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US oil company taken... announced it... of the Global Climate... paper comm... at what the US Government thinks will be about \$20 a tonne. The US is building a wind farm in Costa Rica that will provide 30,000... carbon dioxide... credits are no good to them. The G77 groups of developing countries still point out they want... Ireland's recent 25-cent plastic bag levy resulted in a 90 per cent reduction in plastic check-out bags. And this success has kicked-started Australia's debate about how we can reduce the 6.9 billion plastic check-out bags we use every year. Since March 2002, when the Irish introduced their levy, Planet Ark's founder Dee has argued for a similar levy to be introduced in Australia. There are many other environmental groups. Federal politicians Bob Brown and Peter Andren have introduced the Plastic Bag Levy private member's bill into Parliament. What was previously an environmental issue has now become a hot topic, as evidenced by hours of talkback radio discussion. And much of it focuses on the levy. After all, who wants to pay for something they don't need? For users?

Menace: a dolphin and a plastic bag in Port Phillip Bay. That's assuming the shopper has made no attempt to bring and use alternatives such as calico. But this claim needs to be put into perspective. Discount supermarkets many can't afford to pay another tax. Isn't that nice of them? But this claim needs to be put into perspective. Discount supermarkets many can't afford to pay another tax. Isn't that nice of them?

The true price of your bag

Tanya Ha
HE word Kyoto gets greenies depressed. The word salinity makes the average person's eyes glaze over. But mention plastic bags and you'll find an environmental issue that everyone has an opinion about. Ireland's recent 25-cent plastic bag levy resulted in a 90 per cent reduction in plastic check-out bags. And this success has kicked-started Australia's debate about how we can reduce the 6.9 billion plastic check-out bags we use every year. Since March 2002, when the Irish introduced their levy, Planet Ark's founder Dee has argued for a similar levy to be introduced in Australia. There are many other environmental groups. Federal politicians Bob Brown and Peter Andren have introduced the Plastic Bag Levy private member's bill into Parliament. What was previously an environmental issue has now become a hot topic, as evidenced by hours of talkback radio discussion. And much of it focuses on the levy. After all, who wants to pay for something they don't need? For users?



NATIONAL RECYCLING WEEK

PLANET ARK

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Ten Years of Recycling - The Good, The Bad & The Ugly

Good returns
But not good enough. We've still got a long way to go. By **Peter Vincent**

Every week we dutifully recycle our bottles, cans and paper in the belief we are doing some vague environmental good or, at the very least, keeping junk out of a dirty great hole in the ground. But how useful is recycling? The good news is that it has made a difference. In 2001, 15 per cent less household waste was sent to NSW landfills than in 1991. We

The art of recycling

Find a reasonably shady location. Too much sun will kill your worms.
Your farm should include air vents, a tight lid (not flat, or it will collect water), a tray at the bottom to collect leachate and a tap to get that liquid out. Choose a dark, waterproof material to line the bottom of the bin.

They wanted a contemporary building that retained the integrity of the red-brick building. The architect was faced with an enormous empty brick wedge at the eastern convergence of two streets. The only structure within the wedge was a brick wall running north-south that divided the building into a rectangular shape on the west side and a triangular shape on the east side.

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A Planet Ark Recycling Report - November 2005

Surprisingly it is the developing world that is also keen to show the way. India is already the world's third-largest producer of wind energy. Argentina, host to the talks, with targets. As they phasise, it was the

ARATHON tall... staggered throu... night last week... politicians could claim had finally reached a deal on Climate Change Convention so far not made one jot of reference to the greenhouse effect.

Convention". Suddenly, the urge to make money has become the driving force behind action on climate change. The politicians are already

10 Years of Recycling: The Good, The Bad and The Ugly



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Executive Summary

Internationally, Australia is regarded as having relatively established recycling services. However, we are also one of the biggest per capita producers of waste.

Planet Ark has released this report to mark the 10th anniversary of our annual National Recycling Week campaign. It is an ideal time to reflect and report on the rapid changes in domestic and public place recycling in Australia over the past decade.

Recycling became a buzz-word in the lead up to the new millennium and Australians love talking about the subject. Yet a question mark hangs over how good we really are at waste minimisation and recycling.

The report looks at some of the key developments in waste management and recycling in Australia over the last ten years and reviews the major policy developments of the early nineties that precipitated these key developments.

The conclusions of such a review, as discussed in this report, can be best categorised and described in their essence as The Good, The Bad, and The Ugly.

During this decade we saw recycling initiatives, innovation and education play an integral role, resulting in 'The Good' outcomes. Industry led initiatives have resulted in increased recycling rates, the viability of recycling certain waste streams and a move towards better corporate social responsibility.

Newspaper recycling has gone up from 52.7% in 1995 to 74.5% today and we're now recycling almost 2 billion newspapers a year.

We are also recycling 600 million more aluminium cans today than we were ten years ago. 2.3 billion aluminium cans are now being recycled every year and each can that gets recycled will save enough energy to power a TV set for 3 hours.

New Roy Morgan research commissioned for the report shows that 42% of Australians now compost or use worm farms to recycle their food and green waste. This has been helped by national retailers like Bunnings, who promote these recycling practices in all their stores.

Back in 1995, toilet tissue made from recycled paper was poor quality and didn't work well for consumers. Today, 8,000 tonnes of office paper waste is turned into 'SAFE' toilet tissue every year and the softness and strength of recycled toilet tissue has improved considerably.

As with other industry sectors, changes in technology have influenced recycling. Improved sorting technology has enabled recycling facilities to remove a wider range of contaminants, although this problem remains. Technological change has also brought about recycling solutions for waste streams other than packaging and paper.

Australian innovations have led to the development of new technology for complex waste streams such as electronic waste. This has achieved world-wide recognition.

Over time, many recycling services and systems have changed to provide greater convenience, efficiency, returns and safety for collectors. Indeed, the last decade has seen considerable investment in recycling infrastructure by councils and industry.

Local government has been fundamental in changing behaviour towards recycling over the last decade. With the great expansion and development of council-provided kerbside recycling services and the increasing focus on waste education, councils have managed to enlist the support and participation of many households.

The Australian public continue to acknowledge that the environment and recycling is important. However, this is a case of talk verses action, demonstrating 'The Bad'. On the surface level, Australians appear to be good recyclers. However, comparing our recycling and participation rates to countries overseas shows that we could do more.

Only 11% of Australia's office paper is currently being recycled. Nearly 9 out of every ten sheets of office paper are being thrown away despite the fact that 68% of Australians told Roy Morgan that they want to recycle more paper at the office.

Too few mobile phones are being recycled, glass recycling is causing concern and 18 million printer cartridges are being thrown into landfill every year. This is a huge waste. On the up side, however, 9,000 businesses and 2,400 retail outlets have recently recycled 1.5 million printer cartridges via 'Cartridges 4 Planet Ark'.

48% of Australians told Roy Morgan they are confused about what can and can't be recycled. As a result, rubbish like drinking glasses and plastic bags are wrongly being put into recycling bins causing real problems for recycling companies.

Growing recycling expertise and trends towards consumption away from home has also led to the development of public place recycling, including recycling programs at special events. However, this type of recycling has yet to be widely adopted. There is also a need for transparency and accurate recycling data that allows us to measure how well we do. Australia is currently unable to measure its national recycling rate – this has to be rectified with the introduction of a national waste and recycling audit.

Over-consumption is 'The Ugly' side of recycling. Despite the fact that the average household is now placing more items in their recycling bin than they were 10 years ago, we are now producing more waste. Each Australian produces 2.25kg of waste every day, making us one the world's largest waste producers.

Australians now throw away 3.3 million tonnes of food every year - up to a quarter of the country's food supplies, mainly because we purchase too much. The Australia Institute estimates that Australians spend \$5.3 billion a year on food they do not eat.

This report discusses the key developments in Australian waste management, what we've achieved in terms of recycling and participation rates, and a concluding discussion of the highlights and lowlights of a decade of recycling in Australia.

There has been mixed success with recycling in the last ten years. In some areas we fall short. However, in other areas there are isolated examples of brilliance. There is no doubt that each of us can do more to recycle better and waste less. It's a moral responsibility that we owe to our kids as well as to future generations of Australians.

Background

Over the past 10 to 20 years, concern about the environment has brought with it a massive increase in recycling in Australia and around the world. When leaders from over 100 countries met in Rio de Janeiro for the 1992 Earth Summit, waste management and recycling was one of the key Agenda 21 issues that was addressed.

In November 1996, Planet Ark founded 'National Recycling Week' as a community education and media campaign. The aim was to bring a national focus to recycling and the broader themes of minimising waste and managing material resources. This report marks the tenth anniversary of the event

The need for National Recycling Week has never been greater. OECD figures show Australia to be one of the world's biggest per capita producers of waste¹. Indeed, Australia generates waste at an alarming rate of 2.25 kilograms per person per day².

Concern for the long-term availability of resources was and remains the driving force behind National Recycling Week. The concept of the 'ecological footprint' illustrates why Australians should be concerned about the environmental consequences of the way they use materials and produce waste. Ecological footprinting estimates the amount of productive land or space needed to provide the resources to support a particular standard of living.

The average Australian ecological footprint is 7.7 hectares per person. The amount of space available per person on earth is 1.8 hectares, but it's shrinking because of overpopulation, land degradation and pollution. This means that we would need at least three more Planet Earths for all of the world's population to have the same standard of living as that enjoyed in Australia³.

Providing resources for the planet's growing population was a driver for the establishment of recycling programs when National Recycling Week was founded back in 1996. The global population was nearly 5.8 billion⁴. In just under a decade it has grown to an estimated 6.4 billion⁵, having doubled since the early 1950s.

Locally, our population is also growing as we continue to tap into and use our natural resources. There are now 2 million (10%) more people living in Australia than there were during the first National Recycling Week⁶.

The late eighties and early nineties had seen widespread public interest in recycling. However, collection programs were still in their infancy and limited to a group of major population centres. Planet Ark and other organisations worked to stimulate the call for better council recycling services and to educate the public about how and why they should recycle.

