The Senate

Standing Committee on Environment, Communications and the Arts

Management of Australia's Waste Streams (including consideration of the Drink Container Recycling Bill 2008)

September 2008

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Acronyms and abbreviations

ABS	Australian Bureau of Statistics
AWD	Australian Waste Database
AWT	Alternative Waste Technology
CDL	Container deposit legislation
CDS	Container deposit system or container deposit scheme
C&D	Construction and demolition
C&I	Commercial and industrial
CFL	Compact fluorescent lamp
Covenant	National Packaging Covenant
CO_2-e	Carbon dioxide equivalent
CSIRO	Commonwealth Scientific and Industrial Research Organisation
EPHC	Environment Protection and Heritage Council
Environment Department	Department of the Environment, Water, Heritage and the Arts
EPR	Extended producer responsibility
E-waste	Obsolete electronic and electrical products
GDP	Gross domestic product
GHGE	Greenhouse gas emissions
GST	Goods and services tax
HDPE	High Density Polyethylene
LATS	Landfill Allowance Trading Scheme
MRF	Materials recovery facility
NEPC	National Environment Protection Council
NEPM	National Environmental Protection Measure
NWMRS	National Waste Minimisation and Recycling Strategy

OECD	Organisation for Economic Co-operation and Development
PET	Polyethylene terephthalate
Productivity Commission report	Productivity Commission, *Waste Management*, Report no. 38, 2006
RVM	Reverse vending machine
TPR	Tradeable property right

Recommendations

Recommendation 1

3.11 The committee recommends that state and territory governments implement waste reduction targets that are set in a sustainability context and based on rigorous analysis and sound science.

Recommendation 2

3.28 The committee recommends that landfill levies should be applied across all jurisdictions, adjusted for the impact on smaller communities, and should be calculated to include the full range of social and environmental externalities.

Recommendation 3

3.32 The committee recommends that state and territory governments pursue the hypothecation of landfill and their investment into resource recovery initiatives and infrastructure to the fullest extent possible.

Recommendation 4

3.46 The committee recommends that the Commonwealth Government calculates options to send a direct and undiluted price signal to the market and publishes the greenhouse benefits of recycling or landfill gas reduction, capture and use as part of its deliberations on the Carbon Pollution Reduction Scheme.

Recommendation 5

3.75 The committee recommends that the Environment Protection and Heritage Council undertake a cost-benefit analysis of glass in the kerbside recycling system including economic, social and environmental externalities. Such an analysis should consider alternatives to kerbside recycling for glass, including container deposit schemes, and their potential economic, social and environmental impacts.

Recommendation 6

3.83 The committee recommends that the Environment Protection and Heritage Council consider initiatives, including container deposit schemes, to improve away-from-home recycling. Such initiatives should include elements such as an incentive to recycle, convenience, adequate infrastructure and a supporting education and awareness program.

Recommendation 7

3.102 The committee recommends that waste management policy must be grounded in rigorous cost-benefit analysis which encompass economic, environmental and social externalities.

Recommendation 8

4.18 The committee recommends that the Environment Protection and Heritage Council develop a national resource efficiency strategy. The strategy should seek consistent policies between the states and adopt a principles-based approach; including sustainability, the waste hierarchy, extended producer responsibility and user pays cost reflective pricing as guiding principles.

Recommendation 9

4.39 The committee recommends that the Environment Protection and Heritage Council re-establish the national waste data system. Once the Waste Management Association of Australia's review of the Australian Waste Database is complete, governments should consider whether to fund the CSIRO and/or the Australian Bureau of Statistics to re-establish the national waste data system.

Recommendation 10

4.47 The committee recommends that the Commonwealth Government, and state and territory governments audit the adequacy of existing resource recovery infrastructure and commit funding or implement policy changes which will address any deficiencies.

Recommendation 11

4.59 The committee recommends that the Environment Protection and Heritage Council establish national minimum environmental standards in relation to emissions from landfill operations including the reduction, capture and use of landfill gas emissions. Such standards should be applied to all landfill sites above an agreed threshold.

Recommendation 12

4.75 The committee recommends that the Environment Protection and Heritage Council recommend measures to reduce the quantities of organic material going into landfill. The options considered should include utilisation of alternative waste technologies and a cap and trade scheme.

Recommendation 13

5.20 The committee recommends that in light of the emergence of national priorities including climate change and water conservation, the Environment

Protection and Heritage Council (EPHC) review the adequacy and transparency of the EPHC waste framework.

Recommendation 14

5.29 The committee recommends that the Environment Protection and Heritage Council expedite the establishment of Extended Producer Responsibility arrangements for identified products of national significance.

Recommendation 15

5.36 The committee recommends that the Environment Protection and Heritage Council revitalise the product stewardship National Environment Protection Measure to address waste issues of national significance in a timely and coordinated manner.

Recommendation 16

5.77 The committee recommends the Environment Protection and Heritage Council work towards a national container deposit system. As part of its review the committee recommends that the Environment Protection and Heritage Council consider the South Australian model and the Drink Container Recycling Bill 2008.

Recommendation 17

5.103 The committee recommends that the Environment Protection and Heritage Council finalise and/or develop Extended Producer Responsibility initiatives for the various forms of e-waste as a matter of priority.

Recommendation 18

5.108 The committee recommends that the Environment Protection and Heritage Council consider an Extended Producer Responsibility initiative for compact fluorescent lamps as a matter of priority.

Chapter 1

Introduction

Background to the inquiry

1.1 On 20 March 2008, the Senate referred the following matter to the Environment, Communications and the Arts Committee for inquiry and report by August 2008:

Management of Australia's waste streams, with particular reference to:

a) trends in waste production in Australia across household, consumer, commercial and industrial waste streams;

b) effectiveness of existing strategies to reduce, recover or reuse waste from different waste streams;

c) potential new strategies to reduce, recover or reuse waste from different waste streams;

d) the economic, environmental and social benefits and costs of such strategies;

e) policy priorities to maximise the efficiency and efficacy of efforts to reduce, recover or reuse waste from different waste streams; and

f) consideration of the Drink Container Recycling Bill 2008.

1.2 The committee's terms of reference are reproduced in Appendix 1.

The committee's approach

1.3 In approaching this inquiry the committee was acutely cognisant of the major waste report released in October 2006 by the Productivity Commission. The committee was consistently referred to this work which tends to strongly polarise views amongst stakeholders.

1.4 The Productivity Commission took a highly theoretical 'net benefit to the community'[1] approach. As a result, the report's recommendations tend to be theoretical in nature and appear to contribute little to achieving that inquiry's stated objective to 'identify policies that will enable Australia to address market failures and externalities associated with the generation and disposal of waste, including opportunities for

1 Productivity Commission, *Waste Management*, Report no. 38, 2006, p. 1.

resource use efficiency and recovery throughout the product life-cycle...'[2] The committee notes that many of the Productivity Commission's recommendations were rejected by the former government in July 2007.[3]

1.5 The committee has taken a different approach in its inquiry. It recognises that there are several significant drivers, such as climate change and water scarcity, that are changing the waste debate. In the committee's view waste policy needs to address issues that are relevant to its own sphere and at the same time, complement policies in other spheres particularly in relation to environmental protection, sustainable agriculture, productivity as well as transport and infrastructure.

