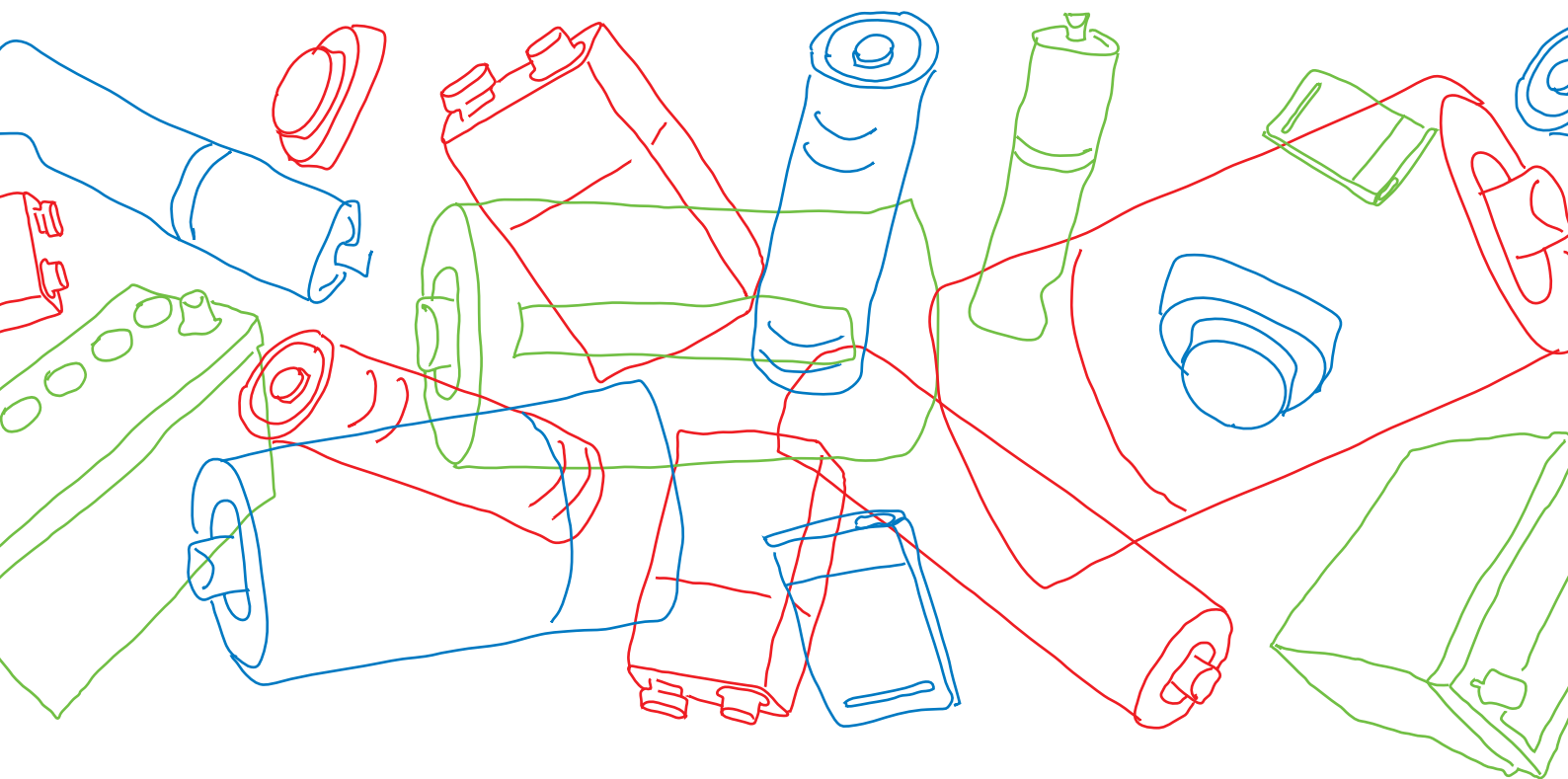


Battery Use, Disposal & Recycling in Australia

PLANET **ARK**

Research Report



About This Report

In 2010, Planet Ark commissioned an independent study on the battery recycling behaviour of Australians. The research was conducted by Pollinate, a specialist research company.

The Australian Battery Recycling Initiative (ABRI)¹ conducted a separate research study in 2010, *Analysis of Battery Consumption, Recycling and Disposal in Australia*.