¹ See Planet Ark 2004 report *The Recycling Olympics: An international waste & recycling comparison of Australia and 10 other developed nations*.

² ABS Year Book Australia 2005 – page 658.

³ <http://www.epa.vic.gov.au/Eco-footprint/>

⁴ Actual figure – 5,773,464,448 estimate from U.S. Census Bureau

⁵ Actual figures – 2004: 6,376,863,118; 2005: 6,451,058,790. Estimates from U.S. Census Bureau

⁶ Actual figures – 1996: 18,310,714; 2005 (as at September 28th) 20,402,304. Estimates from Australian Bureau of Statistics.

Factors influencing waste management and recycling

There are a number of factors that influence what we recycle and the amount and type of waste that we send to landfill. These factors are often referred to as 'drivers'.

These include:

- **Population size** – As previously implied, population has a major influence on waste management. More people equals more consumption and more waste produced. Australia is a comparatively young nation (in terms of Western-style settlement) and its population is rapidly growing.
- **Population density and spread** - The development of widespread recycling services in Australia has been somewhat hampered by Australia's relatively small population size compared with its huge land area. The majority of the 85% of Australians who live in urban areas now have access to recycling services through council run kerbside collections as well as a range of retail, commercial and council 'drop-off' collection points. Recycling services in remote and rural areas, where present, are mostly provided through drop-off points.
- **Government waste management policies** – Covered later in this report.
- **Market forces** – Collected recyclable materials become 'secondary raw materials', ready for manufacture into new products. In many cases, they compete with virgin raw materials on the commodity market. As commodities, they are subject to fluctuations in their market value. The rules of 'supply and demand' apply to recycled commodities, just as they do to other commodities such as wool. Creating demand for recycled materials through 'Buy Recycled' schemes and policies can therefore affect recycling rates in a positive way.
- **Consumption** – The more materials, food and products we consume, the more waste is produced, whether it be produced in our homes or far away in manufacturing plants. Increases in recycling rates around the world are encouraging, however, they're meaningless if they are outstripped by increases in levels of consumption and overall waste to landfill levels.
- **Consideration of the 'Waste Hierarchy'** – The waste hierarchy is a general model that places different approaches to managing waste in an order of priority that reflects their different environmental consequences. The order is: avoidance (1), reduce (2), reuse (3), recycle (4), energy recovery (5), and landfill (6). Landfill is the least desirable outcome model for the majority of materials. Australia's emphasis on recycling currently focuses our primary efforts on managing the waste problem after it has been created. However, more recent trends, such as 'Design for Environment' and Extended Producer Responsibility, are shifting the focus towards waste avoidance, preferring 'prevention' rather than 'cure'. Manufacturers from certain industries have also become more responsible for their products at the end of their life, leading to more emphasis on landfill prevention.

Government Waste & Recycling Policies

In Australia, waste and recycling is legislated at a State level, with municipal councils providing collection programs for residents.

In 1992, the Commonwealth Government released the **National Waste Minimisation and Recycling Strategy** with a target of reducing the amount of solid waste going to landfill per capita by 50% from 1990 to 2000. All states and territories set their own

waste reduction targets in line with the national 50% reduction target or set targets that exceeded it. NSW set a target of 60% waste reduction from 1990 baseline levels by 2000 and ACT set a target of zero waste by 2010.

Following this, the Australia and New Zealand Environment and Conservation Council (ANZECC; now the Environment Protection and Heritage Council or EPHC) adopted the **National Kerbside Recycling Strategy** to extend and improve kerbside collection.

The National Kerbside Recycling Strategy:

- Set recycling targets for the different major packaging materials (such as glass containers and aluminium cans),
- Required all Governments to have a municipal waste management plan,
- Required all households in major urban areas and 50% of households elsewhere to have access to kerbside recycling, and
- Required all urban households to have a durable container for kerbside collection.

Many local councils have implemented this strategy and are the backbone of household recycling in Australia. As a result, the vast majority of Australians have access to convenient and easy to use recycling services.

More recently, in November 1996 ANZECC (now the EPHC) initiated discussions and negotiations for what became the **National Packaging Covenant**. This encompassed all levels of government and all parts of the packaging supply chain, including producers, wholesalers, distributors, retailers, fillers and brand owners.

The Covenant (which was signed off in July 1999) was based on the principle of shared responsibility for waste and recycling. Previously, the emphasis had been on government (with local government feeling the most pressure) and consumers/householders. The Covenant is voluntary. However, the regulatory safety net of the National Environment Protection Measure on Used Packaging Materials (NEPM) is designed to deal with non-signatories and 'free riders'.

The Covenant expired in July 2005. The EPHC agreed to a proposal for a **revised Covenant**, which came into effect on the expiration of the original Covenant. This revised Covenant has been extended for a further five years and has been significantly strengthened. Signatories are now committed to the shared goals of reaching a national recycling target of 65% for packaging and no further increases in packaging waste disposed to landfill by the end of 2010. For more information about the National Packaging Covenant visit

<http://www.deh.gov.au/settlements/waste/covenant/index.html>.

According to the *Australia State of the Environment 2001* report, state-level waste minimisation programs have steadily gained momentum and most of the waste reduction success has been attributed to increases in recycling rates. However, absolute waste generation rates remain high and therefore waste reduction targets were generally not met by their specified deadlines. For example, in Sydney an 18% reduction in the per capita amount of solid waste sent to landfill was achieved by 2000 from 1990 baseline figures⁷. This was far below the NSW target of 60%.

However in the years since the 2000 deadline, Victoria has reached and surpassed their 50% solid waste reduction target. ACT has also had considerable success, partly

⁷ *Australia State of the Environment 2001* report, page 130.

due to the small land area of ACT, its high population density and high participation - 50% waste reduction was achieved by 2000. ACT also achieved a 280% increase in total resource recycling/recovery tonnages from 1993/94 to 1998/99 alone⁸.

Monitoring changes

One of the greatest problems in measuring our success or failure with waste management is the lack of consistent data collection methods. In Australia, unlike many other developed nations, we don't have a reliable national recycling figure. There can also be vast differences in the recycling systems used and the methods of measuring waste and recycling rates, from one state to another.

The 2001 *Independent Assessment of Kerbside Recycling in Australia Volume 1* report, prepared by Nolan ITU Pty Ltd in association with SKM Economics and EnvirosRIS for the National Packaging Covenant Council, noted that at the time of publication there had never been a comprehensive regulatory cost benefit analysis of kerbside recycling in Australia, despite the significance given to it.

Similarly, for the *OECD Environmental Performance Reviews – Australia 1998*, the national report card given to OECD (Organisation for Economic Cooperation and Development) member nations, noted the difficulty in accurate environmental reporting and evaluation in Australia, stating “environmental monitoring and environmental data are often inadequate in terms of coverage and consistency” and “there is no consistent waste classification system; nor is there reliable, comprehensive information on the amount and composition of waste streams, making it impossible to accurately define the composition of waste or rates of waste generation, or to evaluate waste management practices and performance”.

Planet Ark has long and publicly argued for an annual national recycling and waste audit that documents recycling rates (as both percentages and absolute tonnages), landfill rates, consumption rates and other waste statistics. These waste figures are important environmental indicators. Environmentalists and government authorities alike ask households to participate in recycling and waste avoidance for the good of the planet. We owe it to the people who participate in recycling to document and evaluate our combined efforts in a transparent and meaningful way.

In October 2005, Treasurer Peter Costello and the Minister for Environment, Ian Campbell, announced that the Productivity Commission will launch a 12 month inquiry to examine the way Australia manages its waste. This is a welcome development.

Announcing the terms of reference for the inquiry, the Treasurer stated that:

“Australians generate solid waste at a high rate compared with most other OECD countries. Technologies and processes to avoid, reduce and recover waste are generally not used as extensively in Australia as in some other OECD countries.

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

The inquiry will cover resources associated with solid waste, including: municipal waste (eg household collections, electrical and consumer items,) commercial and industrial waste, and, construction and demolition wastes.

⁸ ACT NoWaste annual progress reports

Detailing the scope of the inquiry, the Treasurer stated that the Commission will “examine and report on current and potential resource efficiency in Australia, having particular regard to:

1. The economic, environmental and social benefits and costs of optimal approaches for resource recovery and efficiency and waste management, taking into account different waste streams and waste related activities;
2. Institutional, regulatory and other factors which impede optimal resource efficiency and recovery, and optimal approaches to waste management, including barriers to the development of markets for recovered resources;
3. The adequacy of current data on material flows, and relevant economic activity, and how data might be more efficiently collected and used to progress optimal approaches for waste management and resource efficiency and recovery;
4. The impact of international trade and trade agreements on the level and disposal of waste in Australia; and
5. Strategies that could be adopted by government and industry to encourage optimal resource efficiency and recovery.

The Government will consider the Commission’s recommendations and its response will be announced after they receive the Commission’s report.

Australia’s states and territories are already making progress towards standard State of Environment (SoE) reporting, an environmental management tool used by governments internationally. In Victoria, the recycling rate recently met and overtook the rate of disposal to landfill – something we hope to see nationally. A national waste and recycling audit could help to facilitate this outcome.

There are also reliable sources of data from specific industry sectors, particularly where industry associations enable traditional competitors to address industry-wide environmental issues.

As a good example, widespread publishing industry support and involvement in the Publishers National Environment Bureau (PNEB) has meant that the PNEB receives broad input from all the major companies in Australia’s publishing industry. As a result, the PNEB is able to accurately measure and report annually on both newsprint and magazine consumption and recycling rates. They have been able to do this at both a state and national level.

Australia is currently recycling nearly 2.5 billion newspapers and magazines a year. These sector-specific figures therefore support and illustrate the general trend that Australia is making inroads towards minimising waste from households.

Part 1: Key developments

Council recycling

History

In 1975 Canterbury Council became the first Australian municipality to start separating some recyclable materials from household waste. Kerbside recycling collection programs were introduced in many urban council areas in the late eighties and early nineties. At this time there was also a groundswell of public interest in environmental issues. Household recycling offered an easy way for concerned citizens to participate in environmental protection. Hence, there was overwhelming support for recycling across Australia at a community level. By 1992, when the Australian Bureau of Statistics began the now annual study *Environmental Issues: People's Views and Practices* (catalogue # 4602.0), around 85% of households were practicing some kind of basic material re-use or recycling, and nearly half of these households recycled through kerbside collections.