1.6 Evidence before the committee suggests that such an approach would be strongly supported by the community. The growing community awareness of, and support for, reducing greenhouse gas emissions and improving water efficiency are clear examples. Indeed, a number of submissions from community groups and private individuals highlighted the need for environmentally sustainable solutions to waste which enable greater community engagement and commitment.

1.7 The committee acknowledges that waste management is a complex and multilayered policy area. There are multiple sectors involved, multiple waste streams from each sector, a range of treatment technologies, different geographical and jurisdictional influences, as well as economic, environmental and social considerations. All these complexities must be balanced when assessing the various policy options that could be implemented. Needless to say there are no 'silver-bullets'. Items of waste themselves are also becoming more complex and toxic which only adds to the challenge of appropriate end-of-life management.

1.8 Despite heightened community, business and government awareness of waste issues and impacts, the quantity of solid waste produced in Australia continues to increase. Current generation is approaching 40 million tonnes per annum[4] with growth rates exceeding increases in GDP.

1.9 While recycling rates have increased rapidly over the past decade, they have not kept pace with the proliferation of overall waste generation, resulting in an increasing amount of 'end-use' material being sent to landfill. Although current waste

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2 The Hon Peter Costello MP, Treasurer, October 2005, cited in Productivity Commission, *Waste Management*, Report no. 38, 2006, p. iv.

3 Australian Government, *Government response to the Productivity Commission's Final Report on the inquiry into Waste Generation and Resource Efficiency in Australia*, July 2007, www.environment.gov.au/settlements/publications/waste/pubs/waste-efficiency-inquiry-response.pdf (accessed 15 August 2008).

4 WCS Market Intelligence & WME Environment Business Media, *The Blue Book – Australian Waste Industry,* 2008, p. 49.

data are far from perfect, estimates of disposal rates are around 54 per cent while resource recover rates are around 46 per cent.[5]

1.10 Australia's waste management practices rely heavily on landfill which is currently the main treatment option. The 'goods' side of the Australian economy tends to involve a linear extraction-production-consumption-disposal model rather than a closed-loop resource efficiency model, which leads to vast quantities of used materials loosing their productive capacity within the economy.

1.11 Current waste management practices produce a range of negative environmental and social externalities that are excluded from waste pricing models. Impacts include greenhouse gas emissions, resource depletion, waterway degradation, human health and visual amenity. As a result, these negative costs are borne across society in general rather than those involved in, and that benefit from, a product's life-cycle.

1.12 The committee notes that there is no national waste management strategy to guide policy development. Although there are some similarities across jurisdictions, there exist a range of inconsistencies which lead to a patchwork of regulation, targets and programs. There was strong support for the development of a national strategy amongst submitters.

1.13 The committee recommends the development of a national resource efficiency strategy. It should be designed as a principle-based tool for all participants in the waste sector. From the evidence the committee has identified resource efficiency, the waste hierarchy, sustainability, and user pays, cost-reflective pricing each of which should form the key guiding principles for the national strategy. The committee recognises that these principles are not absolutes. They must be balanced with each other as well as other social, economic and environmental goals.

1.14 The committee acknowledges and shares the concerns raised by many stakeholders regarding the lack of a national waste data system. Without this information it is not possible to make evidence-based policy formulations nor informed business decisions. The committee heard of the background to the Australian Waste Database (AWD) which is now out of date. The committee would like to see the AWD (re)established and adequately funded.

1.15 A common theme that flowed throughout the inquiry was the deficiencies in infrastructure that inhibit recycling and Extended Producer Responsibility (EPR) initiatives. The committee recognises that without adequate infrastructure to support alternatives to landfill and EPR initiatives, landfill is likely remain the country's primary response to waste generation.

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5 Australian Bureau of Statistics, *Australia's Environment: Issues and Trends*, Report no. 4613.0, 2007, p. 43.

1.16 The committee took a keen interest in a number of key waste streams within the waste sector including, organics, packaging, beverage containers, and e-waste.

1.17 Organic waste currently makes up approximately half of the 20 million tonnes of waste going to landfill in Australia each year. Its current recycling rate of 36 per cent is well below the national average for all waste streams of 46 per cent. Organic material in landfill is responsible for nearly all of the waste sector's greenhouse gas emissions. Although it represents a relatively small component in national terms (around 3 per cent or 16.6 of Australia's total 576 Mt CO_2-e in 2006) there is enormous potential to cost-effectively minimise these emissions.

1.18 Abatement of greenhouse gas emission through the recovery of gasses from organics can be achieved through a variety of mechanisms such as large-scale composting, anaerobic digestion, pyrolysis to form biochar, and alternative waste treatment. Diverting organic waste from landfill has a number of co-benefits such as increasing crop yields, improving soil structure, replenishing depleted organic carbon in soils, reducing chemical and fertiliser inputs, reducing run-off and consequent soil erosion and waterway pollution. The committee recommends that the Environment Protection and Heritage Council (EPHC) recommend measures to reduce the quantities of organic material going into landfill including utilising alternative waste technologies including composting, and a cap and trade scheme.

1.19 There are other potential greenhouse abatement opportunities arising from improved waste management and resource efficiency. Improving the level of capture and flaring of methane landfill gas (which currently stands at only 26 per cent) will significantly reduce sectoral emissions and the committee makes a recommendation in this regard. Increasing the recycling rate of high embodied energy materials will also result in lower emissions. The committee recommends that the Commonwealth Government calculates options to send a direct and undiluted price signal to the market and publishes the greenhouse benefits of recycling as part of its deliberations on the Carbon Pollution Reduction Scheme.

1.20 The committee explored a number of existing and proposed Extended Producer Responsibility (EPR) schemes, either implemented or being considered by the EPHC. In light of the emergence of national priorities including climate change and water conservation, the committee recommends that the EPHC review the adequacy and transparency of the EPHC waste framework, which it uses to identify matters of national importance.

1.21 The committee considered various EPR schemes under consideration by the EPHC. Noting the significant delays in establishing several such schemes, the committee recommends that the EPHC expedite the establishment of Extended Producer Responsibility arrangements for identified products of national significance.

1.22 Regarding the Drink Container Recycling Bill 2008 which is a specific term of reference of this inquiry, the committee recommends that the Environment Protection and Heritage Council work towards a national container deposit system. As

part of its review the committee recommends that the Environment Protection and Heritage Council consider the South Australian model and the Drink Container Recycling Bill 2008.

Conduct of the inquiry

1.23 The committee had been required to report by August 2008. On 17 June 2008 the Senate resolved to change the reporting date to 28 August 2008 and then on 27 August 2008, the Senate resolved to extend the reporting date to 3 September 2008.

1.24 The committee advertised the inquiry in *The Australian* on 1, 9 and 23 April and 7 May 2008, inviting submissions by 23 May 2008.

1.25 Ninety-one submissions were received, and these are listed at Appendix 1. Submissions were also posted on the committee's website to facilitate public access. The committee held hearings in Adelaide on 30 June 2008, in Sydney on 2 July, Melbourne on 3 July 2008, and in Canberra on 4 July 2008. A list of the witnesses who appeared at the hearings is at Appendix 2, and copies of the Hansard transcript are available through the internet at www.aph.gov.au/senate/committee/eca_ctte/index.htm.