This report presents the results of the Pollinate research but also draws on a number of key findings from the ABRI research. Unless specifically attributed to the ABRI research, the findings in this report have been drawn from the Pollinate research.

The Pollinate research focused mainly on common household ‘stand-alone’ batteries such as AAA, AA, 9 Volt, C and D. The ABRI research used a definition of ‘handheld’ batteries which included not only stand-alone batteries but also ‘embedded’ batteries such as those in mobiles, laptops, other electronic devices and cordless power tools.

¹ The Australian Battery Recycling Initiative (ABRI) has been formed by a group of battery manufacturers, recyclers, government bodies and environment groups to promote the collection, recycling and safe disposal of the full range of batteries. For more information visit BatteryRecycling.org.au.

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Executive Summary

Key findings

Battery Consumption in Australia

- About 345 million handheld² batteries are purchased in Australia every year. AA and AAA batteries make up 72% of this number (ABRI, 2010).
- 81% of all handheld batteries in Australia are single-use and 19% are rechargeable (ABRI, 2010).
- 46% of survey respondents had never bought rechargeable AA batteries and 52% had never bought rechargeable AAA batteries.
- The most common use for AA and AAA batteries was for remote controls (for TVs, DVD players etc). Other common uses for AA and AAA batteries were for children's toys, digital cameras, torches, wireless mice and keyboards, and gaming consoles.

Attitudes Towards Buying Rechargeable Batteries Versus Single-Use

- Cost was the main reason respondents *didn't* buy rechargeable batteries (due to the perception that the charger and/or the batteries are too expensive).
- Rechargeable batteries were also perceived by some non-purchasers as not working as well as single-use batteries and as inconvenient to use.
- Conversely, cost was also the main reason why respondents *did* buy rechargeable batteries (to save money in the long term).

² Handheld batteries are those batteries under 1 kg in weight, and include both common 'stand-alone' batteries such as AAA, AA, 9 Volt, C, D, as well as 'embedded' batteries such as those in mobiles, laptops, other electronic devices and cordless power tools.

- Rechargeable batteries were also purchased on the basis of concern about waste and the environment.

Current Methods Of Battery Disposal/Recycling

- Battery recycling rates in Australia are low. Less than 6% of all handheld batteries in Australia (by weight) are recovered for reprocessing. Over two thirds of handheld batteries are currently sent to landfill (ABRI, 2010).
- About 70% of survey respondents disposed of their AA and AAA batteries in their household garbage bin. However, 75% of respondents said that they would 'definitely' recycle batteries if there were an easy way to recycle them. An additional 23% said they would 'probably' recycle them.

Attitudes Towards Battery Recycling

- 80% of respondents thought that end-of-life batteries should be recycled.
- When asked to choose a preferred method for recycling their batteries, 42% of respondents said they would prefer to drop them off in a shop and 31% would prefer to put them in their council-provided kerbside recycling bin.

Attitudes Towards Manufacturers and Recycling Responsibility

- When asked who *should* be responsible for bearing the cost of battery recycling, the most commonly nominated group was battery manufacturers (nominated by 36% of respondents).
- Almost 4 out of 5 respondents (79%) said they would be more likely to buy from battery companies that cover the cost of recycling their used batteries.

Survey Methodology

Collection Method

The quantitative survey was conducted online from 14 - 19 October 2010. The survey took each participant approximately 15 - 20 minutes to complete.

Survey Respondents

1,013 Australians aged 14 - 64 years of age responded to the survey. Respondents were recruited from a major panel provider in line with specified quotas, and are representative of the Australian population.

Males and females were represented equally. The proportions of participants in each age bracket are shown in Table 1.

Table 1

Age	
14-17	8%
18-24	14%
25-34	20%
35-49	33%
50-64	24%

ABRI estimates that 81% of all handheld batteries in Australia are single-use and 19% are rechargeable.

Consumption of Batteries by Australian Households

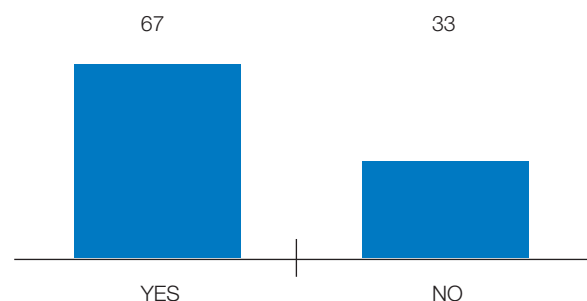
Single-use AAAs and AAs are the most frequently purchased types of batteries, according to both the Pollinate and ABRI research.

