



**NATIONAL  
RECYCLING WEEK**

**PLANET ARK**

# The Recycling Olympics

*An international waste & recycling comparison  
of Australia and 10 other developed nations*



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## Executive Summary

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Athens 2004 was our most successful ever Olympic Games, with Australia securing its reputation as a top sporting nation. But how are we going in the recycling Olympics?

If recycling were an Olympic sport, Australia wouldn't bring home the medals like we did in Athens. That's the conclusion of this Planet Ark report which has been compiled for Planet Ark National Recycling Week.

This report analyses recycling rates and municipal waste figures from Australia and ten other OECD countries. Overall, Australia finished in the middle of the field, marginally behind France and alongside Italy but ahead of the USA, Spain, Portugal and the UK.

In this waste tally, Switzerland, Germany, Sweden and Japan are ahead of Australia with their recycling. However, given our large land mass and relatively small population, Australia has done well, but we could definitely do better.

Two billion aluminium cans are recycled annually in Australia - a recycling rate of 63%. Whilst it's a great result internationally, Australians still throw away one billion aluminium cans every year. Switzerland's drink can recycling rate of 91% shows what can be achieved when people fully use their local recycling services.

We are, however, one of the world's best newspaper recycling nations, recycling 73.5% of our newspapers and magazines. The bad news is that only 47% of Australia's paper and cardboard was recycled, leaving us seventh in those rankings. For this ranking to improve, more corporate and government offices need to recycle their office paper.

When it comes to E-waste, research shows that Australia and the UK were the first countries to offer comprehensive mobile phone recycling. Australia's Mobile Phone Industry Recycling Program has now recycled over 1.5 million handsets and batteries.

In order to perform better in the "Recycling Olympics", there are a number of key areas where Australia needs to improve:

- 1) Recycling services provided by local councils need to be best practice in terms of the number of materials collected, the frequency of collection and the bins used to collect recyclable materials. There are simply too many differing collection systems around Australia.
- 2) Recycling education needs to be improved so that people know exactly what can and cannot be recycled in their local communities. This will reduce the amount of recyclables getting thrown into the garbage bin.
- 3) Public place and office recycling needs to be more widespread. \$15 million worth of aluminium cans are thrown away every year in Australia and 53% of our paper and cardboard is ending up in landfill.
- 4) Landfill costs need to rise so that Australian society has a financial incentive to recycle more.

Finally, Australia needs an annual 'National Recycling Audit' that measures just how well we are doing with our recycling efforts. How can we increase our recycling rates if we can't accurately measure the areas that need improving at the local and national levels?

The UK Audit Commission is able to measure just how bad the UK is at recycling. Every single council in the UK has to report on just how much is recycled and composted in their local area. From these figures, the UK Government is then able to calculate a UK national recycling rate. Australia, however, is not able to do this.

We owe it to the many Australians who recycle regularly to tell them exactly how well we are doing as a nation when it comes to recycling. If each local community is able to see how well they are doing with their recycling on a per capita basis, then national and local improvement targets can be set that will enable Australia to improve its recycling and waste minimisation efforts.

If we are ever to get the Recycling Olympics gold medal, then all of the above need to be implemented. Australians have shown that they have a strong commitment to recycling and the environment – there's no reason why we shouldn't strive for gold.

# Background

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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.

The push for waste reduction, better waste management and improved recycling has been driven by more than international agreements. Many cities are experiencing acute lack of landfill space, with populations in urban areas growing at a fast rate. Concern for long-term resource availability, the greenhouse impacts of waste and waste-related pollution have also driven the development of waste and recycling schemes.

Some countries have been quick to develop and implement recycling programs, often aided by innovative legislation that rewards better waste management. Some countries have enacted legislation that penalises poor performers and implements disposal bans on certain hazardous wastes. Extended producer responsibility programs among manufacturers have also been encouraged by many countries.

High public awareness of the need to recycle as well as environmental commitment among consumers has also been a primary driver for positive recycling change.

This report aims to get a general indication of the waste management performance of Australia and 10 other developed countries in relation to each other. Data was obtained from the Organisation for Economic Cooperation and Development (OECD) and various international and regional industry groups with the aim of compiling data sets from comparable sources and, where possible, from the same reference year.

It should be noted that detailed analysis of waste management data is always hampered by inconsistencies between different countries in the methods used to collect and measure data, definitions of the materials or waste categories being measured and the availability of reliable data. However, the data that is available is useful to make broad comparisons between different nations, identifying the top nations, the mid performers and the poor performers.

The nations selected for this report were chosen from OECD members who are required to submit detailed environmental reporting as part of their membership. Countries were selected to represent different regions, population sizes, densities and cultural attitudes as well as the various stages of development relating to their waste and recycling programs and infrastructure. Countries with limited or inconsistent data were excluded.

To that end, the countries selected for this study were Australia, Italy, France, Germany, Japan, Portugal, Spain, Sweden, Switzerland, the United Kingdom and the United States of America.

With 2004 being an Olympic year, the waste and recycling categories in this report are presented as “Olympic” events. The “events” of these “Recycling Olympics” are paper and cardboard recycling, glass packaging recycling, aluminium can recycling and steel can recycling -all measured in terms of recycling rates.

A final “event” comparing the per capita total municipal waste from each country was also included. This puts the recycling performance of different countries into the context of overall waste management and recognises that it’s environmentally preferable to avoid producing waste in the first instance before considering the next best options of reuse and recycling.

In each “event”, each country was awarded a relative placing, with the overall first place being awarded to the country with the highest recycling rate and the lowest municipal waste figure. Where two countries had the same result, the higher placing was given to the country with the smaller population density, recognising that there is a greater degree of difficulty in implementing waste programs in areas where smaller populations are spread over larger distances.