This public interest in recycling was an important driver in establishing early council collections. With councils already responsible for household rubbish collection, ratepayers began calling for separate collections for recyclable materials. It is interesting to note that recyclable materials among household waste represent a relatively small proportion of the total overall waste stream (particularly compared with waste from the construction and demolition area). Yet kerbside recycling quickly became a key focus of public waste management policy. Municipal councils were placed under significant pressure to respond to resident demand for recycling service, often at great financial cost. However, it has brought about positive results.

The National Packaging Covenant aims to take some of the financial pressure off local government, through the Covenant's principle of shared responsibility between all parties in the packaging supply chain. However, the Australian Local Government Association (ALGA) has raised concerns about the Covenant in its current form. The ALGA believes the Covenant allows too much reliance on kerbside recycling when industry groups could be developing alternative collection methods, and that the packaging industry should take greater responsibility for the waste it produces throughout its lifecycle.

Changes in collection systems over the last decade

Early recycling collections used council provided bags and crates, or boxes or other bins that were provided by the householder. Participation rates for bags were low among householders, but were relatively inexpensive for councils to provide. Recycling crates costed more but facilitated greater participation and relatively low contamination rates. Mobile garbage bins (MGBs), better known as 'wheelie bins' represented the greatest initial cost. However, they also allowed automated collections and facilitate higher material recovery rates, though with greater contamination than that generally experienced with crates.

Very few councils now use bags as the collection container for recycling programs, with the trend favouring wheelie bins. Some councils use split bin systems, where a partition in the bin either separates recyclable containers from paper, or recyclables from general waste.

Recent years have seen a move away from source separation at the kerb, which involved a truck with a three-person team (one driver, two runners) sorting the recyclables at the kerb. Many councils now have fully automated trucks with a single driver/operator, where the recyclables are separated at a recycling centre such as a Materials Recovery Facility (MRF).

Changes in collection systems have been motivated by the need for improved efficiency, the Occupational Health & Safety needs of collectors and the improved returns from households with easier and more convenient systems.

The rise of garden/organics recycling

By 2000, the vast majority of households in metropolitan areas had access to kerbside recycling services, with high reported participation. Despite this, waste reduction targets were still not being met. Bin audits highlighted the high proportion of garden/organic waste remaining in the garbage destined for landfill.

Recent council developments have focused on this garden/organic waste stream, which constitutes around 35% of the total domestic waste stream⁹. Many more metropolitan councils now offer a third bin for garden/organic waste collections. Councils also encourage householders to use compost bins or worm farms to process some garden/organic waste in their backyards. This is working - retailers like Bunnings now sell these units nationally and research commissioned for this report indicates that 42% of Australians compost or use worm farms to recycle food and garden waste.

Garden/organic waste collected through council programs is generally recycled in one of two ways. Large scale composting is used to recycle the garden/organic waste into commercial compost or mulch products. The compost or mulch is then sold to households or the agricultural sector. Garden/organic waste from council collections is also being used, along with other plant waste from agriculture or industry, as a fuel in waste-to-energy plants. For example, Green Pacific Energy uses garden/organic waste from suburban households to produce energy, which is sold as green energy to the electricity retailer Energy Australia.

Case Study: Cleanaway's 'Bio-insert' for green waste bins

The typical Australian home has a backyard, producing a large amount of plant trimmings, twigs, fallen leaves and lawn clippings. Mobile garbage bins (MGBs) have proven conveniently large and strong enough for garden waste. However, garden/organic waste in such bins generally has too much moisture and not enough oxygen. The material rapidly becomes anaerobic, causing unpleasant odours and other problems. 'Bio-bins', which keep garden/organic waste aerated, have been used with great success in Europe and North America. However, very few Australian councils would wish to go to the expense of replacing the green waste bins they have already invested in.

Waste management company Cleanaway has developed the 'Bio-insert' – an insert that, with some minor modifications to the bin, converts normal MGBs into Bio-bins. Bio-inserts ventilate the contents of the bin, allowing some of the moisture in the garden/organics waste to evaporate, reducing the weight of the materials, aiding decomposition and reducing odours. In some areas, this means that garden/organic waste can be collected less frequently. Many councils are now adopting bio-inserts for their garden/organic waste collection bins.

⁹ Enviro 2002 article *Kerbside Breakthrough*, based on information from Cleanaway

Recycling away from home

Kerbside recycling works well for the waste generated within the home. However, around half of our beverage containers are used and disposed of away from home, where there are generally no recycling bins for empty cans, cartons and bottles. This has led some environment groups to call for national introduction of the Container Deposit Legislation (CDL) scheme currently used in South Australia.

With kerbside recycling reasonably established in Australia, waste authorities have begun to turn their attention to recycling in public places and at special events. Some popular public places now have recycling bins alongside garbage bins, such as those at the Southgate tourist precinct in Melbourne and Lane Cove National Park in Sydney.

Studies and trials have shown that recycling bins need to be where beverages are commonly consumed or they won't be used. With this in mind, waste authorities are particularly targeting the hospitality and tourism sectors. Returns have been high from cafes, bars and restaurants where staff and management show a commitment to recycling. Major shopping centres are also starting to provide recycling bins.

Special events present a temporary need for waste services that incorporate public place recycling systems. The Sydney 2000 Olympics was a great example of well-planned special event recycling. The Games achieved a record recovery level of 77% of total waste. Since then, other major events have incorporated comprehensive waste and recycling systems. The closed-loop recycling program at the 2004 Australian Open was a finalist in the 2004 Banksia Environmental Awards and the upcoming Melbourne 2006 Commonwealth Games has recycling programs at event venues and within the athletes' village.

At special events the generation of and disposal of waste is very much determined by the 'input' waste streams – the items, brought in to the event. Recent years have seen a trend towards input controls, which manage the packaging allowed for use by event food outlets (and/or managing the kinds of food/packaging allowed to be brought into venues by members of the public). By implementing input controls, planners can provide tailor-made waste and recycling services that maximise recycling and minimise waste and litter at the venue.

Case Study: Visy Closed Loop

Visy Industries is a major Australian packaging, waste management and recycling company. With expertise in both the provision of food packaging products and recycling services, it makes sense that the two distinct areas work together as Visy Closed Loop.

Visy Closed Loop works with venues, events and organisations to provide packaging that can be captured after use, then recycled and manufactured into new products.

The closed loop program is based on the concept of controlling inputs to tailor the waste stream, maximising recycling and minimising the amount of waste sent to landfill. The inputs are all either recyclable or biodegradable/compostable.

Visy Closed Loop (and UK subsidiary Closed Loop London) has provided closed loop packaging and recycling services to a range of clients including the Sydney 2000 Olympics, Melbourne and Olympic Park Trust (managing Olympic Park

Stadiums, Rod Laver and Vodafone Arena and Melbourne Park Function centre) and Marks & Spencer for their 'Food to Go' product range and recycling.

Technology

A broad range of materials are recyclable in principle. However, recyclable materials are often made into complicated products that make material recovery at the end of the product's life nearly impossible.

There are also problems with separating materials, particularly when different materials have similar physical and chemical properties or appearance. For example, there are around forty different types of plastics used in manufacturing, but only a handful are commonly recycled and even then recycling may be limited to certain colours.

The last decade has also seen the development of new technologies that make it easier to separate, sort and process various recyclable materials. For example, City of Stirling commissioned a Western Australian company, Atlas Group, to design and build a 'total materials recovery facility' - a facility that is able to sort a mixture of household discards to recover compostable organics (food scraps, garden waste and paper), glass bottles and jars, plastic bottles, steel and aluminium cans. This enables City of Stirling to use a single bin for general waste and recyclable materials, removing the need for householders to sort their own waste. Now all 176,000 City of Stirling residents recycle – whether they like it or not! The recovered packaging is recycled as normal and organics are made into a high-grade compost product.

Organics recycling has enjoyed huge benefits from innovative processing technology. Around the country a range of technologies are used to process organic waste, including composting and bio-digestion plants, and anaerobic digestors.

Contamination is also an ongoing issue in the Australian recycling industry. A broken ceramic cup or 15 grams of oven proof glass can stop a whole tonne of normal recyclable glass from being recycled.

Contamination can make it harder to sort and recover desired materials. It can also limit the uses for recovered materials and can cause problems with the machinery in processing facilities. Some recent advances in recycling technology, however, address contamination removal. For example, Visy Glass has invested in optical sorting technology, which enables them to remove contaminants such as metals, ceramics and non-recyclable glass, such as Pyrex. In the past, contaminated recovered glass has ended up in landfill. The optical sorting plant enables a much greater proportion of the glass recovered to go on to be recycled into new products.

The role of technology in recycling complex waste products

The past decade has seen the recycling of paper and packaging materials become established through kerbside collections. These items are relatively simple, made up of a single material type. The use of recycled materials in manufacturing relies on the recovered materials being reasonably consistent and pure. This can sometimes limit the recycling options for products made up of a range of component materials (such as computers, mobile phones or printer cartridges).

There are now a number of resource recovery specialists in Australia using a range of methods to extract and recover certain materials, particularly ferrous, non-ferrous and precious metals. This is widening the number of products that can be recycled.

Case Study: Close the Loop®

Close the Loop Limited is a leading global recycler of imaging consumables including inkjet cartridges, laser and toner cartridges, drum units and copier bottles.

Close the Loop® Founder and CEO, Steve Morriss was previously a professional cartridge remanufacturer. Having promised customers that none of the cartridges he collected would be sent to landfill he found himself with a growing stockpile of unwanted cartridges and cartridge parts. Many of the cartridge types available at that time were not being remanufactured. The hi-tech zero waste landfill technology needed to process and recycle these unwanted cartridges simply did not exist.