About 465 million handheld batteries are in use in Australia, and about 345 million handheld batteries are purchased every year (ABRI, 2010). AAA batteries make up 29% of handheld battery sales on a per unit basis, while AAs make up 43%. ABRI estimates that 81% of all handheld batteries in Australia are single-use, and 19% are rechargeable.

46% of survey respondents had never bought rechargeable AA batteries and 52% had never bought rechargeable AAA batteries. However two-thirds of respondents' households possessed a battery recharger and rechargeable batteries (see Figure 1).

Figure 1

Q: Do you have a battery recharger and rechargeable batteries at home?



A breakdown of the frequency of purchase of different types of common household batteries is given in Table 2.

Table 2: Purchasing frequency for different types of batteries

	At least once every three months	Once every 6 months	Once a Year or less often	I never buy this product
AAA - single use	28%	24%	29%	19%
AAA - rechargeable	5%	6%	35%	52%
AA - single use	31%	27%	23%	20%
AA - rechargeable	6%	8%	40%	46%
C	6%	7%	30%	57%
D	5%	6%	30%	59%
6 volt (e.g. dolphin torch)	2%	5%	20%	73%
9 volt	3%	9%	36%	51%
Car / bike / boat	0%	1%	52%	45%
Button (e.g. watches)	4%	8%	54%	33%

The most common use for AA and AAA batteries was for remote controls (for TVs, DVD players etc). Other common uses for AA and AAA batteries were for children's toys, digital cameras, torches, wireless mice and keyboards, and gaming consoles (Table 3).

Table 3: Common uses of different types of handheld batteries (respondents could select more than one use)

	AAA - single use	AAA - rechargeable	AA - single use	AA - rechargeable	C	D	6 volt	9 volt	Car / bike / boat	Button
n *	441	482	438	544	410	399	272	413	422	432
Kids toys	26%	30%	30%	32%	31%	23%	1%	8%	2%	8%
TV, DVD etc remote controls	65%	59%	62%	50%	1%	2%	1%	4%	0%	3%
Fire alarms	11%	8%	21%	13%	5%	3%	3%	72%	1%	3%
Bicycle lights	7%	12%	6%	11%	5%	3%	3%	3%	1%	1%
Digital camera	17%	26%	27%	52%	2%	1%	1%	2%	0%	4%
Torches and lights	16%	18%	29%	23%	42%	45%	79%	4%	0%	3%
Gaming consoles	10%	17%	22%	28%	5%	3%	2%	1%	1%	2%
Car alarm / garage door	6%	8%	8%	9%	4%	1%	3%	5%	6%	17%
Cordless phones	12%	18%	13%	22%	3%	1%	2%	4%	0%	1%
Wireless mouse and keyboard	15%	22%	20%	26%	2%	1%	1%	1%	0%	2%
Personal care items	14%	17%	18%	21%	3%	1%	0%	1%	0%	7%
Other item	10%	10%	12%	13%	13%	16%	6%	12%	52%	46%
None of these	5%	6%	4%	5%	16%	18%	10%	6%	38%	19%

* n = number of respondents

Reasons Why Consumers Buy or Don't Buy Rechargeable Batteries

Cost was the main reason for both *buying* and *not buying* rechargeable batteries. Of the 319 survey respondents that don't buy rechargeable batteries, 49% said that the main barrier was because the charger and/or the batteries were too expensive. Yet cost was also the main driver for the 658 survey respondents who *do* buy rechargeable batteries (as rechargeable batteries cost less over the life of the battery), with 51% of these respondents nominating cost as their primary reason for buying rechargeables.

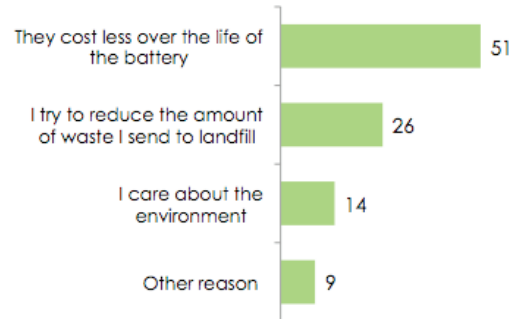
Other barriers to buying rechargeables included the perception that rechargeable batteries do not work as well (nominated as the main reason by 21% of the 319 respondents) and the perception that they are inconvenient to use (nominated as the main reason by 8% of the 319 respondents).