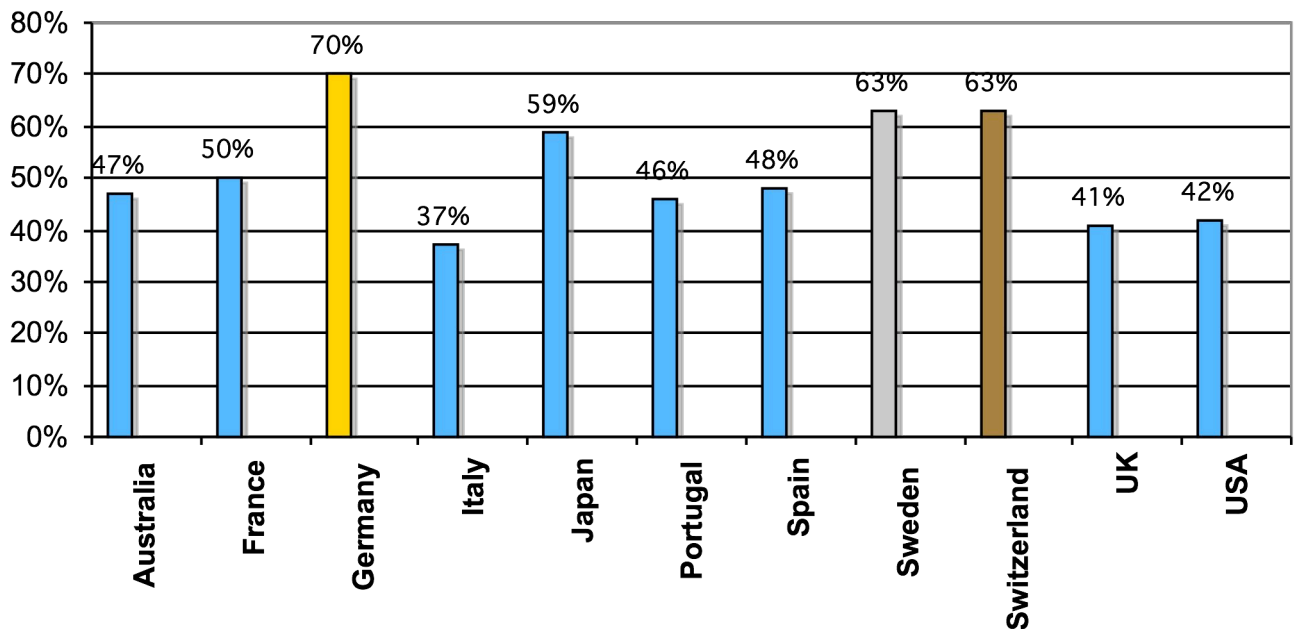
At the end of the report all of these placings have been added to give each country an overall standing<sup>1</sup>. **The overall standings are intended to provide an indication of the top nations, the mid performers and the poor performers.**

The above criteria dictated the way in which the “Recycling Olympics” were judged.

Let the games begin!

## Event 1: Paper and cardboard recycling rates

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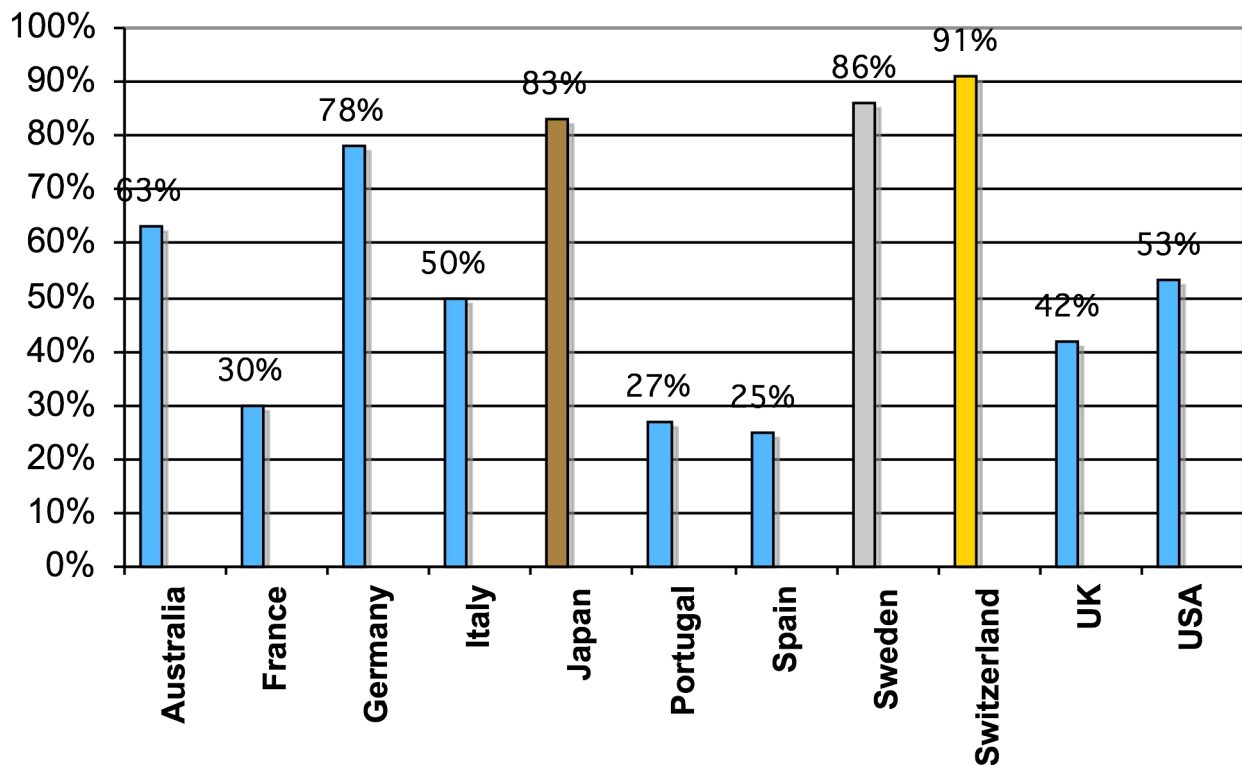
Gold – Germany  
Silver – Sweden  
Bronze – Switzerland

