

Second Nature

Recycling in Australia

Report Summary



A snapshot of the past, present and future of recycling in Australia prepared by Planet Ark for National Recycling Week 2012.



Major Sponsor



Supporting Sponsors



Introduction

When we consider the flow of resources through the economy and through our lives, it's useful to think in terms of circles and cycles, instead of lines with dead ends. For National Recycling Week 2012, Planet Ark looked at the past, present and future of recycling in Australia. The theme of this report (summary) is **Second Nature**; it aims to offer us a *different way of acting* and a *different way of thinking* about the materials we use, recycle, and throw away.

We need to change our view of resources, rubbish and recyclables. We need to act on this change to make better design, better collection and recycling systems and better behaviours. And, we need to take our good recycling habits from home, where they are second nature, out to work, school and the community.

As a society, we must stop looking nature as a source of resources to exploit, and start looking at the waste we generate as a 'second nature' – an alternative source of the resources needed to make the products we use.

Recycling: The Past

For the first half of 20th Century war and economic depression meant that people recognised the value of food, energy and materials. From the 1950s onwards, there was enormous economic growth in developed countries, which brought an explosion of consumer goods and the associated problems of pollution, solid waste, litter, and land degradation.

A History of Recycling in Australia

- Colonial Era – Reuse and repair was a matter of necessity
- 19th Century – Rag and bone collections to make paper, fertiliser, soap and glue
- 1815 – First paper mill to use recycled rags
- 1920s – Waste paper collections begin
- 1960s – Gradual replacement of refillable glass bottles begin
- 1970s – Aluminium can collection systems established
- 1975 – Canterbury Council (NSW) the first to use magnetic separation for steel cans
- 1977 – South Australia introduced container deposits
- 1980s – Kerbside collection began to spread from Sydney
- 1993 – Concord Council (NSW) the first to offer garden clipping collection service
- 1993 – 'Cards 4 Planet Ark' collection campaign launched
- 1999 – National (later Australian) Packaging Covenant formed
- 2003 – 'Cartridges 4 Planet Ark' program launched
- 2006 – MobileMuster mobile phone and accessories recycling program launched
- 2012 – National TV and Computer Recycling Scheme launched

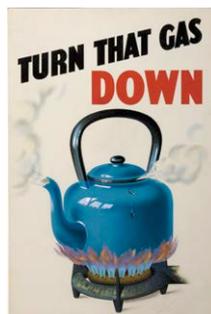
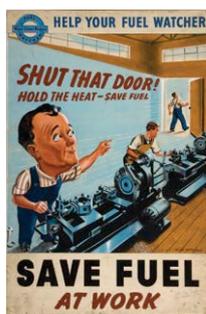


Figure1: World War II government public education posters from the United Kingdom²