Acknowledgement

1.26 In the course of the inquiry, the committee received submissions from a range of organisations and private individuals, often with supporting documents, reports, and other references. Others gave freely of their time in appearing before the committee at its public hearings, and in some cases, undertook additional work to provide follow up information to the committee in response to questions raised during the discussions. The committee wishes to express its appreciation to all those who contributed to this inquiry.

Chapter 2

Trends in waste production in Australia

2.1 This chapter addresses term of reference (a) concerning trends in waste production across Australia. It considers waste generation trends; deficiencies in waste data; some of the key areas of waste growth in Australia; and the impact of such waste on our environment, society and economy.

2.2 Waste is what society throws away because it is no longer needed, wanted or valued and can be generated at each stage of the production process from extraction to consumption and includes items that can be used again.[1] Waste can be classified by source (municipal, commercial and industrial, construction and demolition) or by composition (such as organic, paper, glass, metal, and plastic). Just as the physical and chemical properties of waste materials are different, each individual material has its own unique life cycle which affects its impact on the environment.[2]

2.3 The types of waste discussed in this report typically refer to solid waste rather than liquid or gaseous waste. The report does not consider 'prescribed' or controlled' waste as defined in state and territory regulations.

Waste generation is increasing

2.4 Although estimates vary, commentators agree that the amount of waste generated in Australia each year is continuing to grow, with current generation approaching 40 million tonnes per annum. The 2006 Productivity Commission *Waste Management* report (Productivity Commission report) noted that Australia generated approximately 32.4 million tonnes of solid waste in 2002–03, producing an average of 1 639 kilograms per capita in that year alone.[3]

2.5 WCS Market Intelligence & WME Environment Business Media provides an alternative estimate of more than 38 million tonnes of waste generated in Australia in 2004–05. This represents a 34 per cent rise relative to its estimate of 28.4 million tonnes generated in 1999–2000.[4] These figures are plotted in Figure 2.1.

2.6 According to the Australian Bureau of Statistics (ABS) solid waste generation has risen at around six per cent per annum on average from an estimated 23 million

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1 Australian Bureau of Statistics, *Australia's Environment: Issues and Trends 2006*, *Solid waste in Australia*, Report no. 4613.0, 2006.

2 Australian Bureau of Statistics, *Australia's Environment: Issues and Trends 2006*, *Solid waste in Australia*, Report no. 4613.0, 2006.

3 Productivity Commission, *Waste Management*, Report no. 38, October 2006, p. 17.

4 WCS Market Intelligence & WME Environment Business Media, *The Blue Book – Australian Waste Industry,* 2008, p. 49.

tonnes in 1996–97.[5] This rate is faster than annual GDP growth. The ABS estimates the amount of waste generated in Australia rose from 22.7 million tonnes in 1996–97 to 32.4 million tonnes in 2002–03.[6]

2.7 The Productivity Commission report concluded that despite difficulties resulting from the differences in how data is collected and reported, it was reasonable to conclude that total waste generated per person in Australia has been increasing over time.[7] Indeed, the Department of the Environment, Water, Heritage and the Arts (Environment Department) has stated that from 1996–97 to 2002–03 there was a 42 per cent increase in waste generated in Australia.[8]

2.8 In 2005 the Australia Institute put a dollar figure on the nation's consumption patterns. Its *Wasteful Consumption in Australia* report revealed that in 2004, Australians spent $10.5 billion on goods and services that they never or hardly ever used with food consumption amounting to the largest waste category.[9] The report highlighted that Australians threw away $5.3 billion worth of all forms of food in 2004 which by comparison was thirteen times the amount donated by Australian households to overseas aid agencies in 2003.[10]

5 Australian Bureau of Statistics, *Australian Social Trends, 2007: Household Waste*, Report no. 4102.0, 2007.

6 Australian Bureau of Statistics, *Media Alert Environmental snapshot: recycling up, but e-waste a looming issue*, 10 November 2006.

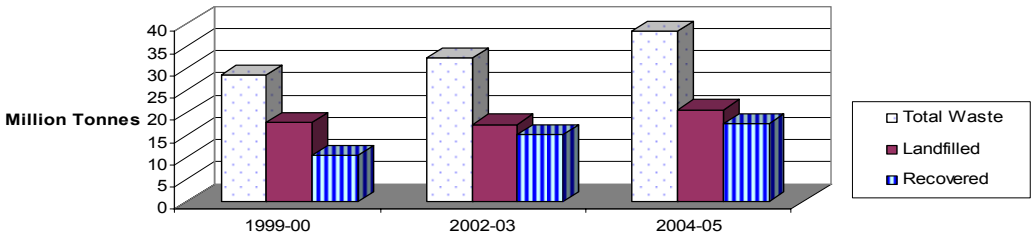
7 Productivity Commission, *Waste Management*, Report no. 38, October 2006, p. 15

8 Department of the Environment and Heritage, *Submission to the Productivity Commission Inquiry into Waste Generation and Resource Efficiency*, February 2006, p. 11.

9 The Australia Institute, *Wasteful Consumption in Australia*, Discussion Paper no. 77, March 2005, p. vii.

10 The Australia Institute, *Wasteful Consumption in Australia*, Discussion Paper no. 77, March 2005, p. viii.

Figure 2.1—Waste Generation and Management in Australia



WCS Market Intelligence & WME Environment Business Media, *The Blue Book – Australian Waste Industry*, 2008, p. 49 and Productivity Commission, *Waste Management*, Report no. 38, 2006, p. xxvii.[11]

2.9 Medium to long term projections show a similar trend. For example Hyder Consulting estimated that based, on data from Sydney, Victoria and the Australian Capital Territory, waste generated in Australia would rise from 31.6 million tonnes in 2002–03 to 42.6 million tonnes in 2012–13 and 57.5 million tonnes in 2022–23 assuming an average annual per capita GDP growth of 1.88 per cent and average annual population growth of 1.13 per cent. By 2022–23, the projected tonnage of material disposed in landfill would amount to over 31.6 million compared to an estimated 25.8 million tonnes recycled.[12]

2.10 The Environment Department cautions that Australia lacks reliable, comprehensive, contemporary waste information at a national level which would otherwise inform projected waste trends.[13] Indeed, as the department stated in its submission, it requires 'more robust information to allow it to better understand not only the level and types of waste generated but the implications of this for the environment, the economy and society'.[14] The poor quality of waste–related data in Australia is discussed later in this chapter.

Drivers of waste generation

2.11 According to the ABS, the drivers behind the growth in waste generation in Australia include economic, demographic and geographic factors such as a growth in

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11 The 1990–00 and 2004–05 figures are taken from WCS Market Intelligence & WME Environment Business Media, *The Blue Book – Australian Waste Industry*, 2008, p. 49. The 2002–03 figures are taken from the Productivity Commission, *Waste Management*, Report no. 38, October 2006, p. xxvii.