Australia – 7th

### Data notes:

- Data from OECD Environmental Data 2002 report
- Data from 1999 for USA and Portugal, and from 2000 for all other countries

## Event 2: Aluminium can recycling rates



Gold – Switzerland

Silver – Sweden

Bronze – Japan

Australia – 5<sup>th</sup> (Australia's best result in this study)

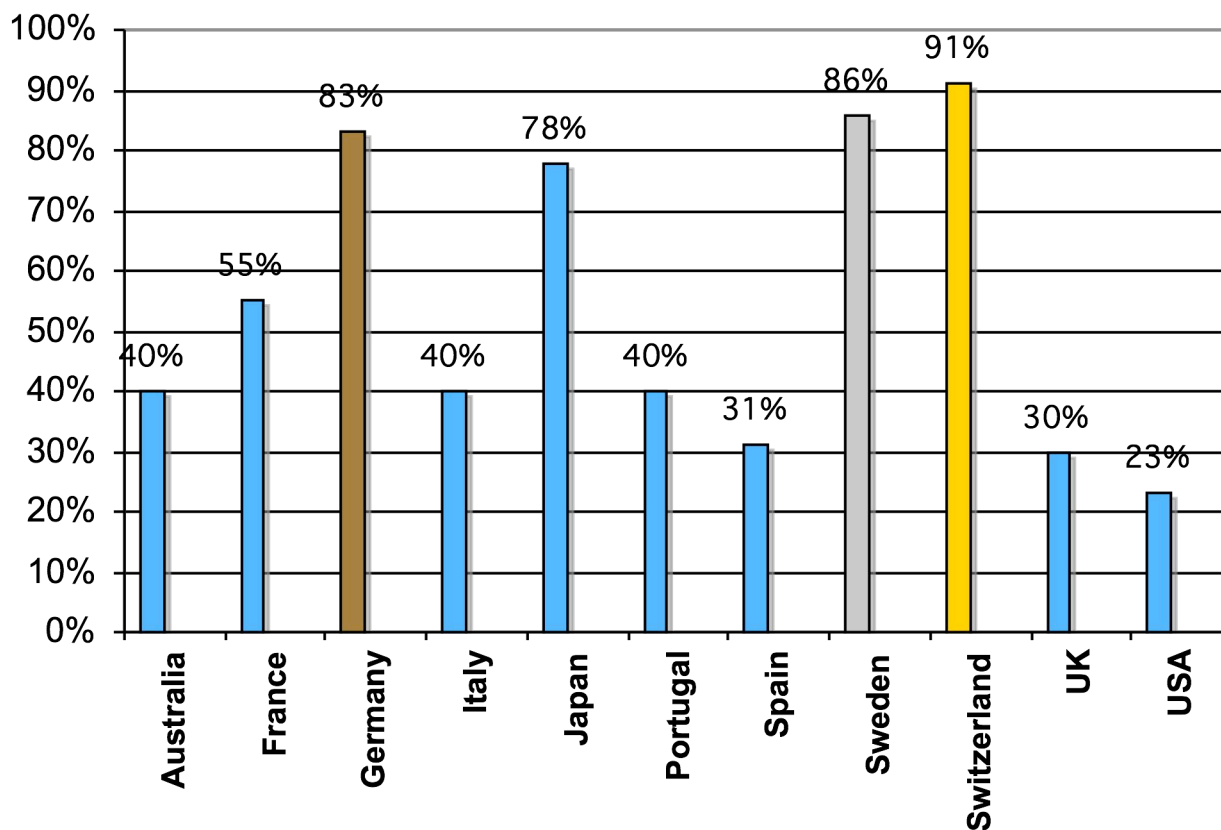
### Data notes:

- Data for European countries from the European Aluminium Association (EAA), data for Japan and USA from The Aluminum Association Inc and Australia's recycling rate from the Aluminium Can Group
- All recycling rates quoted are for the year 2002
- Recycling rates for France and Italy are reported by EAA as the estimated results of the recycled aluminium packaging fraction of the total aluminium recycling figures