Steve's desire to keep his environmental promise to his customers led him to develop the technology he needed. Steve worked with other resource recovery specialists to find existing technologies in other industries and adapt them to the task of zero waste cartridge recycling.

His 'Green Machine' was the result of this extensive research and development, and much trial and error. Based in Melbourne, the Green Machine takes cartridges, breaks them up and separates and recovers the cartridge's component materials. The recovered aluminium, ferrous metals, sponges, residue toner, plastics and other materials are then used to make new products. Separate Green Machines process toner and inkjet cartridges. Nothing goes to landfill.

Cartridge recycling recovers a huge range of plastics of various types and colours. In the recycling industries there is currently no demand for mixed and contaminated plastics. Further research and investment in technology at Close the Loop® led to the development of eWood™ - a recycled plastic lumber product made from plastic recovered from electronic waste. This won an episode of 'New Inventors' on ABC TV.

As a result of their technological achievements, Planet Ark partnered with Close the Loop® for the groundbreaking 'Cartridges 4 Planet Ark' recycling program which has now processed and recycled over 1.5 million printer cartridges.

Industry-led initiatives

Traditionally, the environmental responsibility of producers focused on the environmental impacts of their factories. Extended Producer Responsibility (EPR) is a policy approach in which a producer or manufacturer takes responsibility for the environmental impacts of their products throughout the products entire life cycle.

This cradle to grave approach extends a manufacturer's responsibility to also include any impacts of the product in its use and ultimate disposal. Recent years have seen growing interest in EPR within the broader context of corporate social responsibility.

International waste management and legislation trends are highlighting the importance of product stewardship and EPR among brand owners and manufacturers. Some producers are undertaking EPR initiatives in response to customer demand,

government pressure, the need to gain a competitive edge or a combination of these influences.

In recent years there have been a number of fledgling industry-led EPR initiatives in Australia that aim to minimise waste and maximise recycling. Examples include:

- **'Cartridges 4 Planet Ark'** – Created by Planet Ark and Close the Loop®, this initiative needed support from Australia's leading printer brands to get off the ground. Brother, Canon, Hewlett-Packard, Lexmark, Konica Minolta, Epson and Panasonic sponsor this innovative electronics recycling program and cover the cost of collecting and recycling the cartridges. Many of these manufacturers have incorporated 'Cartridges 4 Planet Ark' into their own EPR programs. 1.5 million printer cartridges have been recycled by this program.
- **The Mobile Phone Industry Recycling Program** – In 1998, the Australian Mobile Telecommunication Association (AMTA) initiated this program, funded by a levy on each mobile phone handset sold into the Australian market. Over 260 tonnes of mobile phone handsets, batteries and accessories have been collected for recycling in Australia through this program. This keeps potentially harmful cadmium contained in old mobile phone batteries out of landfill. This program has not performed as well as it could but it is being relaunched.
- **Recycle IT! and Byteback™** computer recycling initiatives - The Recycle IT! computer collection pilot was undertaken in the Western Sydney area between 15 November 2002 and 15 April 2003. It was organised by the Dept of Environment and Conservation NSW and the Australian Information Industry Association (AIIA) as an information gathering exercise. Byteback™ was launched in 2005 in Victoria and is an ongoing computer recycling initiative of EcoRecycle Victoria, City of Boroondara and Hewlett-Packard.
- **TV Recycling pilot** – The Australian Electrical and Electronic Manufacturers' Association (AEEMA) ran a pilot TV takeback scheme in 2002-2003. The final report *Beyond the Dead TV – Managing End-of-Life Consumer Electronics in Victoria* details the findings and major issues of this project. The project resulted in diversion from landfill of 3,500 TVs, computer monitors and VCRs in the period funded by the pilot.
- **Plastic Bag Code** – The Australian Retailers' Association (ARA) released the Code of Practice for the Management of Plastic Bags in response to pressure from Planet Ark, environment groups, government and consumers to reduce plastic checkout bag use and litter. The threat of a levy or mandatory action also hangs over the retail sector should they fail to adequately reduce plastic bag use. The Code contains specific targets, including reducing the number of plastic checkout bags issued by 50 percent by end-2005 based on 2002 levels. Since 2002, 3.5 billion less plastic checkout bags have been used in Australia and more than 10 million reusable bags have been sold.

EPR programs have proven particularly successful where they have multi-vendor or industry-wide support and/or are non-brand specific. Programs tend to have greater participation when they make it easy for members of the public to get involved.

Programs, such as 'Cartridges 4 Planet Ark', that collect and recycle all makes and models (as opposed to brand-specific take back programs) also avoid confusion among consumers. Networks of convenient collection points, whether through material transfer stations and retail outlets (or other convenient collection systems and locations) are vital to ensure maximum public and industry participation.

Legislation in Australia tends to give the corporate sector time and room to set up their own voluntary programs before regulations are changed. However, there is talk at Federal and State government level of the need for greater product stewardship and EPR among manufacturers. This could lead to increased pressure on industry.

For example, the *Waste Avoidance and Resource Recovery Act 2001* provides for the introduction of EPR schemes in NSW. The NSW government has also released the *Extended Producer Responsibility Priority Statement 2004*. This first Priority Statement identifies 16 wastes of concern and nine wastes for priority focus: computers, televisions, used tyres, nickel cadmium batteries, plastic bags, agricultural and veterinary chemicals, agricultural and veterinary chemical containers, mobile phones and batteries, and packaging waste. The Priority Statement has put the industries producing these wastes on notice that they need to reduce the amount and/or impact of these products in the waste stream.

Industry-wide programs also have the ability to focus the efforts and investment of traditional competitors behind their common environmental goals. New high-tech recycling facilities are an enormous investment, often beyond the means of a single company. However, industry-wide initiatives, often conducted through a neutral industry association, allow industry players to share the burden. Australia's newspaper industry is a great example of how an entire industry can take the initiative to thoroughly address their waste issues. The rise of the newspaper recycling rate from 28% to 74.5% over the last fifteen years shows how successful the efforts of the publishing industry and the Publishers National Environment Bureau have been.

Case Study: Newspaper Recycling

In 1990, News Limited garnered wide publishing industry support for the creation of a new body called the Publishers National Environment Bureau (PNEB). This brought together the major companies in Australia's publishing industry to support, encourage and promote the recovery and reuse of old newspapers and magazines.

To underwrite the viability of newspaper recycling, publishers agreed to long-term contracts for newsprint containing recycled fibre, subject to normal cost and quantity issues. Newsprint with recycled fibre was at that time an unknown but the investment in the future was made.

With this huge capital outlay undertaken, the newsprint manufacturer and the publishers had to create a guaranteed flow of recovered newspapers. This was done in two ways:

- The newsprint manufacturer set up a company called Kerbside Papers to offer long-term contracts to Local Councils and collectors for recovered newspaper.*
- Through the PNEB, publishers created an Interim Support Fund, contributing \$2 million a year for the three years leading up to the commissioning of a de-inking plant to support initiatives that expanded and underpinned the recovery and re-use of newspapers.*

The \$6 million was made available to any project endorsed by the Commonwealth and State environmental agencies and went to Local Government, State Government, researchers and private firms. Over 100 projects were supported.

For example, the use of old newspaper to produce fibre for home insulation was developed with PNEB funding. The publishers also encouraged community involvement in kerbside recycling by making \$1 million worth of free advertising space available each year to Commonwealth and State Governments to promote newspaper recycling. \$100,000 was also spent each year supplying recycling education materials to schools and Local Councils throughout Australia.

The result of this unique and ongoing partnership, and its voluntary plans under ANZECC, has been a great success, with newspaper recycling rates in 1989 of 28% rapidly increasing to 72.4% in 2001 and 74.5 % in 2004. Nearly 2.5 billion newspapers and magazines are now recycled in Australia every year and we are now arguably the best newspaper recyclers in the world.

Education

Council waste education

Many councils focused their early recycling efforts on putting the infrastructure and collection systems in place, only to find themselves stumped with the question of how to get residents to start using their services and using them in the right way.

Education is vitally important in recycling programs, not just to encourage participation but to reduce the wrong items being put into recycling bins. This leads to contamination, which can cause problems for recycling companies.

At a council level, recycling typically became the responsibility of engineers working in council waste service departments. These engineers were well equipped to elect and implement the right recycling technology and systems for collecting and transporting materials, however, very few were trained as communicators or educators.

Early recycling brochures sometimes listed recyclable items in specialised terms that were familiar to recycling industry people, but confusing to residents. For example, many residents were encouraged to put PET in their recycling bins. This was intended to signify polyethylene terephthalate, the plastic commonly used to make soft drink bottles. As a result, council collectors occasionally found dead cats and dogs in recycling bins, presumably from people with recently deceased household pets (who took the acronym 'PET' to mean the literal 'pet'). One can only guess what people thought pets could be recycled into.

Recent years have seen council recycling education shift to professional educators or public relations staff. Many councils have a recycling officer dedicated to education. Some councils also have educational support from neighbouring councils or from the shared resources of regional council alliances. Some states divide councils into regional waste management groups, many of which have a waste educator.

Waste education elements have also been incorporated into many municipal waste management contracts. In such cases, the responsibility for education is outsourced along with the waste management contract to an outside specialist.

Many councils have also worked with organisations like Planet Ark to get the recycling message out to ratepayers via their local media. This is often done through special

events like Planet Ark's 'National Recycling Week' and Sustainability Victoria's 'Zero Waste Week'.

Teaching new recycling behaviours

Environmentalists around the world have highlighted the importance of recycling and waste management and have played an important role in raising awareness of these issues among the general public. This awareness has been an important first step.

From this platform, waste education has taught people what and how to recycle, why it's important to recycle and why we should 'close the loop' by buying back recycled products.

Behaviour change can be hard to bring about as humans can be creatures of habit. But the challenge of getting people to do some sort of recycling has been met – ABS studies report blanket participation in recycling programs and 'at home' reuse.

However, a huge amount of recyclable materials are still ending up in landfill. For example, last year Australians recycled 70.8% of the aluminium drink cans that we used, but that still leaves 957 million cans that could have been recycled ending up littered or in landfill – that's about \$15 million worth of scrap metal. Thanks to a paltry 11% recycling rate, 9 out of every 10 sheets of office paper are also thrown away.