12 Hyder Consulting, *Waste and Recycling in Australia*, Paper prepared for the Department of Environment and Heritage, Short Paper, Report no. 4, 6 February 2006, p. 20, www.environment.gov.au/settlements/publications/waste/pubs/waste-recycling.pdf (accessed 10 July 2008).

13 Department of the Environment, Water, Heritage and the Arts, *Submission 78*, p. 4.

14 Department of the Environment, Water, Heritage and the Arts, *Submission 78*, p. 4.

household incomes and corporate earnings.[15] As noted above waste generation is increasing at a more rapid rate than GDP growth. The Productivity Commission noted that Australia's economic prosperity over the past decade or so has undoubtedly contributed to the growth in waste generation, which appears to be positively related to growth in household incomes and corporate earnings.[16]

2.12 One of the consequences of Australia's materially intensive economy is the production of relatively large qualities of waste.[17] Changes in population demographics including the fact that Australians are increasingly living in smaller household groups and consume a greater amount of smaller-serve goods which have higher packaging-to-product ratios than larger-serve goods, have all contributed to the growth in waste production. Coupled with this trend is the fact that consumer goods are more accessible and affordable than ever before.

2.13 The trend away from the production of re-usable to single use products, spurred by purported consumer demand for greater convenience, has led to a substantial increase in waste generation. This 'out with the old, in with the new' lifestyle has ensured that Australians live in a highly disposable society. As one case in point, Australians purchased more than 25 million electronic products in 2007 at a time when the country had a stockpile of 123 million items of e-waste.[18]

Increasing complexity and toxicity of waste

2.14 The ABS noted that associated with the large increase in the number and diversity of products available in Australia, there has been an increase in waste diversity, toxicity and complexity over the past decades.[19]

2.15 Electronic waste or e-waste is one such example of a complex waste that is estimated to be growing at more than three times the rate of general municipal waste.[20] Each year Australians buy more than one million televisions and 2.4 million computers.[21] In some cases, a range of hazardous chemicals contained in e-waste may

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15 Australian Bureau of Statistics, *Australia's Environment: Issues and Trends, Solid waste in Australia*, Report no. 4613.0, 2006.

16 Productivity Commission, *Waste Management*, Report no. 38, October 2006, p. 20.

17 Department of the Environment, Water, Heritage and the Arts, *Submission 78*, p. 3.

18 Total Environment Centre, *Submission 67*, p. 3.

19 Australian Bureau of Statistics, *Year Book Australia 2008, Waste & Recycling Practices of Households*, Report no. 1301.0, 2008,

20 Australian Bureau of Statistics, *Media Alert, Environment snapshot: recycling up, but e-waste a looming issue, Australia's Environment: Issues and Trends*, 10 November 2006. E-waste comprises obsolete electronic and electrical products including computers, televisions, VCRs, stereos, mobile phones, automobile and manufacturing components.

21 Australian Bureau of Statistics, *Year Book Australia 2008, Waste and Recycling Practices of Households*, Report no. 1301.0, 2008.

diffuse into the landfill leachate.[22] In instances where there is poor leachate control, for example when landfills are not lined or the liners fail, contaminants may escape into the wider environment including groundwater and adjacent waterways. The Environment Department recognises that it is difficult to quantify the nature and extent of this problem as well as the net environmental cost of such diffuse impacts, particularly when it may take decades before serious environmental impacts become evident. The department acknowledges that in considering end-of-life computer management, both recycling initiatives and improved landfill practices may need consideration.[23] Various options for managing e-waste are discussed at greater length in chapter 5.

2.16 Another area of growing concern is the disposal of used motor oil. Each year, more than 500 million litres of lubricating oil is sold in Australia and many car and machinery engines produce large volumes of used oil, which is a highly concentrated and toxic material that can be reclaimed and reused. Indeed, estimates suggest that between 280 and 300 million litres per annum of used oil is generated by industry and the community and is available for recycling.[24] The environmental impact of used oil is such that one litre of used oil can contaminate up to one million litres of water.[25]

2.17 Marketing innovations in the packaging industry have also led to an increasingly complex waste stream. One striking example raised in evidence was a single-serve tuna and biscuits snack which uses nine different items of packaging.[26]

Continued reliance on landfill

2.18 According to the ABS, 'Australia has a strong dependence on landfill for waste management with more than half (54 per cent) of all solid waste, some 17 million tonnes, deposited in 2002–03.'[27] The ABS estimates that 70 per cent of municipal waste, 56 per cent of commercial and industrial waste, and 43 per cent of construction and demolition waste went into landfill in 2002–03. These sectoral trends are explored in more detail later in this chapter.

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22 Leachate is liquid that has passed through solid waste and may have become contaminated with metallic, organic and inorganic compounds and toxins. Productivity Commission, *Waste Management*, Report no. 38, October 2006, p. xxi.

23 Department of the Environment, Water, Heritage and the Arts, *Submission 78*, p. 9.

24 Australian Bureau of Statistics, *Australia's Environment: Issues and Trends: Solid waste in Australia*, Report no. 4613.0, 2006.

25 Australian Bureau of Statistics, *Australia's Environment: Issues and Trends: Solid waste in Australia*, Report no. 4613.0, 2006.

26 Mr David West, National Campaign Director, Boomerang Alliance, *Committee Hansard*, 2 July 2008, pp 8–9.

27 Australian Bureau of Statistics, *Australia's Environment: Issues and Trends*, Report no. 4613.0, 2007, p. 43.

2.19 The 'goods' side of the Australian economy tends to involve a linear extraction-production-consumption-disposal model rather than a closed-loop resource efficiency model, which results in vast quantities of used materials ending up in landfill. National- and state-level trends in waste disposal to landfill are considered in more detail in chapter 3.

Increasing rate of recycling

2.20 At the same time as waste generation is increasing, the rate of recycling is also increasing. Recycling waste materials reduces the volume of waste disposed in landfills. According to the ABS the amount of waste recycled in Australia has increased both in absolute terms and as a proportion of total waste generated. Overall, the recycling rate was estimated by the ABS to be 46 per cent in 2002–03. This figure represents the amount that has been reprocessed into a usable production input and not just the amount collected for recycling.[28]

2.21 However despite the increased rate of recycling, the overall amount of waste being disposed of in landfill is increasing due to the overwhelmingly rapid rate of waste generation. As Figure 2.1 demonstrates, the increased recycling rate has not kept pace with overall waste generation rates, resulting in an increasing amount of 'end-use' material being landfilled. Trends in recycling rates within the various waste sectors is discussed in detail in chapter 3.

Deficient information on waste

2.22 A recurring theme throughout this inquiry was the lack of consistent and complete waste data. This is partly a consequence of the different regulatory structures of different states and territories which apply different definitions to waste and therefore report data differently. Gaps in geographical coverage and types of waste streams and materials also exist. The end result is that any attempt to compare waste management challenges and performance across states and territories is problematic, as are comparisons of performance against policy objectives. The complexity of Australia's waste data issue was articulated by the ABS:

> Quantifying waste data, and trends in waste production, requires compiling information from throughout the economy, from the originating sources of the waste, to the organisations and government agencies that manage the waste once it leaves the point of production, and potentially to the end users of the waste or associated by-products. The flow of waste involves individuals, industry, not-for-profit organisations and all levels of government. Currently waste data sources are many and varied, as is the quality and frequency of availability of the data.[29]

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28 Australian Bureau of Statistics, *Australia's Environment: Issues and Trends*, Report no. 4613.0, 2007, p. 43.