For those 658 respondents who do buy rechargeables, other strong motivators included concern about waste sent to landfill (nominated as the main reason by 26% of these respondents) and concern for the environment (nominated as the main reason by 14% of these respondents).

Figure 2: Reasons why people do and don't buy rechargeable batteries.

Reasons for buying rechargeable batteries

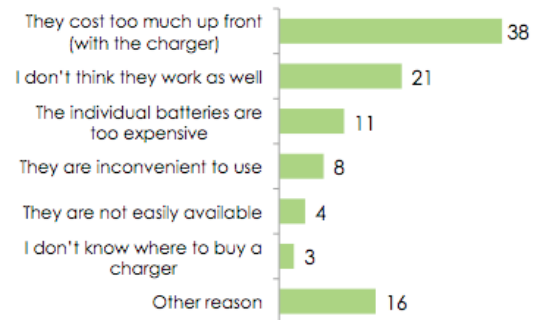
Q: "I buy rechargeable batteries because..."



Base: (n=658)

Reasons against buying rechargeable batteries

Q: "I do not buy rechargeable batteries because..."



Base: (n=319)

Cost was the main reason for both buying and not buying rechargeable batteries.

Methods of Battery Disposal in Australia

Fate of Used Batteries in Australia

ABRI's research shows that end-of-life batteries in Australia are disposed of in a number of ways. These methods are outlined in Table 4, together with the percentage of handheld batteries (by weight) that are disposed of through each given method.

Table 4: Fate of end-of-life handheld batteries in Australia (from ABRI, 2010)

Method of disposal	Percentage of handheld batteries (by weight)
Reprocessed in Australia	2.9%
Legal Export	1.3%
Landfill	67.4%
Stockpiled Formal	2.1%
Stockpiled Informal	25.8%
Rebirth	Less than 0.1%
Illegal Export	0.4%

Battery Recycling Rates in Australia

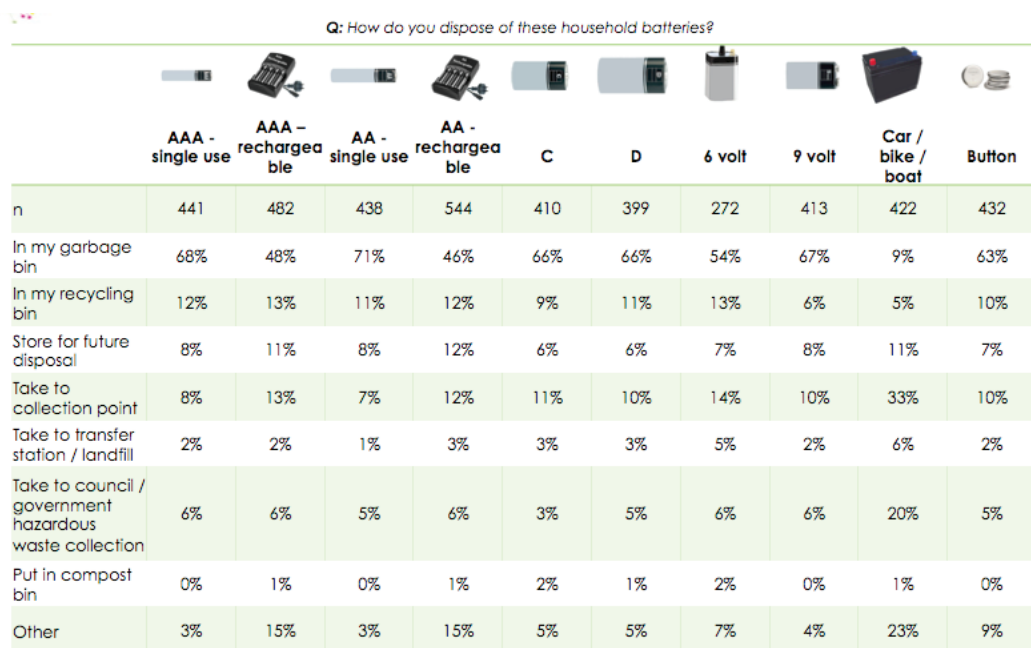
It is clear that over two-thirds of all handheld batteries used in Australia, weighing over 8,000 tonnes, are sent to landfill. Recycling rates for batteries are low. According to ABRI, an 'optimistic' estimate is that 6% of end-of-life handheld batteries are recovered for reprocessing. This includes local reprocessing, legal export and formal stockpiling of all chemistry types (e.g. alkaline, lithium ion and nickel metal hydride).