Case Study: Kogarah Municipal Council

Kogarah Municipal Council in NSW introduced a new domestic waste service in November 1999 to meet the State Government's waste reduction targets. The new domestic waste service for houses included:

- *A fortnightly collection of co-mingled recycling in a 240L MGB*
- *A fortnightly collection of garden waste in a 240L MGB*
- *A weekly collection for garbage in a 120L MGB*

Prior to the new service Kogarah Council's domestic waste service was a weekly 240L MGB garbage collection and a weekly 55L crate recycling collection.

Council recognised that this new range of waste services might have community opposition due to the reduction in garbage bin size and the introduction of two new bins for recycling and garden waste. For this reason, Kogarah Council developed an innovative multi-media education campaign.

This included a re-useable motivational video featuring Michael Caton, delivered free to all households with the new bins. This video explained why the new service was introduced, how to use the new service and what happened with the waste after it was collected. This was also backed up with media editorial coverage, advertisements, brochures, a dedicated hotline number, bin inspectors and displays at events and public places.

Education was a key factor in the success of Kogarah Council's new waste service. Audits just one year later demonstrated that contamination levels in both the recycling and garden organics streams were low – 3.6% and about 1% respectively. 51% of the domestic waste stream was diverted from landfill in the year 2000 and the overall recovery rate for recyclables and garden organics was 86%.*

**Waste Service Overview 2000, Kogarah Municipal Council.*

As a result of Kogarah Council's ongoing waste education initiatives, their contamination and diversion rates remain static. Waste audits in early 2005 showed a 53% diversion rate with low contamination rates for recyclables at 4.3% and garden organics at 1.9%.

Recent years have seen a small degree of apathy set in after the early years of enthusiastic recycling. Planet Ark is working with the Federal Government, the Aluminium Can Group, the PNEB and other recycling industry stakeholders to reignite Australia's enthusiasm for recycling and our commitment to recycle ALL of the materials we're able to, not just a token few.

As well as promoting education that consolidates existing recycling behaviours, Planet Ark has been involved in teaching new recycling habits to consumers. In the early 90's, Planet Ark identified that council kerbside recycling collections were not inherently suited to all types of waste.

Planet Ark closely followed the overseas trend towards retail 'take-back' programs that used a network of 'drop-off' collection points. Take-back programs through collection bins in nationwide retail outlets offered a convenient alternative for recyclable materials such as plastic bags and greetings cards.

Planet Ark adopted this retail take-back program approach for the 'Cards 4 Planet Ark' program. This greeting card recycling program was started as a fun role model to engage the public in recycling through retail collection points.

Planet Ark set up a network of recycling collection points at Coles supermarkets and educated people on how to use them through TV and radio adverts and print articles.

Strictly speaking, greeting cards make up a tiny proportion of the domestic waste stream and are by no means a priority waste. However, by recycling the greeting cards into grocery packaging and toilet tissue, Planet Ark was able to highlight a simple closed recycling loop that demonstrated what some recycled materials get made into.

Members of the public who returned their greeting cards for recycling to Coles could then check out the fruits of their recycling labour on the supermarket shelves simply by looking for 'SAFE' brand tissue products or packaging bearing the 'Australian Recycled Cartonboard' logo.

Millions of Australians participate in 'Cards 4 Planet Ark' each summer and the program has been copied overseas. Having established behaviour change in getting consumers to take a product back to a retail outlet for recycling, Planet Ark was able to adopt this model in subsequent retail take-back programs.

The 'Phones 4 Planet Ark' program was implemented to support AMTA's Mobile Phone Industry Recycling Program. More recently, the 'Cartridges 4 Planet Ark' program was introduced using the successful 'Cards 4 Planet Ark' role model - this time using permanent Planet Ark collection points in over 2,200 retail outlets, including participating Australia Post, Officeworks, Harvey Norman, Tandy, Dick Smith Electronic and Powerhouse outlets.

An online search engine at www.RecyclingNearYou.com.au was set up by Planet Ark to help people find their nearest collection points for all of these take-back programs.

Another method of recovering recyclable materials is 'return to sender' programs in which items are returned for recycling through courier or postal systems. Such systems

typically use pre-paid envelopes or satchels. Through a partnership with Australia Post, 'Cards 4 Planet Ark' was again an important tool for popularising this method of recycling among the Australia public.

In 2002, Australia Post joined with Planet Ark to annually provide 1 million free reply-paid greeting card recycling envelopes to the public through participating Australia Post outlets. This meant that the 'Cards 4 Planet Ark' program became available for the first time in many remote areas. The program has been a huge success.

It is anticipated that our experiences with Australia Post and 'Cards 4 Planet Ark' will serve again as a role model for future 'return to sender' recycling programs.

Market development – 'Buy recycled'

As with virgin raw materials, recovered recyclable materials can be bought and sold. They are effectively commodities. Whatever their inherent 'value' or usefulness to manufacturers, they can have a fluctuating market value. As such, recycling is subject to the rules of supply and demand.

In Australia, recycling has developed with an emphasis on 'supply'. Early waste strategies set targets for reducing waste to landfill. Recycling was seen as a good way to do this, so there was a great push towards recovering materials. In a short space of time there was an oversupply of recovered recycled materials in a country where there is a local and very affordable supply of virgin raw materials. As a result, some recycling companies and councils struggled financially for a number of years to recoup any collection costs from the sales of recovered materials. The demand for recycled products needed to be created to sustain the recycling collections and supply.

Initially, consumers took up the cause and recycled content products were 'in vogue' in the late eighties and early nineties, despite their often higher price. However, many people shifted back to virgin products. Fortunately, government bodies and enlightened businesses have recently stepped in with green purchasing policies.

Green procurement has grown in recent years with the rise in awareness of corporate social responsibility. With corporate green procurement, an organisation adopts a purchasing policy of buying environmentally responsible products in preference to less sustainable alternatives. This provides a healthy market for companies that are doing the right thing by manufacturing products that take a lesser toll on our planet.

Many green purchasing policies allow an additional budget (for example, a premium of up to 10%) for environmentally preferred products, recognising that they sometimes come at a greater initial purchase price. For many companies, this is seen as a marketing expense. Green purchasing allows these companies to do the right thing and also demonstrate their environmental commitment to shareholders, stakeholders and/or customers.

Purchasing alliances

Overseas a number of green procurement initiatives have found success by forming alliances, combining the resources and purchasing power of like-minded organisations. A small number of such initiatives have been launched locally in Australia.

The **Buy Recycled Business Alliance (BRBA)** is a non-profit, pro-sustainability alliance of businesses that are united by a commitment to promote the purchase and

use of recycled content products and materials. BRBA has a range of member companies that include some of Australia's major corporations. Coles Myer Ltd, McDonalds, Visy Industries, Fosters Group, Fuji Xerox and Australia Post are amongst them. The BRBA is committed to increasing the take-up of products made from recycled materials by harnessing the purchasing power of BRBA members (\$30 billion p.a.) to 'buy recycled'.

With all levels of government encouraging the community to avoid waste and to recycle and buy recycled products, it's encouraging that many government bodies are starting to practice what they preach by buying recycled products themselves.

In particular, the **ECO-Buy** program is helping Victorian local governments to buy recycled and environmentally responsible products. The program is a joint initiative of the Municipal Association of Victoria, EcoRecycle Victoria and the Victorian Greenhouse Strategy.

ECO-Buy is an expansion of the Local Government Buy Recycled Alliance (LGBRA), which was established in April 2000. The change of name occurred in late 2002 to reflect the expanded focus of the program brought about by the additional funds provided through Victoria's Greenhouse Strategy. The Local Government Buy Recycled Alliance focused solely on purchasing products with recycled content. ECO-Buy has expanded this focus to also include greenhouse friendly and environmentally preferred products.

ECO-Buy member councils return detailed reports annually that document their green purchasing practices. ECO-Buy's annual *The Great Report Cavort* documents show that local government membership in the program has steadily increased since its inception. Expenditure on recycled products has generally increased as shown in Figure 1 (overleaf), though the most recent report shows a small drop. However, the total expenditure across all categories of green product increased, perhaps reflecting the expansion of the program to include energy-efficient and other green products.

ECO-Buy's report writers suggest that the decrease may also be due to the fact that relatively few footpath and road works were implemented among member councils during the reporting period – these type of works often use recycled materials. They also note that a number of councils reported the incorporation of green specifications for construction projects that will take place in the next reporting period. As a result, they have reasonable expectations that council expenditure on recycled products will once again increase for the 2005 report.

Figure 1: Victorian local government expenditure on recycled products through the ECO-Buy program

Year	2001	2002	2003	2004
Reported expenditure on recycled content products	\$5.9 million	\$15.9 million	\$24.5 million	\$22.7 million
Number of councils represented in expenditure*	24	30	40	42
Total number of member councils for reporting period	30	42	48	50

Sources: The Great Report Cavort #4 2003-2004

The Great Report Cavort #3 2002-2003

The Great Report Cavort #2 2001-2002

The Great Report Cavort #1 2000-2001 (all from ECO-Buy at <http://www.mav.asn.au/ecobuy>)

* Note: Not all member councils returned reports to ECO-Buy with all sections completed. Expenditure figures are based on the purchasing of just the councils that returned completed expenditure reports.

Case Study: Merino Pty Ltd

Merino (formerly Paper Converting Company) is a 100% Australian-owned paper, plastic and non-woven product manufacturing company. Merino has been manufacturing paper and plastic products since 1939 and is the oldest tissue manufacturer in Australia.

In 1985 Merino began recycling paper to produce toilet tissue and have continued to develop products using recycled office paper and recycled paper blends. Merino make the 'SAFE' brand range of toilet tissue and other recycled content tissue products for the household market. These are sold through supermarkets and other grocery outlets.

Merino also make the recycled content 'Earthwise' tissue range, aimed at the corporate market.