29 Australian Bureau of Statistics, *Submission 74*, p. 1.

2.23 Not only is the comparison data between states and territories problematic, but there are also complexities around the data obtained within individual jurisdictions given that definitions of waste and waste categories, as well as regulatory structures change over time. The New South Wales Government, for example, noted that a tightening of its regulatory regime has led to a greater volume of material being defined as 'waste' which is reflected in a numerical increase in the waste volume. In general terms, evidence provided by representatives of the New South Wales Government indicated that disposal data is the 'firmest' because it is easier to establish what is going into landfill.[30]

2.24 The ABS acknowledges that there is currently no 'comprehensive, reliable and on-going source of waste information in Australia' and notes caution in the use of a single statistic. However, available data are cited in this report to provide an indication of the volumes of waste that are produced and therefore must be managed in Australia.[31] The need for a national data gathering mechanism is discussed further in chapter 4.

International comparisons

2.25 Whilst it is difficult to establish precisely the total amount of waste generated in Australia, it is also difficult to compare statistics on waste generation and waste management between countries for similar reasons.[32] Nevertheless, on a per capita basis, Australians are reported to be among the highest producers of waste in the world.[33] In 2004, the Organisation for Economic Co-operation and Development (OECD) estimated that Australians each generated approximately 690 kilograms of municipal waste (based on late 1990s statistics), which was at the time, the third-highest in the OECD and well above the per capita average of 590 kilograms.[34]

Waste streams

2.26 Of the total 32.4 million tonnes of solid waste generated in Australia in 2002–03, the Productivity Commission estimated that approximately 27 per cent (or about 8.7 million tonnes) was municipal waste, 29 per cent (or 9.4 million tonnes) commercial and industrial (C&I) waste, and 42 per cent (or 13.6 million tonnes) was construction and demolition (C&D) waste.[35] Such estimates which are represented in

30 Mr Mark Gorta, Manager, Waste Management, Department of Environment and Climate Change, New South Wales Government, *Committee Hansard*, 3 July 2008, p. 15.

31 Australian Bureau of Statistics, *Submission 74*, p. 1.

32 Productivity Commission, *Waste Management*, Report no. 38, October 2006, p. 15.

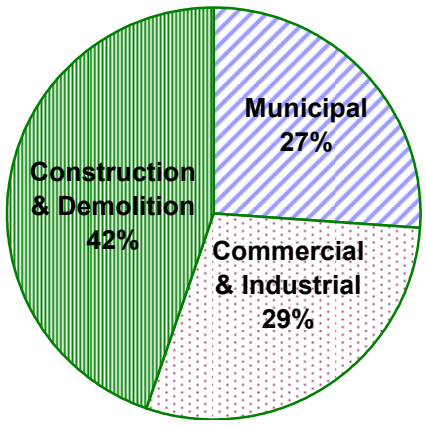
33 Organisation for Economic Co-operation and Development 2007 *Fact Book: Economic, Environmental and Social Statistics*, *Municipal Waste Generation,* ocde.p4.siteinternet.com/publications/doifiles/302007011P1T079.xls (accessed 8 July 2008).

34 Department of the Environment, Water, Heritage and the Arts, *Submission 78*, p. 3.

35 Productivity Commission, *Waste Management*, Report no. 38, October 2006, p. 16.

the following chart do not include waste generated and dealt with on-site by the waste generator.[36]

Figure 2.2—Solid waste generation in Australia by waste streams



Productivity Commission, *Waste Management*, Report no. 38, 2006, p. 16.

2.27 For the purposes of comparison, the WCS Market Intelligence & WME Environment Business Media estimated that of the total 38.2 million tonnes of waste generated in Australia in 2004–05, 10.7 million tonnes (or 28 per cent) was produced by the municipal sector, 12.5 million tonnes (or 33 per cent) by the C&I sector and 15.1 million tonnes (or 39 per cent) by the C&D sector.[37]

2.28 The increasing generation of waste across the country poses a sizeable challenge to our waste management infrastructure. Unless the resource recovery rate surpasses the rate of waste generation, more material (including valuable recyclables) will loose their productive capacity by ending up in landfill. In the Australian Capital Territory, as one case in point, a 2006–07 survey revealed that whilst 566 633 tonnes of waste (or 74 per cent of waste generated) was recovered for recycling, the amount of waste disposed to landfill had risen by 5 112 tonnes to 197 425 tonnes or 2.7 per cent from the previous year.[38] At the same time, waste generation was estimated to have risen over the same period to 815 000 tonnes.[39]

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36 The on-site treatment of waste is common in the mining and mineral processing, agriculture, and manufacturing sectors. Productivity Commission, *Waste Management*, Report no. 38, October 2006, p. 17, footnote 1.

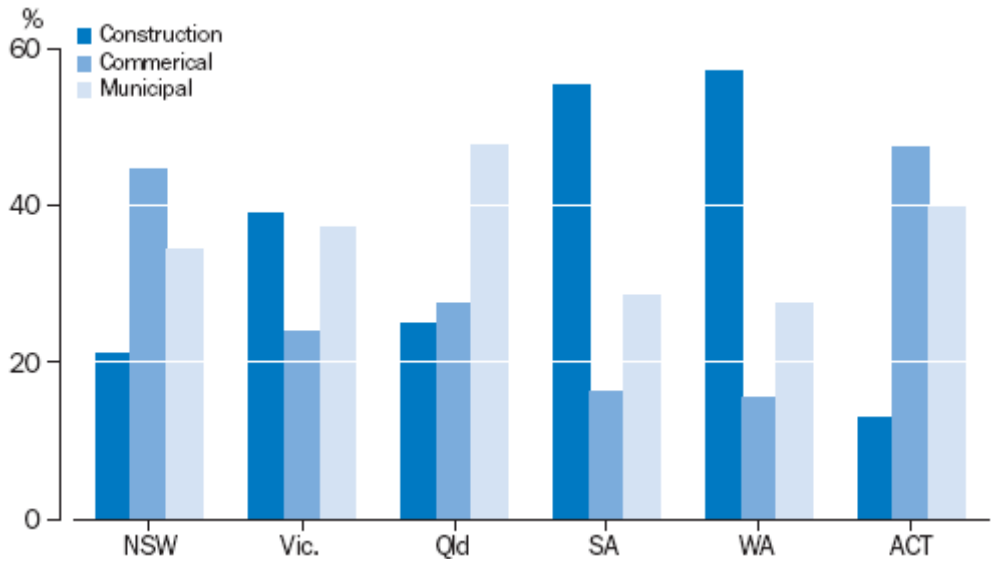
37 WCS Market Intelligence & WME Environment Business Media, *The Blue Book – Australian Waste Industry,* 2008, p. 8.

38 Territory and Municipal Services, *2008 Progress Towards No Waste by 2010*, www.tams.act.gov.au/live/Recycling_and_Waste/The_No_Waste_Strategy/statistics (accessed 15 July 2008).