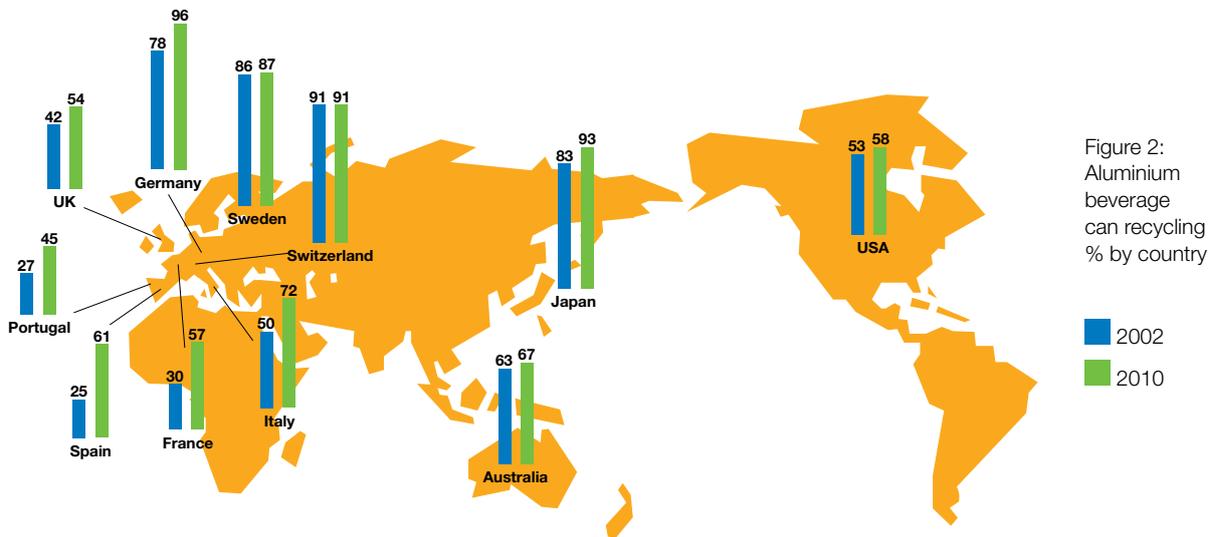


Figure 2: Aluminium beverage can recycling % by country

Yes We Can! Drink Can Recycling Around The World

Aluminium is one of the world's most commonly recycled materials. Over the last decade, recycling rates have risen across the world with previous laggards catching up with the former leaders. See figure two above for international comparisons.

Changing Drivers

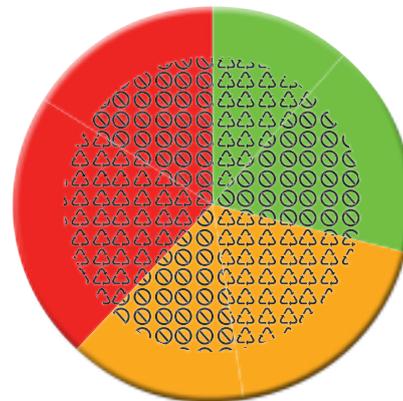
There have been many drivers behind the creation of recycling programs in Australia:

- Provision of **a safe and healthy living environment**
- **Energy prices**, which led to the development of 'Cash for Cans' programs
- **Demand** for raw materials
- **Community concern** over landfill and incineration
- **Litter prevention**
- **Mitigation of climate change**

Recycling Today

In the financial year 2006-07, **43,777,000 tonnes of waste** was generated in Australia. Of that, 52% was recycled and 48% (21 million tonnes) was sent to landfill; a significant lost opportunity to the materials economy. Three sectors make up the waste stream:

- **29% is municipal solid waste (MSW)** mostly produced by households and collected by councils.
- **33% is commercial and industrial (C&I) waste** from offices, shops, factories, restaurants and businesses.
- **38% is construction and demolition (C&D) waste** from the building, renovation and demolition of buildings, houses, roads and the built environment.



Landfill v's Recycling in Waste Sectors



Figure 3: Waste generation, recycling and landfill by sector, 2006-07³



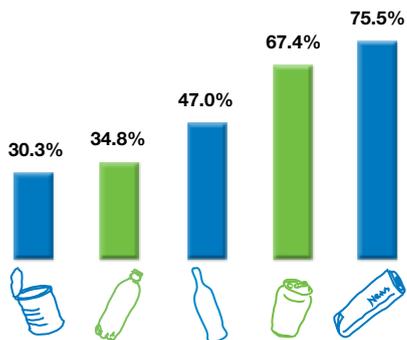


Figure 4: 2011 Australian recycling rates

Packaging and Kerbside Collections

Australian Packaging Covenant recycling data indicates:

- Australians recycled 2,759,595 tonnes of packaging in 2011, a huge 68.7% increase on 2003 figures.
- Australia's overall recycling rate for packaging climbed from 39.2% in 2003 to 63.1% in 2011.

When Recycling Gets Complicated

Some waste products—like printer cartridges, TVs, computer equipment and lead acid batteries—contain both valuable and potentially hazardous materials, including plastics, glass, ferrous metals, gold, copper, toner powder, carbon black, lead, zinc, tantalum, nickel, ceramics and silver.