Merino has faced the highs of the recycled product fad of the late eighties and early nineties, and the lows of the fierce competition from the development of perfumed, quilted, embossed, oil impregnated and/or printed 3-ply virgin products.

Merino has also faced stiff opposition from imported toilet paper that's made from cheap virgin fibre. This has had a very negative impact on the manufacturers of recycled tissue products. However, by making their quality recycled tissue products available at the cheapest possible price, Merino have managed to ride this problem far better than most. They have also achieved this through a commitment to improving the quality and softness of their tissue product.

A comparison of trends in 'SAFE' and 'Earthwise' sales reflect trends in the market for recycled products. 'SAFE' sales remained steady over recent years, reflecting the strong loyalty of eco-conscious customers. Discounting at supermarkets always results in a temporary increase in sales, demonstrating that many customers are more driven by price than 'higher', green motives. However, over a 6 year trend 'SAFE' products sales have increased by 33%.

On the corporate front, major corporations are seeing that helping the environment can also mean saving money. By buying 'SAFE' toilet tissue for their stores, 1 IKEA store alone saved \$4,016 on the cost of toilet paper purchases by switching to the 'SAFE' brand. Better still, no-one seemed to notice that the company had switched to using toilet paper that was made from recycled office paper instead of trees.

This shows how far recycled toilet tissue has come quality-wise since the early nineties when many customers had had bad experiences of this type of product.

Merino have faced one key problem in making tissue products from recycled materials – that problem is getting enough waste office paper from Australia to recycle into toilet tissue. Recently they had to import waste office paper from New Zealand to supplement Australian supplies.

Part 2: Results – What we're achieving

The success of recycling and waste management can be measured in terms of recycling rates, actual tonnages of materials recovered, participation rates and changing community attitudes.

Recycling rates

Recycling rates are commonly quoted figures used to indicate the success of recycling programs. There are two types of recycling rates (i) Recycling rates for specific materials and (ii) Total Recycling Rates.

(i) Recycling Rates for specific materials

These are usually expressed as a percentage of the total domestic consumption of that material. These figures are easier to obtain for materials where there are a small number of key players in the industry. For example, Norske Skog (Australasia) is Australia's only newsprint manufacturer and, as such, provides data on newsprint consumption. However, it can be much harder to get reliable recycling and consumption figures for materials such as plastics, as there are so many different types of plastic, different players in the plastics and chemicals industries, a wide variety of end uses and differing times spent by various plastic products in circulation.

(ii) Total Recycling Rates

Total recycling rates, in contrast, express the amount of material recovered from the waste stream for recycling, as reported by councils and waste authorities. These are reported as a percentage of the total waste stream. The size of the total waste stream is calculated by measuring and adding the quantity of materials recovered, the quantity of materials disposed of in landfill and the quantity of waste disposed of by incineration to recover energy. This calculation does not rely on knowledge of consumption figures.

These two distinct definitions of recycling rates can cause some confusion when measuring our progress with recycling.

Recycling rates for specific materials can be more meaningful to householders as they are likely to have used the materials, such as drink cans, and had the opportunity to recycle them. Householders directly influence the domestic (municipal) waste stream, which is made up of the recycling, green/organic waste and general rubbish they put out for collection. Because of the relevance of these material-specific recycling rates to a general audience, they are often quoted in the media.

However, total recycling rates, often quoted in state and federal government reporting, relate to the total waste stream, including commercial and industrial waste, and construction and demolition waste. Domestic waste represents around a third of the total figure. This leaves two thirds of the total waste stream that the average householder feels no sense of direct influence over.

Figure 2, on the following page shows the recycling rates for aluminium cans and newspapers over the last ten years. The newspaper recycling rate parallels the general trend in recycling rates of rapid gains in the nineties with increases levelling off in more recent years. These increases are partly due to improvements in the provision of recycling services by councils, providing greater opportunity and convenience for public participation.

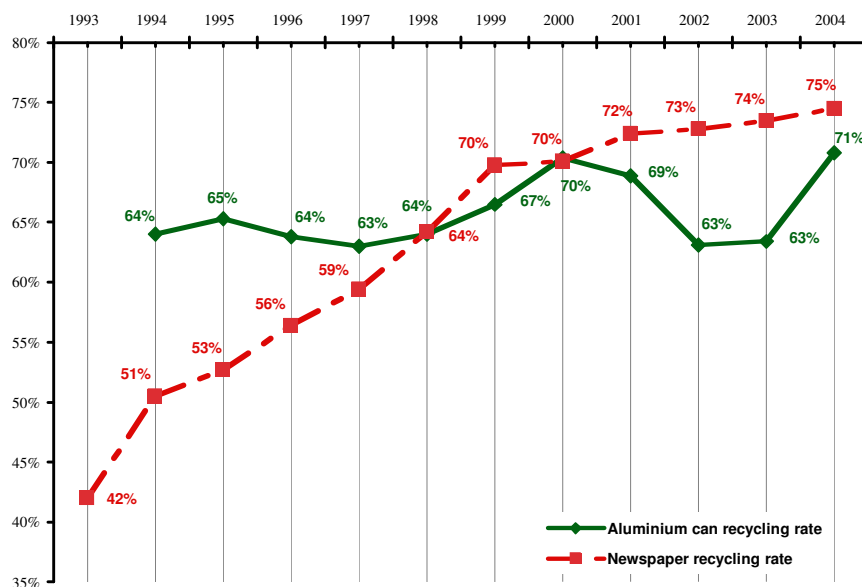
Trends overseas are similar, reporting rapid increases in recycling rates after the establishment of collection programs, tending towards a plateau in later years.

However, some Northern European countries have seen this plateau occur at recovery rates much higher than those in Australia, showing that we still have reasonable room for improvement with our recycling efforts and rates. Some countries, however, have reported slight declines in recycling in recent years. In particular, the (US) Container Recycling Institute reports that recycling rates for beverage cans and bottles have fallen in the USA since the mid-nineties, partly due to increased consumption away from home.

The trend in aluminium can recycling rates in Australia is more complex than that of newspaper recycling. Aluminium cans are one of the more valuable materials collected through recycling programs. Because of the relatively high commodity price of scrap aluminium, recycling programs collecting cans were very quickly established, including the 'Cash 4 Cans' program.

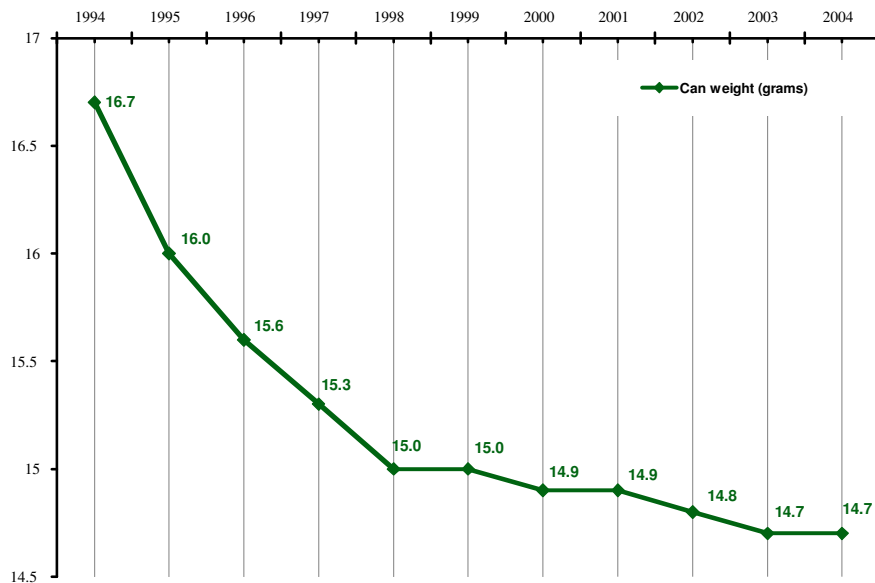
The rapid increases in recycling rates enjoyed by other materials in the late nineties were seen in aluminium can recycling some years earlier. The fluctuating recycling rates of recent years reflect apathy among consumers – a loss of the sense of urgency surrounding environmental issues that drove many early green initiatives.

Figure 2: Aluminium can and newspaper recycling rates as a percentage of consumption: 1994 – 2004



Increasing recycling is one of the many ways to minimise waste and manage our resources. As a waste avoidance strategy, aluminium drink cans have also seen the results of 'light-weighting' efforts. Improved packaging design means that cans can now be made to the desired strength and size, using less material. Figure 3 on the following page shows how aluminium cans have 'lost weight' over the last decade.

Figure 3: Aluminium can 'light-weighting': 1994 - 2004



Overall, waste authorities report a consistent increase in the amount (by weight) of materials recovered for recycling. However, our gains in waste management are being outstripped by our growing consumption of goods and services, as shown by our rapid uptake of new technology products.

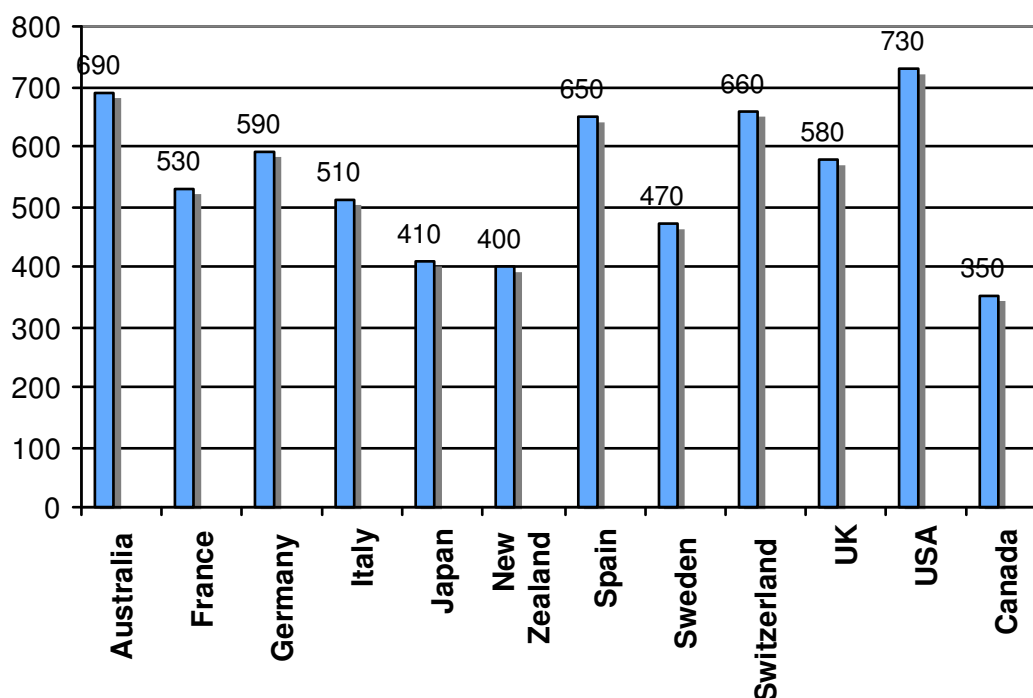
This increasing consumption comes with an inherent increase in waste generation.