39 Territory and Municipal Services, *Annual Report 2006–07*, Volume One, p. 40, www.tams.act.gov.au/__data/assets/pdf_file/0005/69251/TAMS_Annual_Report_V1_Screen.pdf (accessed 15 July 2008).

2.29 Figure 2.3 provides a sectoral and jurisdictional breakdown of the various waste streams discussed below. It demonstrates the diversity in the proportions of municipal, C&I and C&D waste going to landfill in each jurisdiction.

Figure 2.3—Waste disposed to landfill by type and jurisdiction, 2002–03



Department of the Environment and Heritage, *Submission to the Productivity Commission Inquiry into Waste Generation and Resource Efficiency*, 2005, cited in Australian Bureau of Statistics, *Australia's Environment: Issues and Trends, Solid Waste in Australia*, Report no. 4613.0, 2006.

2.30 Solid waste can be managed in different ways and the method of management will depend on the location, source and type of waste involved and the financial viability of different management methods and policies. The most common method in Australia is landfill but others include material recovery facilities and advanced waste treatment. The method of management will also determine its environmental impact. Moreover, the form of waste management will influence additional effects including littering and illegal dumping which have their own environmental and social impacts.

Municipal waste

2.31 Municipal waste includes domestic solid waste and other municipally-collected waste from schools, street litter bins, parks etc., which are non-hazardous.[40] According to the ABS, the materials in municipal waste are reasonably consistent

40 Municipal waste is predominantly household waste including food and kitchen waste, recyclable material including paper, glass, bottles, cans, metals and plastics and green waste. For the purposes of this report, hazardous municipal waste comprising products that contain corrosive, toxic, ignitable or reactive ingredients such as fertilizer, pesticides and batteries are not included in its consideration of municipal waste.

across the country with organic materials (originating from food scraps and garden waste) making up the 47 per cent of household waste by weight.[41]

2.32 Hyder Consulting established that, based on trend data, in all jurisdictions except Tasmania and the Northern Territory, approximately 8.9 million tonnes of municipal solid waste was generated in 2002–03.[42] Of this total, 6.2 million tonnes were disposed to landfill and 2.7 million tonnes was recycled.[43]

2.33 A slightly different result was published in a report of WCS Market Intelligence & WME Environment Business Media, which found that an estimated 10.6 million tonnes of municipal waste was generated 2004–05 of which the main discard materials are contained in the following table.

Table 2.1—Municipal Waste Management in Australia

Main Discard Materials	Tonnes/Year	% of waste generated
Recycled (paper, plastic, glass, metal cans)	1.8 million	17
Garden waste processed	1.8 million	17
Mixed residual waste processed	0.2 million	2
Residual waste disposed	6.8 million	64

WCS Market Intelligence & WME Environment Business Media, *The Blue Book – Australian Waste Industry,* 2008, p. 8.

2.34 The Productivity Commission found that municipal waste comprised 47 per cent food and garden waste, 23 per cent paper, 7 per cent glass, 5 per cent metals, 4 per cent plastics, 1 per cent building rubble and timber respectively, and 12 per cent 'other'.[44]

2.35 Differences in the composition of materials in the municipal waste stream influence the way that such materials are managed. The Productivity Commission

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41 Australian Bureau of Statistics, *Australia's Environment: Issues and Trends*, *Solid waste in Australia*, 2006.

42 The trend data was based on data from Sydney, Victoria and the Australian Capital Territory. Department of the Environment, Water, Heritage and the Arts, *Submission 78*, pp 3–4.

43 Hyder Consulting, *Waste and Recycling in Australia,* Paper prepared for the Department of Environment and Heritage, Short Paper, Report no. 4, 6 February 2006, p. 8, www.environment.gov.au/settlements/publications/waste/pubs/waste-recycling.pdf (accessed 15 July 2008).

44 Municipal waste data are for all states and territories except South Australia, the Northern Territory and Tasmania. Productivity Commission, *Waste Management*, Report no. 38, October 2006, p. 19.

noted that the prevalence of food and garden waste in municipal waste can make it difficult to extract other recyclable materials which have greater value to recyclers without first having it sorted by householders.[45] Without adequate sorting, a substantial volume of such materials goes to landfill due to contamination. Moreover, food and garden waste in the municipal waste stream are a significant source of greenhouse gases from the waste industry, as such wastes biodegrade in landfill. Greenhouse gas emissions emanating from the waste sector are discussed later in this chapter.

Commercial and industrial waste

2.36 Commercial and industrial (C&I) waste is comprised of a diverse range of waste materials. According to the Productivity Commission the main components of C&I waste are: paper 22 per cent; metals 22 per cent; food and garden 13 per cent; timber 9 per cent; and plastics 6 per cent.[46] The C&I sector is made up of diverse range of small businesses without dedicated waste services through to large operators with substantial waste management issues.

2.37 According to the Productivity Commission, in 2002–03, of the 32.4 million tonnes of solid waste generated in Australia, 29 per cent comprised C&I waste.[47] Hyder Consulting established that, based on trend data, in all jurisdictions except Tasmania and the Northern Territory, just over 9.4 million tonnes of C&I was generated in 2002–03 of which 5.3 million (56 per cent) was disposed of to landfill and 4.1 million tonnes (43 per cent) recycled.[48]

2.38 According to WCS Market Intelligence & WME Environment Business Media, of the 12.5 million tonnes of waste generated in the C&I sector in 2004–05, the main discard materials are contained in the following table.

45 Productivity Commission, *Waste Management*, Report no. 38, October 2006, p. 20.

46 Productivity Commission, *Waste Management*, Report no. 38, October 2006, p. 19.

47 Productivity Commission, *Waste Management*, Report no. 38, October 2006, p. 16.

48 Hyder Consulting, *Waste and Recycling in Australia*, Paper prepared for the Department of Environment and Heritage, Short Paper, Report no. 4, 6 February 2006, p. 8.

Table 2.2—Commercial and Industrial Waste Management in Australia

Main Discard Materials	Tonnes/Year	% of waste generated
Recycled (paper/cardboard, plastics, glass, metals, timber)	4.4 million	35
Garden waste processed	1.7 million	14
Food waste processed	0.1 million	0.8
Residual waste disposed	6.3 million	50.2

WCS Market Intelligence & WME Environment Business Media, *The Blue Book – Australian Waste Industry,* 2008, p. 8.

2.39 In New South Wales, C&I waste is the biggest waste stream, comprising nearly 50 per cent of all waste generated in the state and yet only 35 per cent of the stream is recycled.[49] It is also the state's biggest waste challenge as it is the most diverse in nature and in terms of the size of generators who vary from small businesses without waste services to large operations with substantial waste management issues.[50] However, the volume of biodegradable waste in the stream, particularly paper and cardboard, offers real opportunities for greenhouse gas and material recovery.[51]

2.40 In other states, statistics are provided in terms of the amount of C&I waste going to landfill or reprocessed. In South Australia, as one case in point, where the C&I waste stream is the biggest challenge, of the one million tonnes of waste going into landfill each year, around 40 0000 tonnes are from the C&I sector. In 2005–06, C&I waste accounted for 36.4 per cent of materials sourced for reprocessing in the state.[52]

2.41 In the Australian Capital Territory, commercial waste was the major contributor to the increase in waste to landfill in 2006–07 with waste from such sources increasing by almost 10 000 tonnes or 12 per cent over the year. The practice of sending mixed waste to landfill rather than using recycling alternatives was identified as the key factor in this growth.[53]

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49 WSN Environmental Solutions, *Submission 31*, p. 8

50 Mr Timothy Rogers, Executive Director, Departmental Performance Management and Communication, Department of Environment and Climate Change, New South Wales Government, *Committee Hansard*, 3 July 2008, pp 3–4.