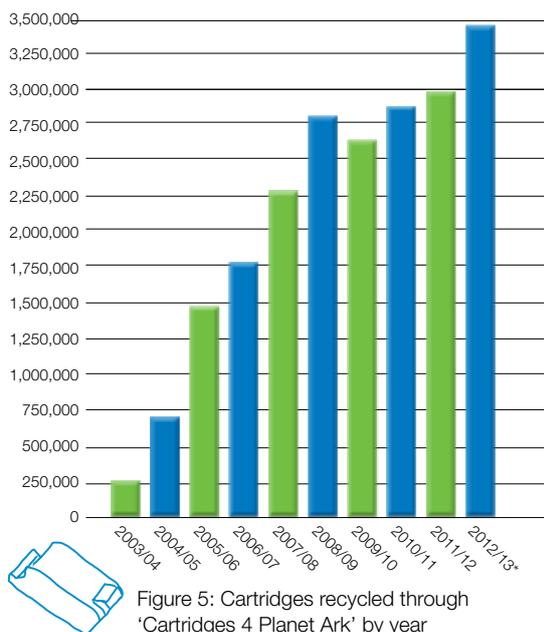


Figure 5: Cartridges recycled through 'Cartridges 4 Planet Ark' by year

Why Not Landfill?

Landfills have environmental and financial costs that are paid for by businesses and residents. They can pollute the local environment by: creating leachate, a toxic liquid; generating methane, a greenhouse gas 21 times more powerful than carbon dioxide; and producing repulsive smells. They also represent a lost opportunity as valuable materials are removed from the economy.

Early developments in the recycling of electronic or e-waste started small, literally! Items such as printer cartridges and mobile phones are collected easily and have been an important learning experience for e-waste recovery.

The **'Cartridges 4 Planet Ark'** program is an extended producer responsibility program made up of participating manufacturers - Brother, Canon, Epson, HP, Konica Minolta, Kyocera and Lexmark - that pay for the collection, processing and recycling of their used cartridges. The program has recycled over 19 million printer cartridges over ten years.

MobileMuster, the Australian Mobile Telecommunications Association's extended producer responsibility initiative, has collected

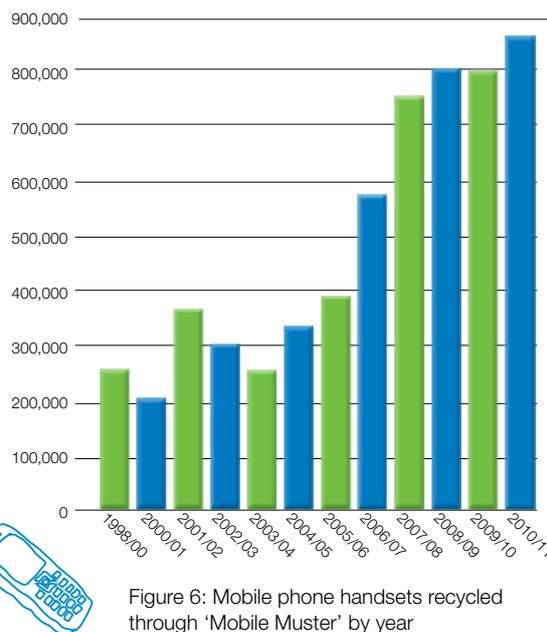


Figure 6: Mobile phone handsets recycled through 'Mobile Muster' by year



947 tonnes of **mobile phones** and accessories including 6.75 million handsets and batteries.

About 6% of handheld **batteries** are currently recycled, but the move to greater recovery of AA, AAA, C, D and 9V batteries will be aided by retail collection programs such as Aldi supermarkets' ActivEnergy Battery Recycling Program, which is supported by Planet Ark.

The **National Television and Computer Recycling Scheme** is supported by regulation and implemented by industry, and it collects and recycles used TVs, computers, and computer accessories. Collection points are being rolled out across the country.

Why Do We Recycle?

Why are there recovery and recycling programs for plastic bags, but not VHS tapes?

Every intervention has environmental and economic costs, and recycling machinery must be bought or designed, often costing millions of dollars. There are key reasons governments, industries, businesses and community organisations invest time, effort and money into developing recycling programs.

To Recover A Resource And Make (or Save) Money...

Some materials are inherently valuable and relatively easy to collect and recycle, so it makes good economic sense to do so, for example

metals. As landfill costs in most states are increasing, it makes economic sense to recycle.

To Prevent Pollution...

Some products are potentially harmful pollutants if disposed of incorrectly. The container deposit legislation in SA was originally designed to reduce litter, and the FluoroCycle program aims to recover the mercury contained in fluorescent lamps.

To Take Back Producer Responsibility...

Some businesses or industries establish Extended Producer Responsibility schemes to take back their products. 'Cartridges 4 Planet Ark' and MobileMuster are great Australian examples.