The *Australia State of Environment 2001* report summarises the trend in waste management in Australia as follows: "As a result of increasing pressures and adequate responses in most respects, the condition is static." The conclusion of the 'Human Settlements' section of the report, which deals with waste issues, states "If existing trends continue, pressures from human settlements are not consistent with a sustainable environment."

It also reports rapidly increasing hazardous waste generation.

Australia continues to be one of the highest producers of waste in the world, as shown by municipal waste figures reported to OECD (Figure 4). Our recycling rates have shown a trend in the right direction, but we still have much more to do in order for Australia to reach a state of sustainable resource management.

Figure 4: Total municipal waste (kg/capita) of selected OECD nations



Data source: *OECD Selected Environmental Data* – released 2004

Participation rates

At first glance, Australians appear to be good recyclers. ABS figures from March 2003¹⁰ report that about 95% of Australian households recycled some of their waste, 83% re-used some of it and only 2% of households didn't recycle or re-use at all. This covered recycling through household collections, drop-off points (eg: retail collections and goodwill bins), special collection areas at waste management centres, composting and re-use within the home.

However, these figures alone don't indicate how thoroughly households are recycling. An earlier ABS survey in 2000¹¹ reported that less than 7% of Australian households recycled all the items surveyed (paper, glass, cans, plastic, kitchen or food waste, garden waste and old clothing or rags).

The main reasons reported for non-participation include:

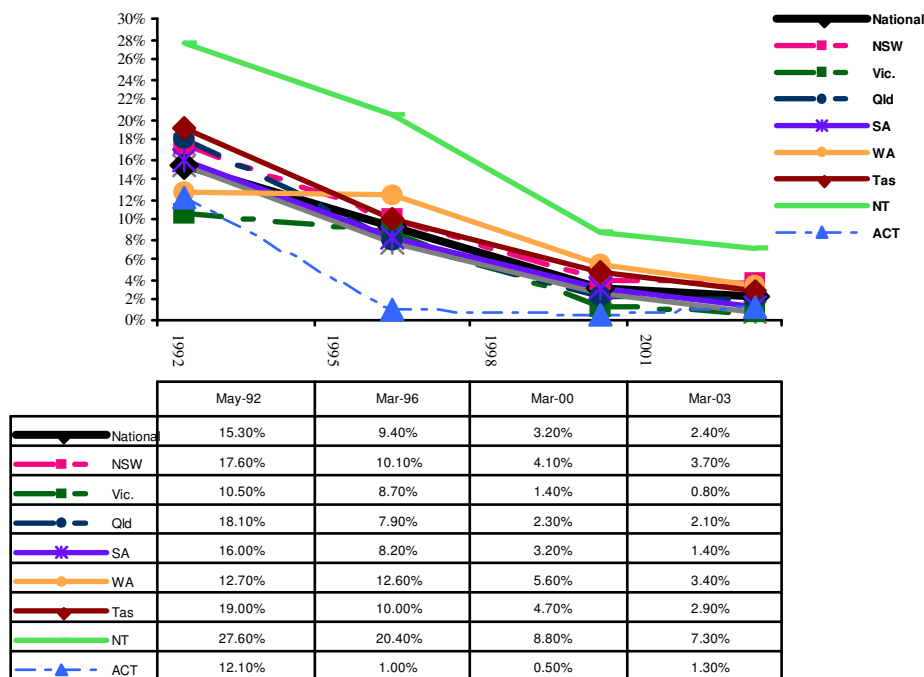
- The lack of recyclable materials to begin with,
- The lack of recycling services or facilities provided, and
- Little interest in recycling or recycling seen as requiring too much effort.

¹⁰ *Environmental Issues: People's Views and Practices* – ABS report, catalogue number 4602.0, March 2003

¹¹ *Environmental Issues: People's Views and Practices* – ABS report, catalogue number 4602.0, March 2000

Figure 5 below shows the change in proportion of households not recycling or re-using waste, nationally and for each state and territory. A data table is included. The downward trend reflects a general increase in participation in recycling, which correlates with improvements in access to recycling services and changes with existing recycling services.

Figure 5: Proportion of households not recycling/re-using waste



Source: *Environmental Issues: People's Views and Practices* – ABS report 4602.0, March 2003. ABS notes that data for ACT and NT is based on a small sample.

Since the year 2000, Planet Ark has commissioned annual Roy Morgan research polls into the recycling attitudes of Australians and their awareness of waste and recycling information.

Over these five years, 99% of respondents agreed that recycling is important for the environment and 95-96% agreed that recycling services are important to them. These figures have remained static. However, respondents have also reported confusion over recycling and a desire for easier ways to recycle.

September 2005 figures found that 73% of Australians say that they would recycle more if it were made easier, down from 79% in 2001.

In addition, nearly half (48.1%) of Australians still find it confusing to figure out what can and can't be recycled, down from 61% in 2000. This suggests that confusion, lack of understanding, apathy and plain laziness are responsible for the discrepancy between our recycling rates and the level they could be, given our extensive recycling systems and philosophical support for recycling.

The challenges facing recycling in Australia are for households to make better use of their existing council recycling services and for industry to develop their own EPR and recycling programs. So far, recycling has relied on the goodwill of householders and businesses to take the initiative and be more responsible with their waste.

However, this goodwill has only taken us so far. Around the world, other governments are also investigating the 'carrot or the stick' approach of using incentives to encourage recycling and disincentives to discourage wasteful habits.

At the government level, this means increased regulation and enforced penalties for organisations that don't adequately manage their waste. Already, higher landfill fees offer some disincentive to make people and businesses think twice before dumping.

Australian landfill fees, however, are too low compared with many other nations. Raising them would increase the incentive to recycle more.

Case Study: The Plastic Bag Reduction Campaign

In 2002, Australians used 6.9 billion plastic check-out bags. Plastic bags are not a large contributor by weight to waste to landfill figures. However, they are a common contaminant in council recycling collections and are disliked by the public for the harm that littered bags do to wildlife.

In early 2002, the Irish government reported that their 15 euro-cent (25 cents) levy on plastic check-out bags had reduced plastic bag usage by a staggering 90%. In a campaign partnership with the Sunday Telegraph, Planet Ark immediately started a campaign calling for this levy and other initiatives to be discussed as a solution to the Australian plastic bag problem. We were joined in this push by other environmental groups, media outlets and the general public.

The threat of a levy was a powerful incentive to motivate change and stimulate discussion about plastic bag waste. The hip-pocket nerve had been hit. Bunnings and IKEA both introduced their own 10 cent levy charge for plastic bags and nearly overnight reduced their plastic bag usage by up to 80%. Other retailers responded by providing customers with better reusable alternatives, including the now common 'Green Bags'. Some companies like Nando's banned plastic bags altogether.

In 2003, after much stakeholder consultation, the Environment Protection and Heritage Council (EPHC) gave retailers a range of targets for the reduction and recycling of plastic bags. These targets included a 25% reduction in the number of bags issued by end of 2004 (against the base usage of December 2002) and a 50% reduction by the end of 2005. The Australian Retailers' Association (ARA) developed a Code of Practice for the Management of Plastic Bags and made a commitment to meeting the targets set by EPHC. A total phase-out of plastic check-out bags is expected by the end of 2008.

Planet Ark also initiated a campaign to get whole towns to become completely plastic check-out bag free. Coles Bay in Tasmania, was the first to do this and other towns soon followed.

The Department of Environment and Heritage commissioned environmental consultancy Nolan ITU to research the progress of plastic bag reduction efforts. Their findings were released in the report Plastic Retail Carry Bag Use 2002 – 2005 Consumption. The report estimated that the reduction in lightweight HDPE bags from 2002 to the end of 2005 will be 27.7%. As a result, it seems certain that

plastic bag use will not have been halved by the end of 2005 as per the original target.

However, over the whole 3 year period. There has been a total reduction in use of 3.44 billion plastic check-out bags. This is broken down as follows:

2002: 5.95 billion HDPE bags used Australia-wide.

2003: 5.24 billion used = 0.71 billion less HDPE plastic check-out bags.

2004: 4.73 billion used = 1.22 billion less HDPE plastic check-out bags.

2005: 4.44 billion used = 1.51 billion less HDPE plastic check-out bags*.

** estimated total HDPE carry bag use for 2005 (Source: Nolan-ITU 2005 mid year report)*

'Green Bags' are now a common sight at shopping centres around Australia and are a potent symbol of reuse and sustainable behaviour. One of the lessons learnt from Australia's experience with the plastic bag debate is that it's possible to stimulate widespread public participation in waste reduction efforts.

Part 3:

Conclusions: The Good, The Bad & The Ugly

Overall, Australia's recycling performance over the past decade has been mixed. There has been a lot of talk about recycling, but disposal of waste to landfill remains too high.

In Australian recycling, there are 'The Good' - pockets of brilliance, where industry groups, businesses and/or innovative individuals have shown initiative, foresight and creativity and have come up with world class recycling solutions.

However, in some quarters there are 'The Bad' – those that drag their heels and take the term 'voluntary program' to mean that they don't have to act unless forced to by competition or regulation. Within this category are also included the general public and those companies who are not recycling items such as office paper or mobile phones anywhere near to the degree that they should.