The survey results support the ABRI findings. Most survey respondents indicated they disposed of their household batteries (excluding car batteries) in their garbage bin. Around 70% of respondents said they disposed of their single-use AA and AAA batteries in the garbage bin. Only 13-16% of respondents stated they took their AA and AAA batteries to an appropriate collection point such as a waste transfer station, hazardous waste collection facility or collection event.

Rechargeable AAAs and AAs are less likely to be disposed of into the garbage bin, and more likely to be recycled. 21% of respondents said they took these battery types to an appropriate collection point. 48% and 46% of respondents said they disposed of AAA and AA batteries, respectively, in household garbage bins.

A breakdown of disposal methods for different types of batteries is provided in Figure 3.

Figure 3: Methods of handheld battery disposal



* n = number of respondents

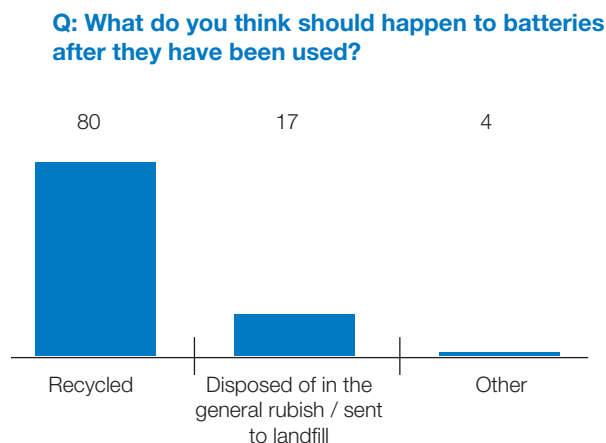
According to ABRI (2010),

‘The two main issues for handheld battery recovery are collection systems and reprocessing capacity. Collection of handheld batteries needs to progress to the point where Australian reprocessing facilities are viable. Work is needed on a sustainable funding model for the collection of handheld batteries.’

Attitudes Towards Recycling Batteries

Most respondents (80%) thought that end-of-life batteries *should* be recycled (see Figure 4).

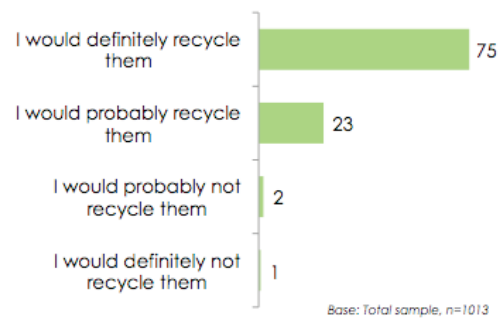
Figure 4: Attitudes towards recycling/disposal of batteries



There is a significant gap between respondents’ expressed attitudes towards battery recycling, and their demonstrated behaviour when it comes to battery disposal. This discrepancy may be partly due to a lack of knowledge of current battery recycling options, or real or perceived inconvenience associated with recycling batteries. When asked about the likelihood of recycling batteries if there were an ‘easy way’ to do it, 75% of respondents indicated that they would ‘definitely’ recycle their batteries. Another 23% said that they would ‘probably’ recycle their batteries (see Figure 5).

Figure 5: Attitudes towards battery recycling if perceived to be convenient

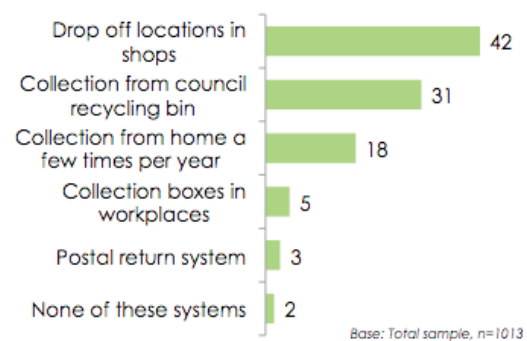
Q: If there was an easy way for you to recycle your used batteries, how likely would you be to recycle them?