To Keep People Happy

Issues that have a lot of public support, like plastic bags and container deposit schemes, regularly appear on the political agenda and result in recycling programs.

Why NOT?

Aside from some small scale processing, there are certain items that just won't be recycled. For example, VHS tapes are an old, redundant technology. To establish a collection scheme and the necessary machinery would cost more than value of the materials recovered, and the feedstock would soon run dry as VHS tapes are no longer produced en masse.

Bitter Medicine

Research from the ABS shows a quarter of Australian households disposed of medicines, drugs or ointments in the last year. Although there is a 'Return Unwanted Medicines' program (ReturnMed.com.au), only 34% of these households took unwanted medications back to retail collection points, while over half put medicines in the garbage bin, and 14% poured them down the drain.

Ref: Australian Bureau of Statistics. (2012). Environmental Issues: Waste Management, Transport and Motor Vehicle Usage, Mar 2012, Cat. 4602.0.55.002





Figure 7: Raised garden bed made from recycled cartridge plastic and filled with compost (recycled food and garden waste)

Closing the Loop

Recycling, like other businesses, relies on supply and demand. To close the loop on recycling and make it economically viable, individuals and businesses need to buy products made from recycled material.

Many packaging types include recycled content such as aluminium cans and glass bottles. Sometimes the product itself is made from recycled material: SAFE toilet tissue; office stationery; mulch; insulation; landscaping materials. The plastic recovered through 'Cartridges 4 Planet Ark' is made into everything from pens to raised garden beds. EnviroTred, developed by Dunlop Flooring and Flooring Xtra, is a recycled content carpet underlay that is 100% recyclable at the end of its useful life.

The Future of Recycling

Immediate Priorities

Many sustainability practitioners and scientists believe we're now in the Transition Decade, during which our society will have to dramatically transform to cope with climate change and increasing resource scarcity. Some of the key priorities of the immediate future include:

- **Biodegradable Materials.** The C&I sector alone sends about 4 million tonnes of organic material to landfill each year; 62.5% of all their waste. Reducing food scraps at work is still a new idea, but the idea of the paperless office is not. Although recycling programs are well established, a million tonnes of paper and paperboard is still sent to landfill from the C&I sector every year.
- **TVs, Computers and Accessories.** About 106,000 tonnes, or 16.8 million items, of e-waste are disposed of each year. Only about 10% is currently recycled and although the problem is growing, the National TV and Computer Recycling Scheme will start addressing this issue.
- **Waste Management Legislation.** Legislation has a key role to play in providing conditions that encourage greater recycling. **Landfill pricing** can make it more expensive to send waste to landfill, providing an economic driver for resource efficiency. In recent years, landfill levies charged in NSW, WA and Vic have increased, and SA has introduced **landfill bans** for specific materials like computers and fluorescent lighting.

Future Directions

Minerals extraction is becoming increasingly difficult and ore grades for many commodities are declining. In the future we may revisit landfill sites to mine the valuable materials we've discarded there.

Society must do more with less, and a process called '**dematerialisation**' will be key to industrial design into the future. For example, between 1994 and 2005 the aluminium can shrank from 16.1g to 14.7g through better design.

Designers can also develop products for easy reuse or recycling at the end of the product's life. This is called 'design for disassembly'. Toyota assesses the recyclability of their vehicles in the development stage.



Conclusion

Although Australian recycling has come a long way, we can't afford to rest on our laurels. Household paper and packaging recycling is arguably second nature for Australians. The next step is to bring our good habits from home to the workplace, extend our good habits to a broader range of products and materials, and review our attitudes about waste and consumption so that we can live in better balance with the natural environment. Naturally, Planet Ark will be there every step of the way.

More Information

This Summary Report contains selected highlights from **Second Nature – Recycling In Australia** developed for National Recycling Week 2012. Visit RecyclingWeek.PlanetArk.org for the full report including references, and to find information, resources, activities and news about recycling at work, home and school.

Householders visit RecyclingNearYou.com.au for information of the recycling services provided by your council and recycling options for items ranging from tyres and car batteries to packaging, mobile phones and printer cartridges.



1 3 0 0 7 3 3 7 1 2

Businesses visit BusinessRecycling.com.au for a comprehensive listing of recyclers, a checklist for choosing the right recycler, case studies, free signage and more.



1 3 0 0 7 6 3 7 6 8