## Event 3: Glass packaging recycling rates

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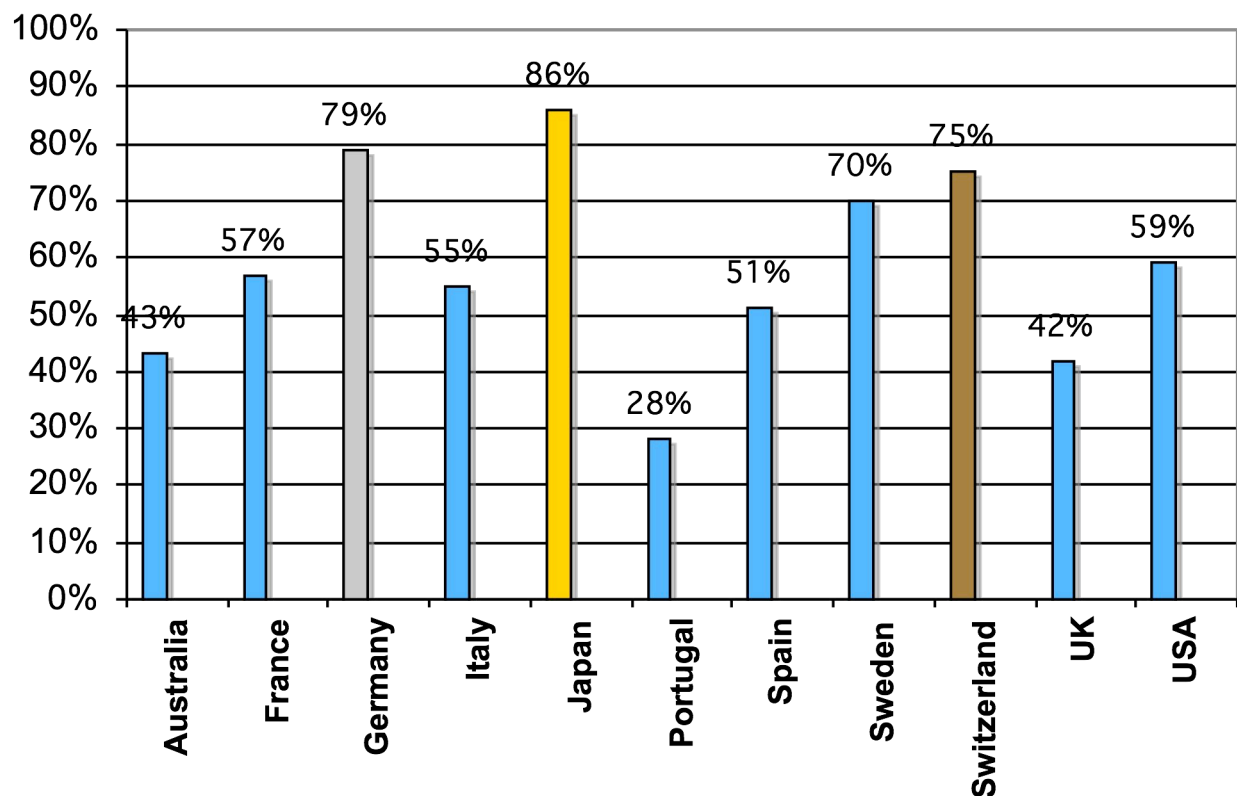
Gold – Switzerland  
Silver – Sweden  
Bronze – Germany

Australia – 6<sup>th</sup>

### Data notes:

- Data from OECD Environmental Data 2002 report and (UK only) from WRAP
- Data from 1999 for USA, from 2003 for UK, and from 2000 for all other countries