51 Mr Timothy Rogers, Executive Director, Departmental Performance Management and Communication, Department of Environment and Climate Change, New South Wales Government, *Committee Hansard*, 3 July 2008, p. 4.

52 South Australian Government, *Submission 83*, p. 6.

53 Territory and Municipal Services, *2008 Progress Towards No Waste by 2010*.

Construction and demolition waste

2.42 Construction and demolition (C&D) waste comprising primarily timber, bricks, plaster off cuts, concrete, rubble, steel and excavated earth.[54] The Productivity Commission established that 82 per cent of the C&D waste stream is building rubble (concrete, brick, rubble and soil).[55] According to WCS Market Intelligence & WME Environment Business Media, the main discard materials of the 15.1 million tonnes of C&D waste generated in 2004–05 comprises 7.6 million tonnes of recycled materials (timber, steel, concrete, rubble, soil) and 7.5 million tonnes of residual waste.[56]

2.43 Hyder Consulting established that, based on trend data, in all jurisdictions except Tasmania and the Northern Territory, approximately 13.7 million tonnes of C&D waste was generated in 2002–03 of which 5.9 million was sent to landfill and 7.8 million tonnes recycled.[57] The extent of the generation of C&D waste is largely reflective of the expansions and contractions in the building industry.

2.44 Whilst C&D waste makes up approximately 26 per cent of Queensland's waste, in Western Australia, it is by far the largest component of the waste disposed to landfill and represents a substantial proportion of waste recycled in the state.[58]

Economic, social and environmental impacts of waste

2.45 The impacts of waste remain a key environmental issue for Australia 'because of potential greenhouse and water impacts, resource conservation concerns, inappropriate disposal (e.g. through dumping and littering along with associated environmental and health impacts) and disposal in landfill facilities which do not meet best practice principles'.[59] Indeed the Environment Department recognises that the changing nature of the waste stream, emerging recovery, disposal and treatment technologies, and evolving community expectations all present challenges for future policy on waste management.[60]

2.46 The Productivity Commission report identified harm to the environment and human health as a primary reason cited in evidence as to why waste is a problem. In

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54 Australian Bureau of Statistics, *Australia's Environment: Issues and Trends, Solid waste in Australia*, Report no. 4613.0, 2006

55 Productivity Commission, *Waste Management*, Report no. 38, October 2006, p.18.

56 WCS Market Intelligence & WME Environment Business Media, *The Blue Book – Australian Waste Industry,* 2008, p. 8.

57 Hyder Consulting, *Waste and Recycling in Australia*, Paper prepared for the Department of Environment and Heritage, Short Paper, Report no. 4, 6 February 2006, p. 8.

58 Queensland Government Environmental Protection Agency, *Submission 80*, p. 2; Western Australian Department of Environment and Conservation, *Submission 76*, p. 2.

59 Department of the Environment, Water, Heritage and the Arts, *Submission 78,* p. 1.

60 Department of the Environment, Water, Heritage and the Arts, *Submission 78*, p. 1.

addition, the fact that waste is an end product of a life cycle process that can have upstream environmental and resource depletion implications was also an oft-cited concern.[61] Indeed, waste generation and disposal can have significant impacts at various stages in the product's life cycle from extraction of raw materials to processing, marketing, transport and consumption, as well as the direct impacts associated with disposal.

2.47 Due to a range of market failures as well as institutional and regulatory barriers, not all of these environmental costs are reflected in the market prices. According to the ABS, the failure of some markets to achieve cost-reflective pricing can result in ineffective use of resources, lower economic growth than would otherwise be the case, and adverse environmental and social impacts.[62] The following sections discuss the economic, social and environmental impacts of Australian waste management practices.

Economic impacts

2.48 The waste industry comprises waste management operators who deal with the collection and transportation, consolidation and transfer, material sorting, material recycling and processing, and disposal activities. Estimates suggest that waste management services sales are approximately $4.8 billion a year and that the infrastructure of the waste management industry has a current value in excess of $2 billion.[63]

2.49 Of other sources, the ABS estimated that in 2002–03, the income generated by private and public trading businesses providing waste management services in Australia generated an income of just under $2.7 billion contributing 0.2 per cent to the GDP for that year. Of this, 20 per cent, or $0.5 billion, was accrued from the treatment, processing and/or disposal of waste. At the end of June 2003, there were 1 092 private and public trading businesses providing waste management services in Australia. These businesses employed 14 386 people.[64]

2.50 The Boomerang Alliance puts the total combined cost of waste collection, recycling and disposal at $2.68 billion per year of which it estimates about

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61 Productivity Commission, *Waste Management*, Report no. 38, October 2006, p. xxvii.

62 Australian Bureau of Statistics, *Australia's Environment: Issues and Trends, Solid waste in Australia*, Report no. 4613.0, 2006.

63 WCS Market Intelligence & WME Environment Business Media, *The Blue Book – Australian Waste Industry,* 2008, pp 9–11. Infrastructure includes waste collection and transfer vehicles, waste transfer stations, landfill facilities, material recycling facilities, and waste processing facilities.

64 Australian Bureau of Statistics, *Waste Management Services, Australia, 2002-03,* Report no. 8698.0, 2004, www.abs.gov.au/ausstats/abs@.nsf/ProductsbyReleaseDate/ED9DD3A0166C50D9CA2568A9001393B7?OpenDocument (accessed 7 August 2008).

$750 million is derived from the sale of recyclate. However, lost commodity values resulting from the failure to recover materials that could otherwise be recycled amounts to $1.1 billion.[65]

2.51 In terms of the economic benefits of recycling, the Australian Council of Recyclers stated that the economic benefits include employment, infrastructure investment, and the value-added to recovered materials. Indirect economic benefits are identified as the use of accounting, legal and other services, industry and employee spending on other consumer goods and services; and payment of taxes, rates and fees. According to the Australian Council of Recyclers, in 2006 the Australian recycling industry had a turnover of $11.5 billion, contributing 1.2 per cent of Australia's GDP and a capital investment of over $6 billion. That year, about 10 900 people were employed by the industry directly and an additional 27 700 indirectly. The Australian Council of Recyclers estimated that the direct and indirect benefits of this investment and employment in recycling were estimated at $55 billion.[66]

Social impacts

2.52 Growing community awareness of the adverse impacts of waste, including the depletion of natural and often limited resources, has encouraged greater focus on waste avoidance and recovery. Such concerns are reflected in government targets such as zero waste and the development of state and territory waste management strategies guided by the waste hierarchy, under which waste avoidance is preferred over the reuse of waste and reuse preferable to recycling with disposal as the least desirable option. Whilst such initiatives have led to a significant increase in recycling as opposed to landfill, of the 32 million tonnes of waste generated in Australia in 2002–03, approximately 15 million tonnes or 46 per cent were recycled.[67] The remaining 54 per cent were sent to landfill.[68]

2.53 The challenge facing waste management policy makers is to address the nexus between growing GDP and increasing consumerism and resource consumption. Part of this challenge implies addressing of community attitudes to waste which are contradictory. On the one hand, the overwhelming attitude is that materials at the end of their life are of little or no value and can therefore be managed as cheaply as possible, typically involving landfill. This is largely due the exclusion of environmental and social externalities in waste management cost structures.