Underlying our approach to waste management and recycling is 'The Ugly' – Australia's unsustainable level of consumption and continued waste of our material resources.

The Good – initiative and innovation

Today, members of The Australian Council of Recyclers annually reprocess more than 11 million tonnes of recyclable material and directly employ over 5,000 Australians in resource recovery activities. There is no doubt that recycling is making a real contribution to our economy as well as our environment.

However, there has been a lot of debate about Australia's legislative approach to waste management, particularly when compared with other countries. In some European countries, such as Germany, Sweden and Switzerland, governments have set both waste and recycling targets and the strategies to meet these targets.

Similarly, in Japan the close relationship between government and industry ensures that changes to packaging and waste laws are implemented quickly by industry. Such countries have a relatively high level of regulation.

In contrast, the Australian government sets targets but allows flexibility in how they are met by preferring voluntary measures over changes to legislation. On one hand, this has allowed some poor performers to continue their poor performance. However, this has also allowed some organisations and industry sectors to come up with their own unique and innovative solutions.

Over 9,000 Australian businesses now give their used printer cartridges to the 'Cartridges 4 Planet Ark' program. This initiative has seen resource recovery specialist Close the Loop® process over 1.5 million printer cartridges in less than three years, with none of the collected cartridges going to landfill.

Previously, the industry standard was to remanufacture a few select models of toner cartridge suited to remanufacture, with the rest sent to landfill. The technology to

recycle all these remaining cartridges with 'zero waste to landfill' did not exist at the time; so former professional remanufacturer Steve Morriss developed it.

Innovators think outside the square – Steve thought outside the industry and found the technology he needed in the mining industry and in general plastics recycling.

In seeking out a best practice method to recover the component materials in cartridges, Steve went on to develop a better end use for the broad range of mixed plastics recovered from cartridges and other forms of e-waste – that of eWood™.

In 2005, Steve showed off eWood™ on the ABC's *The New Inventors* TV show.

With its ability to replace arsenic treated pine in children's playgrounds, eWood™ was chosen as the episode's winning invention by both the show judges and viewers. There is great potential for this eWood™ technology to be applied to other forms of e-wastes - one of the fastest growing categories of waste in Australia.

Other industries have shown initiative by pre-empting a potential issue and dealing with it before the urgent need arises. Fifteen years ago the newspaper industry joined forces with Australia's newsprint manufacturer to plan ahead for recycling. The concept was to create a new market for old newspapers and to give continuing industry support for it. They fostered and encouraged the development of the emerging kerbside recycling system through direct involvement in the market. This successfully stimulated public interest in newspaper recycling to the point that Australians are now the best newspaper recyclers in the world.

In addition, the owners of Australian Newsprint Mills invested around \$135 million in building a newspaper de-inking and recycling plant in Albury, roughly half way between Melbourne and Sydney. This was done with no pressing financial or technical reason. But it made environmental sense. Even the residue from the de-inking process is used by local farmers as a soil conditioner.

Crucial to the success of all recycling programs is consumer participation. Over the past decade, there have been some very good results for newspaper and aluminium can recycling. Newspaper recycling has gone up from 52.7% in 1995 to 74.5% today. Australians are now recycling almost 2 billion newspapers a year.

Aluminium can recycling rates have also significantly increased - we are now recycling 600 million more aluminium cans today than we were ten years ago. Last year alone, Australia recycled over 2.3 billion aluminium cans. Each can recycled saved enough energy to power a TV set for 3 hours.

Australians are also 'closing the loop' on their recycling actions. Every year, millions of the milk cartons that we put into our recycling bins are being turned into high quality office paper at the Shoalhaven recycling mill in NSW. 8,000 tonnes of waste office paper has also been turned into 'SAFE' tissue products every year. These simple consumer actions have guaranteed a big market for that waste. Over the last decade, millions of Australians have helped to recycle tens of thousands of tonnes of office paper - simply by buying one brand of recycled toilet tissue.

This coalition of Australian consumers, councils and industry has brought about other positive change. Back in 1995, only 128 councils were recycling steel cans. Now 381 councils are recycling them and as a result, 60,000 tonnes of steel cans were recycled in 2004. The added benefit is that making new steel from old steel uses 75% less energy than if that steel is made from virgin resources. The steel industry also has the ability to recycle every steel can that Australia throws at it.

Recent dramatic falls in plastic bag use have also shown our ability to make a difference. Despite the doomsayers of ten years ago, these results show that Australians can rise to the recycling challenge when they understand their responsibility as consumers and the impact that they have on the environment.

The Bad – talk verses action

Nearly half of Australians are confused about what can and cannot be recycled. As a result, people are throwing out material that can easily be recycled. But worse still, people are putting rubbish in their recycling bins that can stop material from being recycled. Just 15 grams of oven proof glass can stop a whole tonne of normal glass from being recycled.

At the moment, only 11% of office paper is being recycled. For every ten sheets of office paper being used, nine are thrown into landfill. 18 million printer cartridges are still being thrown into landfill every year. That's despite the fact that 68% of people want to recycle more in the office. Too few mobile phones are being recycled, despite the industry's best efforts. Nearly a billion aluminium cans, worth \$15 million dollars, are also being littered or thrown into landfill. That's despite the fact that the aluminium industry is paying top dollar for scrap aluminium and can recycle every aluminium can used in Australia.

It is encouraging to see new recycling initiatives being developed. It's good that Australians are putting lots of material into recycling bins instead of garbage bins. It's even better when the public then 'close the loop' and buy products containing recycled content. However, it's vitally important that our recycling doesn't become a token effort.

Statements about recycling achievements look great in media releases and annual reports. But there is a danger in using recycling rates for PR 'spin'. For true environmental benefit, recycling must also take it's appropriate place; first within the context of waste management and then within the context of all the environmental impacts over a product's entire lifecycle. It is admirable and responsible for an organisation or industry body to conduct recycling initiatives, but that does not excuse them from harming the environment in other areas.

Australia was one of the first countries to have a widespread recycling program for mobile phones and the industry should be congratulated for this. However, the greater environmental problem with mobile phones in Australia is their short lifespan and early obsolescence – we replace our mobile phones on average every 18-24 months. In many cases these unwanted mobile phones are still in good working order. New handsets are often given away as part of new account agreements.

Australia's love of new gadgets is also seeing us throw away or recycle perfectly good phones, as new models with new features become available. Many of these new features, such as games or built in cameras, have little relevance to the primary function of a mobile phone. Consumers need to think about drawing the line between needs, wants and over-consumption.

If the mobile phone industry is serious about wanting to help the environment, they also need to look at ways of making mobile phones and their batteries last longer, perhaps starting with education campaigns to help users prolong the life of their batteries by avoiding the overcharging of their phones.

Transparency and accurate data is also important in recycling as it allows us to measure change that is real. Australia is still in a position where we cannot calculate a proper national recycling rate because none of the states use a standard way of measuring recycling and waste minimisation efforts around Australia. How can we reduce our levels of waste if we cannot properly measure how much we are recycling or not? Which areas do we target for action if we do not have adequate information?

Critics of the National Packaging Covenant argued that it allowed some signatories to make a lot of noise stating 'aspirational goals' whilst making token efforts at achieving them. Reviews of the National Packaging Covenant also acknowledged it was insufficient in its original form to bring about the waste reductions needed to achieve a more sustainable society. Consequently, the Covenant has been extended and revised.

Industries and governments aside, individuals need to start backing up their talk with action. The participation and recycling rates in 'Part 2: Results: What we're achieving' within this report showed a gap between our professed concern for the environment and our somewhat wasteful habits. As individuals we all need to start taking personal responsibility for reducing waste – we cannot just expect the government or the business sector to solve the problem for us.

The Ugly – growing consumption

The ugly side of recycling is the over-consumption and wasteful habits that produce waste to be recycled or discarded in the first instance.

The average household may be putting much more into their recycling bins than they were ten years ago. However, these houses are generally larger than they were a decade ago. They're also filled with a broader range of products, from DVD and MP3 players to 'moistened towelettes' for toilet use, from computers with wireless mice to coffee grounds in 'coffee bags' (each individually wrapped "to seal in freshness", bought in a box with a fourth cellophane layer of packaging around the outside).

As a result, Australians generate waste at a rate of 2.25 kg per person per day, making us one of the biggest per capita producers of waste in the world.

According to the United Nations World Food Program website, 7.5 million tonnes of food aid was distributed worldwide in 2004. Despite this, Australians are throwing away 3.3 million tonnes of food annually, almost half the food aid that was distributed last year to the world's 825 million starving people. Australians now throw away up to a quarter of the country's food supplies, mainly because people purchase too much. The Australia Institute estimates that Australians spend \$5.3 billion every year on food they do not eat.

As the generation that lived through the Great Depression fades, we've forgotten how to make do with less. Trends show that the richer we get, the more we consume and the more wasteful we get.

The Australia Institute discussion paper *Wasteful Consumption in Australia*, released in March 2005, reported that on average each Australian household wasted \$1,226 on items purchased but unused in 2004. It also reported that total wasteful consumption amounts to over \$10.5 billion dollars spent each year on goods and services that are never or hardly ever used.

The report also analysed wasteful consumption among different demographics and found that young people waste more than older people. These young people are those that have been taught about recycling and other environment issues in school. In some cases they're the ones who have come home from school and encouraged their parents to recycle. Yet somehow they have missed the connection between the environment and giving in to purchasing whims.

If Australians are to enjoy our current standard of living into the future, we need to find ways of making our material resources go further. We need to move from non-renewable resources to renewable alternatives and we need to make sure that we're not burying non-renewable resources, such as metals in landfill. Our grandparents and great grandparents understood this.

Recycling is a great way to help the environment, but it's not just about putting cans and newspapers into a special bin. Recycling is an important part of a greater whole; that of resource management – in short making more with less.

We need to keep putting our cans, bottles and newspapers in recycling bins and we need to buy back products made from these recovered materials, all without losing sight of the big green picture.

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