10% of the litter stream (not including cigarette butts), and around 4% in South Australia, although they are larger and heavier than many other litter items. Littering occurs most frequently on highways (31%) followed by industrial areas (17%) and parks (16%).

Recovery rates for CDL items are reported to be higher in South Australia than in other States using kerbside recycling systems. Despite being in operation for more than 30 years, reporting of CDL recovery rates remains inexact. Until recently the South Australian EPA regularly reported a beverage container recovery rate of 95%, even though this figure was not supported by any empirical data. Recovery rates are reported by Recyclers SA to be as high as 92% for glass and aluminium containers, and up to 70% for plastic containers. These numbers are almost certainly over-stated, although it is accepted that CDL does achieve overall higher recovery rates than kerbside recycling.

Problems with CDL

The three key problems associated with CDL are the cost of operating a deposit system, the limited scope of the system as a tool to reduce domestic waste (if this is its primary objective) and its impact on overall recycling when operated alongside kerbside recycling systems.

Cost: CDL schemes are inherently expensive compared to kerbside or other less regulated and broader scale collection systems. This is because of the requirement under CDL to identify containers by exact number (in order to pay refunds and process handling fees), and therefore to separate containers not only by their physical properties but also by brand owner.

The Victorian EPA estimated the cost of introducing CDL on top of the existing kerbside scheme would be around $150 per household per annum, or around $1 billion per annum nationally. Similar research commissioned by the ACT Government found CDL would double or triple the cost of kerbside recycling.

It is important to recognize that the cost of operating CDL will increase, not decrease, as the range of containers is widened under this regulation. Under the original legislation the range of container types was narrow – restricted mainly to specific types of glass bottles and aluminium cans. As a wider range of material types and container shapes are added to the system, more complexity is added both in collection and administration.

More recent work shows that under US conditions, beverage container deposits are by far the most expensive way of eliminating one item of litter. One in 164 containers sold ends up as litter, so the handling costs for 164 containers is now being spent to prevent a single potential item of litter. Based on a conservative estimate of a little over 2 US cents per container to maintain a deposit redemption system, this works out at US$ 3.42 ($4.4) to prevent the littering of one container.

By comparison, paid, targeted advertising costs 1.7¢ Australian to eliminate one item of litter, “adopt-a-highway” schemes 18.0¢, comprehensive statewide litter control programmes aimed at preventing rather than removing litter 18.2¢, and litter pickup programmes $1.80.

Scope of CDL: Beverage containers make up around 4 per cent of the domestic waste stream, although around 10% of the litter stream (by number). While CDL is effective at reducing beverage container litter, it is still only one component of the litter stream. CDL doesn’t eliminate litter; it just reduces one fraction of the litter stream. While it is easy to say every item of litter reduced should be encouraged, it is worth considering whether the cost of running CDL might be better spent on litter clean ups and preventative programs which impact on the entire litter stream.

Impact on kerbside: While CDL was introduced to reduce litter, kerbside recycling was introduced to divert packaging waste from the domestic waste stream. Both systems compete for some of the same materials from the waste stream. In this respect, CDL acts as a rival collection scheme to kerbside recycling and acts to reduce its efficiency.

The cost of operating a kerbside recycling system is relatively fixed – around two-thirds of the cost is in setting up the collection and one third is allocated to handling and processing. The more material collected at kerbside, the cheaper it costs per tonne to collect and process. While CDL becomes more expensive to operate per tonne as the range of containers increases, kerbside gets cheaper.

Two independent Government funded studies conducted in South Australia in 1994 and 1998 found that the rates of kerbside recycling in South Australia were significantly lower than other States. A 1994 comparison of the performance of 82 kerbside recycling schemes operated by Councils in Adelaide, Perth, Melbourne and Sydney found that, holding all other measurable factors constant, the kerbside recycling schemes in South Australia recovered around 43% less material than similar schemes in other States.