When asked which type of recycling service they would most prefer, 42% of respondents said they would prefer to drop used batteries off in a shop, 31% would prefer to put them in their council-provided kerbside recycling bin, 18% would prefer a household pick-up several times per year, and 5% would prefer to have a battery collection box in their workplace.

Figure 6: Preferred system for recycling batteries

Q: If there was a battery recycling system in Australia, which of these types of battery recycling services would you like to have?



Importance of Environmental Concerns and Stewardship on Purchasing Behaviour

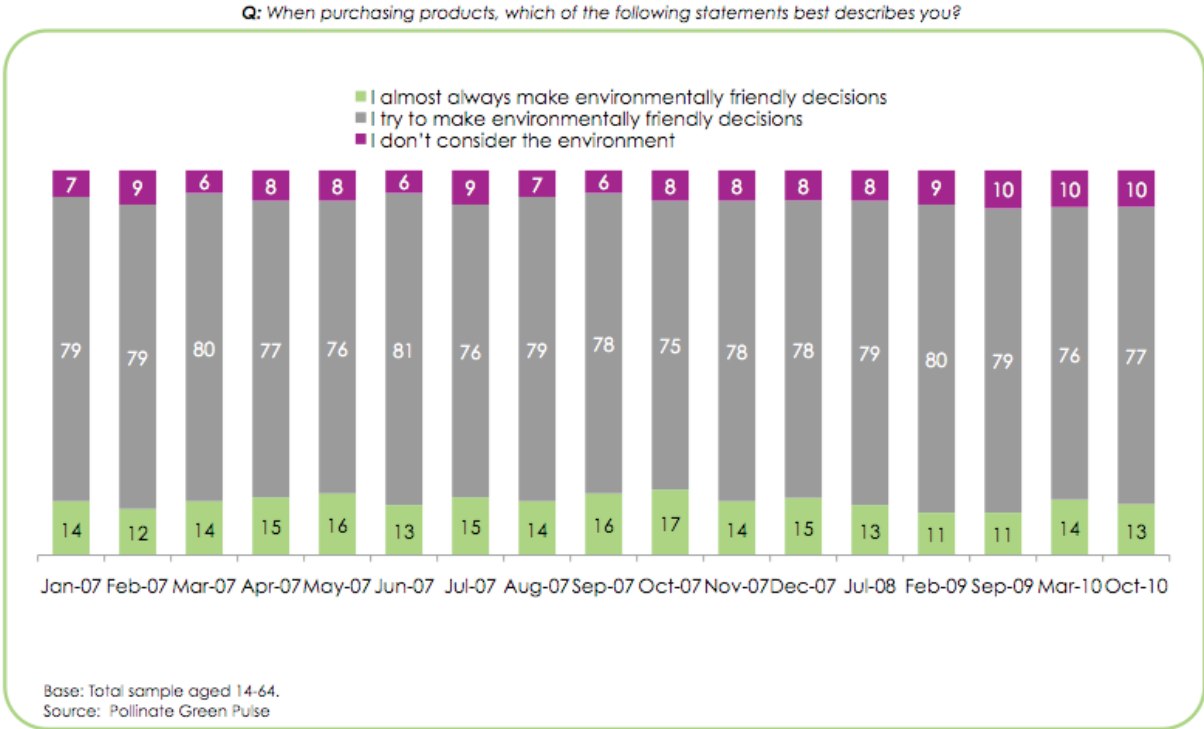
Impact of Environmental Concern on Purchasing Behaviour

In general, the majority of respondents said that they consider the environment when making purchasing decisions. 13% of respondents indicated that they 'almost always' make environmentally friendly decisions when purchasing, and another 76% said they 'try' to make environmentally-friendly decisions (see Figure 7).

Almost 4 out of 5 respondents claim that if a battery company was responsible for covering the cost of recycling its used batteries, they would be more likely to buy that company's products.