## Event 4: Steel can recycling rates



Gold – Japan  
Silver – Germany  
Bronze – Switzerland

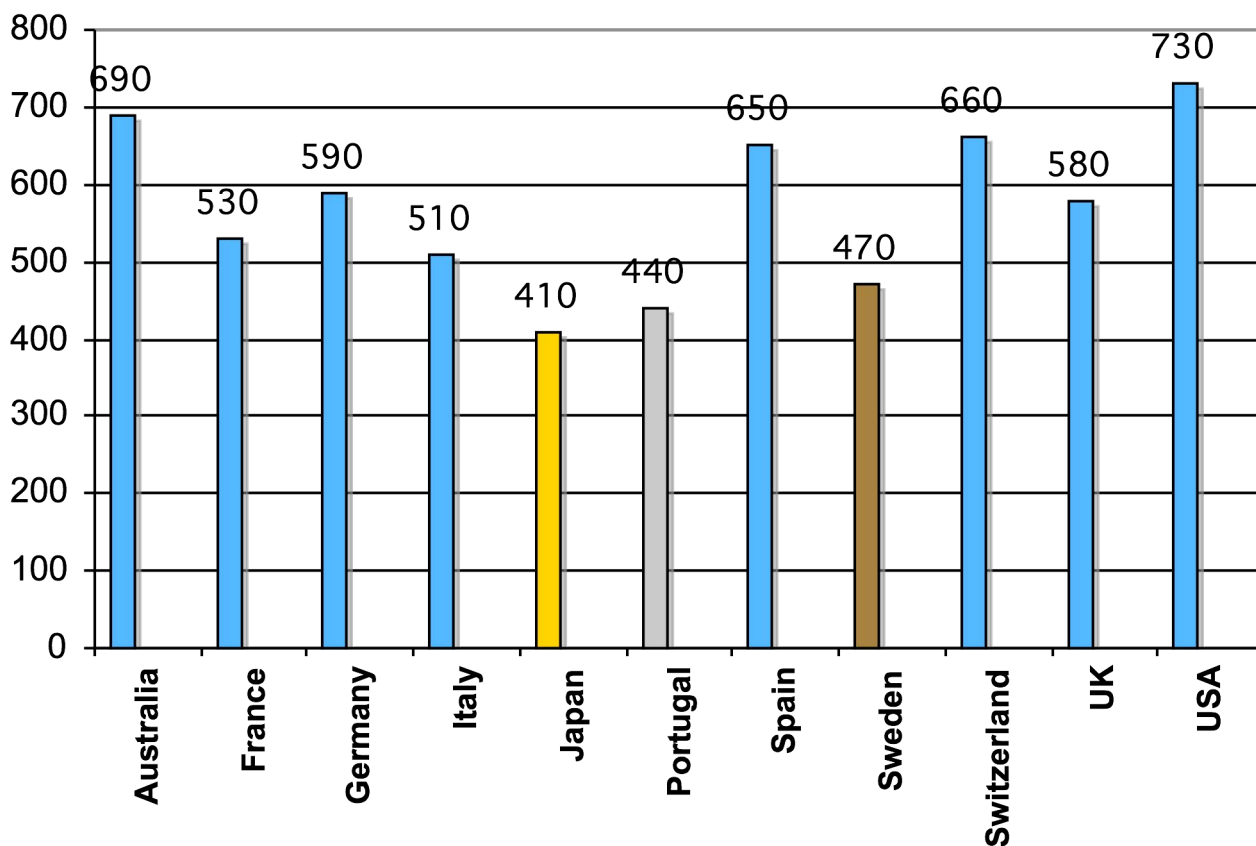
Australia – 9<sup>th</sup>

Data notes:

- Data from the Association of European Producers of Steel for Packaging (APEAL)
- Data shows recycling rates for 2002

## Event 5: Total municipal waste

(measured in kg/capita)



Gold – Japan  
Silver – Portugal  
Bronze – Sweden

Australia – 10<sup>th</sup>

Data notes:

- Data from *OECD Selected Environmental Data* report – second cycle, released 24 June 2004

# Overall standings

Event/Country	Australia	France	Italy	Germany	Japan	Portugal	Spain	Sweden	Switzerland	UK	USA
Paper & Cardboard	7	5	11	1	4	8	6	2	3	10	9
Aluminium Cans	5	9	7	4	3	10	11	2	1	8	6
Packaging Glass	6	5	8	3	4	7	9	2	1	10	11
Steel Cans	9	6	7	2	1	11	8	4	3	10	5
Municipal Waste	10	5	4	7	1	2	8	3	9	6	11
	37	30	37	17	13	38	42	13	17	44	42

## Rank

1 <sup>st</sup>	Japan*	Top performers
2 <sup>nd</sup>	Sweden	
3 <sup>rd</sup>	Switzerland*	
4 <sup>th</sup>	Germany	
5 <sup>th</sup>	France	Mid performers
=6 <sup>th</sup>	Australia	
=6 <sup>th</sup>	Italy	
8 <sup>th</sup>	Portugal	Poor performers
=9 <sup>th</sup>	Spain	
=9 <sup>th</sup>	USA	
11 <sup>th</sup>	UK	

\*In the spirit of the comparison's Olympic theme, Japan has been placed ahead of equal scoring Sweden as it had more gold medal placings. The same applies to Switzerland and Germany.

# The Competitors – Country Profiles

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## Australia

Population: 20 million (ABS)  
Population density: 2.5 persons/square km<sup>ii</sup>



Australia enjoys high public support for recycling with attitudinal research finding that 96% of Australians agree that recycling services are important to them<sup>iii</sup>. ABS figures also show that 95% of Australia households recycle waste<sup>iv</sup>.

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 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, tend to be provided through drop-off points.

In 1992, 'The Kerbside Recycling Strategy' was adopted by the Australia and New Zealand Environment and Conservation Council to extend and improve kerbside collection. Many local councils have implemented this strategy and are the backbone of household recycling in Australia.

The National Waste Minimisation Strategy and the more recent National Packaging Covenant have involved a range of voluntary recycling targets for major packaging industries, retailers, manufacturers and the supply chain.

Australia also has a wealth of natural 'virgin' resources, which manufacturers tend to use more than recycled secondary raw materials. In other countries, a lack of local natural resources can often boost their manufacturing industry's demand for collected recyclable materials.

*A more detailed breakdown of recycling in Australia is included at the end of this report.*

## France

Population: 60 million  
Population density: 109.3 persons/square km



France is one of Europe's largest and most populous countries, resulting in a moderate population density. Recycling programs are well established. Although recent years have seen an increase in the amounts of materials recycled in France these increases have been out-stripped by the growth in the total amount of waste produced<sup>v</sup>.

The total amount of waste disposed of in landfill is being minimised through recycling and composting programs. Around a third of their total waste is also incinerated (largely with energy recovered)<sup>vi</sup>. Although waste to energy technologies reduce the amount of waste sent to landfill and recover some of the embodied energy of waste materials, a year 2000 study for the European Commission<sup>vii</sup> reported that recycling can save more energy than is generated by incineration.

## Germany

Population: 83 million  
Population density: 233.2 persons/square km



Germany is one of the leading countries in environmental policy and performance.

Germany's recycling success has been driven by the government's Duales System Deutschland (DSD). German packaging laws generally place responsibility for packaging on product manufacturers and distributors, requiring that used packaging be recovered and recycled. These policies and programs have been successful in helping to reduce waste to landfill.

Similar laws are being considered, developed and enacted to address the waste from durable goods such as appliances and automobiles.

The European Community is an important driving force behind environmental law in Europe, setting waste strategies with target recycling rates for member countries. Much of this follows the standards set by Germany.

Germany is also one of the world's highest consumers of recycled content paper<sup>viii</sup>. This demand for recycled paper is an important financial driver for the recycling of their paper and cardboard.

## Italy

Population: 58 million  
Population density: 191.6 persons/square km

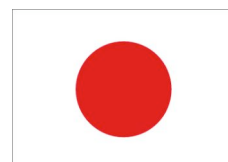


Recycling programs in Italy are still in their infancy when compared with their more established Northern European neighbours, such as Switzerland. Indeed, by the end of the nineties, Italy was still landfilling a high percentage of its waste.