In 1998 Recycle 2000, a State government funded authority responsible for the promotion and co-ordination of recycling systems in South Australia, commissioned a report comparing the total recycling rates for all Australian States including the recovery of CDL items. The study found that, even when CDL and kerbside were combined in South Australia, it was still the second-worst performing State for the recycling of non-organic domestic waste in Australia. Further, it identified that only 4% to 10% of CDL items were being collected through kerbside schemes.

If the primary policy objective is to reduce domestic waste through increasing diversion, then the effect of CDL is counter productive – it increases recovery rates for a small component of the domestic waste stream while reducing recovery rates and efficiency for a much larger proportion.

Conclusion

The national adoption of CDL has become a populist campaign slogan for a number of environment groups who, typically, have sought to synthesise the complexity of waste management policy into one symbolic act. As with many other environmental campaigns, their position is heavily influenced by a moral perspective that believes industry should be held more “accountable” for its environmental impacts and therefore if CDL has a cost then this is borne by industry, making it not only acceptable, but desirable (ignoring that any cost will be passed on to consumers).

Container Deposit Legislation is 1970s vintage environmental policy designed to reduce specific types of beverage container litter. In this regard, it is effective policy. However the waste policy debate has and continues to evolve considerably beyond this specific objective. Waste policy now includes litter reduction, fast and constant evolution of new packaging formats, changing consumer behaviour and preferences and increasing relevance of all these issues to more serious environmental impacts like climate change and water management.

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6. References

[i] Environment Report 2003, Australian Food and Grocery Council, Canberra www.afgc.org.au

[ii] Conservation and Economic efficiency: an approach to materials policy. Page, T. Johns Hopkins University Press, Baltimore, 1977.

[iii] Glen Eira Glass Bin Trial, Prepared for ACI Glass Packaging by Kinhill Pty Ltd, March 1998

[iv] National Packaging Covenant Council, Independent Economic Assessment of Kerbside Recycling in Australia, Final Report Vol 1, June 2000, prepared by Nolan-ITU Pty Ltd

[v] Container Deposit Legislation and Kerbside Recycling, prepared for the SA EPA and Recycle 2000 by M. Warren, April 1995.

[vi] NSW EPA Annual Report 2000-01. pp41-48.

[vii] Waste Avoidance and Resource Recovery Strategy 2003, p. 23, Resource NSW

[viii] NSW EPA 2001

[ix] World Development Indicators, The World Bank. 2000.

[x] Special Article – Household and Family Trends in Australia, ABS, Ausstats, 1994

[xi] ACT Jurisdictional Recycling Group Research Report, Benchmarking Attitudes and Behaviour Prior to Introducing a new Domestic Resource Recovery Service, Community Change Consultants, August 2003

[xii] Packaging and Labelling, Report 49, Industry Commission, Canberra, February 1996.

[xiii] The EPHC Recommendations: A European Perspective, David Perchard, February 2004

[xiv] Perchard 2004

[xv] Peer review of the Boomerang Alliance Report, David Perchard, March 2005.

[xvi] National Recycling Audit and Garbage Bin Analysis, Beverage Industry Environment Council (BIEC) 1997, , BIEC, Sydney

[xvii] Kerbside Recycling in the Greater Sydney Region, EPA NSW, May 1998, prepared by Nolan-ITU Pty Ltd

[xviii] Local Government Data Collection Survey 2003-04, EcoRecycle Victoria, Melbourne

[xix] EPA NSW, 1998

[xx] ACT Jurisdictional Recycling Group, 2003

[xxi] Consumer Demand for Environmental Packaging, NSW JRG, December 2003, prepared by Taverner Market Research.

[xxii] What's wrong with the Pathetic Package, David Perchard, June 2005

[xxiii] Perchard, June 2005

[xxiv] Perchard, June 2005

[xxv] Biodegradable Plastics – Developments and Environmental Impacts, Department of Environmental Heritage, October 2002 http://www.deh.gov.au/settlements/publications/waste/degradables/biodegradable/pubs/biodegradable.pdf

[xxvi] Survey and audit of kerbside waste and recycling practices, EPA SA, December 2002 www.zerowaste.sa.gov.au/reports.php

[xxvii] www.epa.nsw.gov.au/waste/epr.htm