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Figure 7: Importance of the environment on purchasing behaviour



Impact of Producer Responsibility on Purchasing Behaviour

Almost 4 out of 5 of respondents (79%) claim that **if a battery company was responsible for covering the cost of recycling its used batteries, they would be more likely to buy that company's products.**

Figure 8: Impact of producer responsibility on purchasing behaviour

Q: *If a battery company was responsible for covering the cost of recycling its used batteries, would you be more likely to buy their products?*

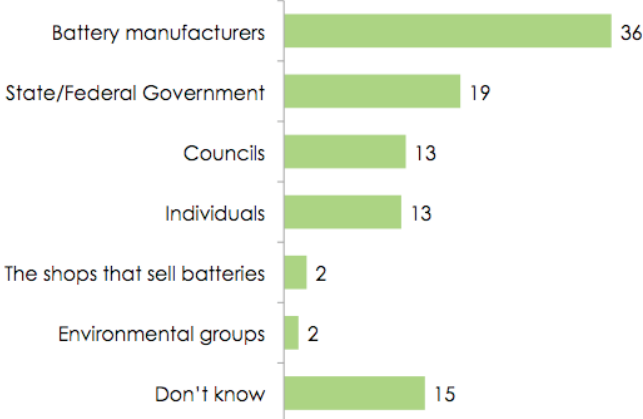


Responsibility for Battery Recycling

When asked who should be responsible for bearing the cost of recycling batteries, the most commonly nominated group was battery manufacturers (nominated by 36% of respondents). State/Federal Government was the second-most nominated group (by 19% of respondents), followed by Councils and Individuals (Figure 9).

Figure 9: Apportioning of responsibility for battery recycling

Q: *Who do you think should be responsible for paying for recycling batteries?*



Implications for Rechargeable Battery Consumption and Battery Recycling in Australia

The findings of this report highlight the discrepancy between the widespread desire to recycle batteries, and the demonstrated levels of battery recycling in Australia. The great majority of people surveyed in this report think that batteries *should* be recycled, and believe they *would* recycle their batteries if given a convenient recycling option. Currently less than 6% of handheld batteries in Australia are recycled, and recycling options are limited for both households and industry. Planet Ark is working to encourage relevant businesses to participate in the drive to lift Australia's battery recycling rate, through the provision of more recycling options (including retail drop-off locations) and engagement in workplace recycling initiatives. Planet Ark is also working to raise awareness amongst the Australian public of the benefits of battery recycling and local recycling services.

This research highlights the opportunity for increased consumer education about the value and performance of rechargeable batteries. Currently, 49% of those surveyed said that they don't buy rechargeable batteries/chargers because they are too expensive, yet the fact is that rechargeable batteries cost less than single-use batteries over the life of the battery. Another 29% of survey respondents said that they don't

buy rechargeables because they perform poorly compared to single-use batteries. This highlights an opportunity for a relevant organization to commission research that compares the performance of rechargeable batteries and single-use batteries.

Finally, the research points to the golden opportunity available to battery manufacturers to gain competitive advantage by adopting extended responsibility for their products and by demonstrating to consumers that they are environmentally responsible. The message is clear: the large majority of Australian consumers would be more likely to buy batteries from a manufacturer that is known to be covering the cost of recycling its used batteries.

Need to recycle your batteries from home?

The RecyclingNearYou.com.au website and hotline make it easy to find your nearest recycling service for household batteries, whether it's a drop-off point at a nearby retailer, business, or at the facilities of your local council or shire.

RecyclingNearYou can also help you find local recycling solutions for a range of other items including electronics, glass, packaging, garden clippings and light globes.

Search the website or call the RecyclingNearYou hotline on 1300 733 712*.



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* Hotlines: 9am – 5pm Monday – Friday EST.

Need to recycle batteries at work?

The BusinessRecycling.com.au website and hotline make recycling at work easy.

Specifically designed for Australian businesses, you'll find national and local re-use and recycling options for batteries as well as cardboard, food scraps, plastics, packaging, construction waste, electronics and more. The site contains information about the recyclability of every listed material as well as the contact and service details for recycling services.

Search the website or call the BusinessRecycling hotline on 1300 763 768*.



Planet Ark's BusinessRecycling.com.au is a partnership program that has been funded by the NSW Government, the QLD Government, and Pitney Bowes.

The Australian Battery Recycling Initiative

The Australian Battery Recycling Initiative (ABRI) has been formed by a group of battery manufacturers, recyclers, government bodies and environment groups to promote the collection, recycling and safe disposal of the full range of batteries. For more information visit BatteryRecycling.org.au.