However, this is slowly changing with new laws being implemented and recycling infrastructure being developed in line with the European Union's strategy on waste and recycling. On a positive note, recent years have seen a rapid increase in Italy's recycling of steel and aluminium cans.

## Japan

Population: 127 million  
Population density: 336.1 persons/square km



Culturally, there has tended to be a lower level of environmental consumer activism in Japan and other Asian nations when compared with the United States and Europe. In the past there was also little interest in greener product design from either industry or government.

However, recent years have seen Japan identify the commercial opportunities of greener products in the global marketplace.

Japanese manufacturers have been quick to respond, investing in research and development and product redesign. The close relationship between government and industry in Japan ensures that changes to packaging laws and related government programs can be implemented quickly by industry. The result is that Japan is achieving good waste reduction and recycling rates.

Other drivers that make Japan a top recycling performer are the acute shortage of landfill space to accommodate the refuse of Japan's large population and Japan's relatively short local supply of virgin raw materials (when compared with countries like Australia and USA). Indeed, large amounts of aluminium used in Japanese manufacturing comes from scrap (including used drink cans).

Despite excellent recycling rates for some of the packaging materials included in this comparison, there is very little composting in Japan and a heavy reliance on incineration to minimise waste to landfill.

## Portugal

Population: 10 million  
Population density: 109.1 persons/square km



Portugal, like fellow EU member Italy, is still developing and implementing widespread recycling programs in an effort to meet the targets of the EU strategy on waste and recycling. While Portugal's recycling rates are generally average to low, they must be given credit for their low total municipal waste per capita figure.

With 6% of municipal waste recycled, 6% composted and 21% incinerated (with energy recovered), most of Portugal's overall waste (67%) ends up in landfill<sup>ix</sup>.

In the past, Portugal has had a low degree of environmental awareness. However, efforts to catch up with EU standards are helping to improve public awareness.

## Spain

Population: 40 million  
Population density: 79.4 persons/square km



Recycling and centralised composting are widely practiced in Spain and have been increasing in recent years. However, improvements in the amount of materials recycled are being outstripped by growth in the amount of waste being generated.

Recycling industry figures in Australia have often noted the effects of state government waste legislation, resulting in different waste management approaches in our 8 states and territories. Spain consists of 17 autonomous regions, each with its own parliament. Consequently, the development of national programs requires agreement between the minister and the regions - a sometimes difficult task.

The national Seven Year Waste Plan became law in January 2000 and includes the closing or licensing of 3,700 unlicensed landfill sites by 2005, targets for urban organic waste recycling and separate collections for smaller communities by 2005.

## Sweden

Population: 9 million  
Population density: 19.7 persons/square km



Sweden enjoys a developed and established recycling infrastructure, thanks partly to government funding for recycling and composting plants.

Just over a third of Sweden's waste is incinerated<sup>x</sup> with most of the energy recovered being used in district heating schemes. The Swedish produce a relatively low amount of municipal waste per capita. With significant recycling, incineration and composting, just under a third<sup>xi</sup> of Sweden's municipal waste ends up in landfill.

Swedish legislation also uses economic instruments to achieve waste management goals, including landfill taxes and high landfill costs, incentives for home composting and a deposit-refund system for some packaging types.

## Switzerland

Population: 7 million  
Population density: 176.8 persons/square km



Australia's recycling efforts are hampered by the large area over which our population is spread. Japan's landfill shortage has been brought about by their huge population and small geographic area. By comparison, Switzerland has the benefit of a relatively small population in a small geographic area, in close proximity to other European trading partners.

Switzerland has also benefited from early government and private sector investment in waste management infrastructure. Kerbside recycling programs are now well established. With 32% of municipal waste recycled, 14% composted and 48% incinerated (with energy recovered) very little waste (6%) ends up in landfill<sup>xii</sup>.

## United Kingdom

Population: 60 million  
Population density: 244.2 persons/square km



The UK has a sizable population spread over a relatively small land area. With a significant level of consumer activism and a high level of general environmental awareness, it is surprising that the UK gets the wooden spoon as the worst performer in this comparison.

As an EU member state, the UK has recycling targets to achieve that will require a huge improvement in their approach to waste management. The British approach to date has produced waste minimisation results that have consistently fallen behind other leading European countries. Indeed their national recycling rate is only 14.5%<sup>xiii</sup>.



Their key problems are relatively poor quality kerbside recycling infrastructure and a low overall level of public awareness about what can and cannot be recycled.

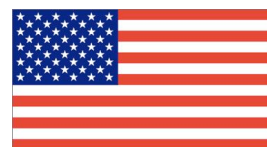
Within the UK there is also opposition from the media, public and environmentalists to the use of incineration as a way of dealing with waste.

The British government is now implementing a two-pronged approach to improving waste management through the recently introduced Household Waste Recycling Act. The first aspect involves the change in legislation and the provision of extensive funding to support and develop recycling infrastructure in cooperation with local authorities. All councils are now required to provide kerbside recycling collections to households for at least two types of recyclable materials by 2010.

The second aspect is currently seeing £10 million of government funding being invested in communication and education to ensure that all households correctly participate in their improving recycling programs. As part of this, the British Government-initiated WRAP organisation worked with Planet Ark in October 2004 to run the *The Big Recycle* campaign, encouraging Britons to recycle more.

## United States of America

Population: 280 million  
Population density: 29.1 persons/square km



The USA is the only other country in this comparison with a land area comparable to Australia's. However, the US also has a large population and so is in a better position to take advantage of economies of scale. Limited landfill space is a growing problem in the USA within some urban population centres, but this is not as severe as it is in Northern Europe and Japan.

Waste and recycling programs are well established but not as well utilised as similar programs in Northern Europe. There is a high level of consumer activism and public environmental awareness. However, the American lifestyle serviced by recycling services has a high level of consumption to begin with<sup>xiv</sup>.

One of the key recycling drivers in the United States is the Resource Conservation and Recovery Act (RCRA). The primary goal of the Act is to protect public and environmental health from the potential hazards of waste disposal. However, the Act also calls for the conservation of natural resources and the reduction of the amount of waste generated.

High environmental awareness saw the American public embrace recycling with enthusiasm, with rapid increases in recycling rates in the late-eighties through to the mid-nineties. Unfortunately, recent years have seen recycling rates plateau and even decline in some communities. In one worse scenario, the percentage of waste recycled in Franklin County, Ohio fell 50% during the years 1994 to 2000. Several states have also cut back on their recycling programs, spending less money on them leading to a resultant drop in participation levels for the first time.

*State Recycling Laws Update* reports that many States will miss — or have already missed — the recycling targets they set for themselves in the 1990s. Connecticut, for example, hoped to reduce waste by 40% by 2000. It instead achieved a 25% reduction.

According to the Container Recycling Institute, recycling rates for beverage cans and bottles have fallen since the mid-1990s. Given the ease with which these materials can be recycled, this gives cause for concern.

In comparison with Europe, the US has been slow to adopt the concept of extended producer responsibility (EPR). However, many environmental policy experts believe that US-based manufacturers will increasingly adopt EPR programs in response to the environmental concerns of their European customers.

One other beacon of hope is Seattle. In December 2003, it decided to make recycling mandatory rather than voluntary. Starting in 2006, their recycling crews will leave residents' garbage by the roadside if it often contains recyclables. Given Seattle's influence on environmental matters, it is a policy other American communities may follow.

# Conclusion

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Australia finished among the mid-performing nations. The top performers were Japan and the Northern European nations. The influences affecting waste and recycling that the top performers have in common are small land areas, an acute shortage of landfill space, established separate collections for recyclable materials, legislation that encourages better waste management and a reasonably cooperative relationship between government and industry.

Australia's strength is the enthusiasm and optimism of the Australian people, inspired by our love of our natural environment to better protect and preserve it. However, Australia will always face the challenge of providing appropriate services across large distances and is unlikely to have the same pressure of landfill shortage experienced in Europe and Japan.

There is room for improvement in Australia's recycling performance, both in the provision of recycling services and in public participation in existing recycling programs.

As stated in the Executive Summary, there are a number of key areas where Australia needs to improve in order to perform better in the "Recycling Olympics":

1. Recycling services provided by local councils need to be best practice in terms of the number of materials collected, the frequency of collection and the bins used to collect recyclable materials. There are simply too many differing collection systems around Australia. This has led to public confusion, which in turn has affected the quality of our recycling efforts.
2. Recycling education needs to be improved so that people know exactly what can and cannot be recycled in their local communities. This will reduce the amount of recyclables getting thrown into the garbage bin.
3. Public place recycling and office recycling needs to be more widespread. \$15 million worth of aluminium cans are thrown away every year in Australia and 53% of our paper and cardboard is ending up in landfill. This needs to change.
4. Landfill costs need to rise so that Australian society has a financial incentive to recycle more.
5. Australia needs an annual national recycling audit that measures just how well we are doing with our recycling efforts. If each local community is able to see how well they are doing with their recycling on a per capita basis, then national and local improvement targets can be set that will enable Australia to improve its recycling and waste minimisation efforts.

# Appendix:

## *A Brief History of Australian Recycling*

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By Jon Dee - Founder and Managing Director, Planet Ark

**Back in 1953, Queen Elizabeth II had just ascended the throne and our planet was home to 3.3 billion people.**

Just over 50 years later, our world population has now nearly doubled to 6 billion and an estimated 236,000 people are being born every day. Our planet simply cannot sustain such growth unless society finds a better way to re-use and recycle the natural resources that we consume.

Like many nations around the world, Australia has needed to come to grips in an effective and sustainable way with the waste that our modern society generates. By making it simple and easy for people to recycle, Australian local government have removed the barrier to people doing the right thing with their weekly waste.

The public have responded accordingly. National research undertaken for Planet Ark by Roy Morgan showed that 96% of Australians said their local recycling services were important to them." No other issue in Australia attracts such unanimous support.

This societal consensus has shown up in Australia's recycling figures.

Last year, over 1 billion newspapers were recycled in Australia - this means that 7 out of every 10 newspapers being read here are getting recycled. With a recycling rate of 73%, Australians are arguably the best newspaper recyclers in the world. The aluminium can industry recycles nearly 2 billion cans a year - not bad for a country whose population is only 20 million people.

Today, processing reusable products from Australia's waste stream is big business and recycling is playing a key role in our economy. ACOR figures show that over 100,000 people are employed in Australia's recycling related industries.

Every time they pick up our recycling, these recycling companies are showing that conservation means business. The benefit to jobs and the economy are now indisputable.

Looking at the Australian steel industry, the steel giant BHP were already recycling steel back in 1915, well before it became an environmental issue. The reason? Recycling steel scrap made economic sense as it uses 75% less energy to make steel from scrap than it does from raw materials like iron ore and coal. Today millions of tonnes of steel continue to be recycled in Australia by our steel companies.

Energy saving is also a reason why Australia's aluminium industry will take every aluminium can it can get. The energy saved from each can is enough to power a TV set for 3 hours.

Australia has a long and proud tradition of recycling. The first Australian paper mill to use recycled material was built in 1815 - it used recycled rags to make paper. Waste paper collections from households and factories started in Melbourne in the 1920s and in 1975, Canterbury Council became the first Australian municipality to start separating some of their household waste.

Back in 1953, the only kerbside recycling to be had was the rag and bone man picking up scrap metal. Now in 2004, kerbside recycling is in many communities all around Australia.

Whilst Australia's kerbside recycling continues to improve in terms of economics and efficiencies, thousands of retail outlets around Australia now also offer easy drop-off recycling for materials such as mobile phones, batteries, printer cartridges, car batteries, tyres and gas cylinders. Significant results are being obtained from the recycling carried out via these outlets.

Political support for recycling has also had a positive influence. In 1992, 'The Kerbside Recycling Strategy' was adopted by the Australia and New Zealand Environment and Conservation Council to extend and improve kerbside collection. It has been a tremendous success.

The National Waste Minimisation Strategy and the more recent Packaging Covenant have involved a range of voluntary recycling targets for major packaging industries. As this report shows, there is definitely room for improvement, but this is an approach that is being seen to work.

More people now understand that whilst it's good practice to put your paper out for recycling, that in itself is not enough. To properly recycle, you ideally need to buy back the products that your waste gets turned into. As a result, most leading brands in Australia now use consumer packaging with significant recycled cardboard content, which is marketed under the 'Australian Recycled Cartonboard' (ARC) brand.

This 'Buy Recycled' approach is a sound, practical and market-based approach to waste minimisation. The 'Buy Recycled Business Alliance' in Australia is working to facilitate the increased use in business of products and materials made from recycled content. This collection of high-profile businesses has a combined purchasing power of some \$30 billion.

This purchasing clout, if used properly, could boost demand for post-consumer materials. By increasing demand, it has the potential to also boost commodity prices, thereby improving the economic viability of recycling.

The need to 'Close the Loop' on our recycling efforts is increasingly being taken up by the public as the range of products with recycled content expands. Indeed, last year, Australian bought 35 million rolls of 'SAFE' toilet tissue which in turn enabled the manufacture to recycle more than 10,000 tonnes of office paper.

It's a 'Buy Recycled' approach that our Governments at a State, Federal and local level would do well to follow.

# References & end notes

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<sup>i</sup> It should be noted that the inclusion of more recycling rates for other materials could change a given country's overall standing by one or two places within these three general levels of performance.

<sup>ii</sup> All population and population density figures are from the *SBS World Guide* 11<sup>th</sup> edition (2003, Hardie Grant Books) unless stated otherwise

<sup>iii</sup> Roy Morgan research conducted for Planet Ark in August 2004

<sup>iv</sup> Australian Bureau of Statistics 2003 report *4602.0 Environmental Issues: People's Views and Practices*

<sup>v</sup> *Recycling Achievement in Europe* report (2000, Recycling Recovery Forum)

<sup>vi</sup> *OECD Environmental Data 2002* – based on 1999 data of 30,744 kilo-tonnes total municipal waste, 10,180 kilo-tonnes total waste incinerated, of which 8.611 kilo-tonnes was incinerated with energy recovery

<sup>vii</sup> *Cost-efficiency of packaging recovery systems: the case of France, Germany, the Netherlands and the United Kingdom* (2000, European Commission). Study commissioned by Enterprise DG.

<sup>viii</sup> *Recycling Achievement in Europe* report (2000, Recycling Recovery Forum) – profile of Germany reported that Germany is the world's third largest consumer of recycled paper.

<sup>ix</sup> *OECD Environmental Data 2002* – based on 2000 data of 4,531 kilo-tonnes total municipal waste, of which 287 kilo-tonnes was recycled, 275 kilo-tonnes was composted, 930 kilo-tonnes was incinerated and 3042 kilo-tonnes was disposed of in landfill

<sup>x</sup> *OECD Environmental Data 2002* – based on 1998 data of 4,000 kilo-tonnes total municipal waste, of which 1,400 kilo-tonnes was incinerated with energy recovery

<sup>xi</sup> *OECD Environmental Data 2002* – based on 1998 data of 4,000 kilo-tonnes total municipal waste, of which 1,300 kilo-tonnes was disposed of in landfill

<sup>xii</sup> *OECD Environmental Data 2002* – based on 2000 data of 4,681 kilo-tonnes total municipal waste, of which 1,500 kilo-tonnes was recycled, 641 kilo-tonnes was composted, 2,261 kilo-tonnes was incinerated and 279 kilo-tonnes was disposed of in landfill

<sup>xiii</sup> 14.5% recycling rate for UK from WRAP

<sup>xiv</sup> The high level of consumption of USA is indicated by the 'ecological footprint' (an estimate of the amount of land or space needed to provide the resources to support a given standard of living) of the average American. The Earth Council, an environmental organisation, calculated the ecological footprint per capita of a number of nations. The footprint size of the average American is 10.3 hectares, 9 hectares for the average Australian, 5.2 hectares for the average Briton and 1.2 hectares for the average Chinese person.

## Other key information sources

- *Greener Products by Design: Choices for a Cleaner Environment* (Chapter 5: *International Comparison of Policies Affecting Green Design*) – a publication of the US Congressional Office of Technology Assistance (OTA)
- *Recycling Achievement in Europe* (2000, Resource Recovery Forum)
- *Recycling Achievement in North America* (2000, Resource Recovery Forum)
- *Research Study on International Recycling Experience* (2000, UK Department of Environment, Transport and the Regions)
- *Recycling – How Does Australia Compare?* – report by Nolan ITU, sponsored by Visy Recycling

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