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65 Boomerang Alliance, *Submission 46*, p. 5.

66 Australian Council of Recyclers Inc, *Submission 81*, p. 2.

67 This figure does not take Tasmania and the Northern Territory into account due to the unavailability of data. Department of the Environment, Water, Heritage and the Arts, *Submission 78*, p. 3.

68 Such figures are largely indicative as the rate of recycling varies considerably from one material to another.

2.54 On the other hand, there is growing interest in minimising the environmental impact of waste by way of reuse and recycling. A 2008 Zero Waste South Australia survey revealed that 63 per cent of the 1 206 individuals surveyed indicated that they were aware of the greenhouse gas benefits of recycling including less waste to landfill. At the same time, 94 per cent of the sample indicated that as a society, we are consuming too much and producing too much waste.[69] Narrowing the gap, between community aspirations for environmental sustainability, and inappropriate consumer practices, is the key challenge.

Environmental impacts

2.55 The growth in waste generation in Australia has major consequences for the environment, through increased greenhouse gas emissions (GHGE), natural resource depletion, water use and leachate contamination. Each of these issues is discussed below.

Greenhouse gas emissions

2.56 In 2006 Australia's net GHGE totalled 576 million tonnes of carbon dioxide equivalent (Mt CO_2-e) under the accounting provisions of the Kyoto Protocol.[70] The waste sector represented around 3 per cent or 16.6 Mt CO_2-e of the national total. These figures do not include emissions from the transportation of waste (which are included under 'transport' in the national greenhouse accounts).

2.57 By far the largest contributor to waste sector GHGE is the decomposition of organic waste in landfill including paper and cardboard, food and garden organics, and wood and timber. As the organic carbon of such materials in landfill decomposes, it produces a waste gas which comprises approximately 50 per cent methane and 50 per cent CO_2.

2.58 An estimated 9.5 million tonnes of organic material (or approximately 67 per cent of the 14.1 million tonnes of organic waste generated) is disposed of in landfill each year across the country.[71]

2.59 In New South Wales alone, 4.3 million tonnes of food, garden, paper and wood waste is generated annually of which 59 per cent ends up in landfill.[72] The

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69 Zero Waste South Australia, *Community and Industry Attitudes, General Public Survey*, March 2008, pp 5 and 12, www.zerowaste.sa.gov.au/pdf/reports/General%20Public%20Survey%20March%202008.pdf (accessed 16 July 2008).

70 Department of Climate Change, *Australia's National Greenhouse Accounts*, 2008, p. 1, www.climatechange.gov.au/inventory/2006/pubs/inventory2006.pdf, (accessed 22 July 2008).

71 Warnken ISE, *Potential for Greenhouse Gas Abatement From Waste Management and Resource Recovery Activities in Australia*, Prepared for SITA Environmental Solutions, March 2007, p. 3, submitted by Boomerang Alliance, *Submission 46*, Attachment F.

72 WSN Environmental Solutions, *Submission 31*, p. 6.

New South Wales Government recognises that landfill accounts for 90 per cent of the waste sector's emissions and that currently, New South Wales landfills emit approximately 5.4 Mt of CO_2-e per annum which is expected to increase to 6.1 Mt by 2050 without intervention.[73]

2.60 Unlike other sectors such as stationary energy and transport, emissions from the waste sector have reduced over time.[74] According to the most recent national greenhouse accounts, net waste emissions in 2006 (16.6 Mt CO_2-e) decreased by around 11 per cent since 1990 (from 18.8 Mt CO_2-e). Further reductions are expected during the Kyoto period with waste emissions expected to decrease by around 14 per cent (to 15 Mt CO_2-e) between 2008–12 compared to 1990 levels.[75]

2.61 The decrease in waste GHGE is largely due to the recovery of waste methane gas from landfills. In 2005, gross waste sector emissions were reduced by around 3.9 Mt CO_2-e (around 19 per cent) through the capture of methane emissions for electricity generation and flaring (burning) at landfills.[76] Rates of methane recovery from solid waste have increased substantially from a negligible amount in 1990 to around 16.8 per cent in 2005.

2.62 Apart from GHGE resulting from landfilling organic material, the waste sector has the potential to abate GHGE by substituting recycled product for high embodied energy materials such as aluminium (also referred to as 'congealed energy'[77]). Ecos Corporation highlighted the environmental benefits of recycling aluminium:

> For example the manufacture of one tonne of aluminium requires 206 GJ of energy to transform bauxite into alumina, and then alumina into aluminium smelting. The associated greenhouse gas emission from one tonne of aluminium manufacture is 20.2 tonnes of CO_2e. By contrast the energy used to recycle one tonne of aluminium for reuse is 14.1 giga-joules, a net saving in embodied energy of 191.9 giga-joules, which equates to a greenhouse gas saving (carbon abatement) of 18.8 tCO_2e.[78]

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73 Department of Environment and Climate Change, New South Wales Government, *Submission 16*, p. 2.

74 Stationary Energy includes emissions from fuel consumption for electricity generation, fuels consumed in the manufacturing, construction and commercial sectors and other sources like domestic heating. Department of Climate Change, *Tracking to the Kyoto Target 2007*, 2008, p. 6, www.climatechange.gov.au/projections/pubs/tracking2007.pdf (accessed 22 July 2008).

75 Department of Climate Change, *Tracking to the Kyoto Target 2007*, 2008, p. 12, www.climatechange.gov.au/projections/pubs/tracking2007.pdf (accessed 22 July 2008).

76 Australian Greenhouse Office, *Analysis of recent trends and greenhouse indicators 1990 to 2005*, September 2007, p. 45, www.greenhouse.gov.au/inventory/2005/pubs/trends2005.pdf (accessed 22 July 2008).

77 Clean Up Australia, *Submission 55*, p. 11.

78 Ecos Corporation Pty Ltd, *Submission 42*, Attachment A, p. 1.

2.63 Clearly a key challenge for the waste industry in terms of tackling climate change is addressing its handling of organic waste. This issue as well as other opportunities to reduce Australia's GHGE are further considered in chapters 3 and 4 of this report.

Natural resource depletion

2.64 Disposal of waste, as opposed to reuse or recycling, implies that the existing resources that constitute the waste are lost to the economy and as a result virgin materials are required to manufacture new products. Given the overall recycling rate in Australia of 46 per cent, the potential to recover and utilise materials currently disposed of in landfill is considerable. The use of recycled materials in manufacturing processes enables a reduction in the amount of virgin materials and energy used. Waste disposal represents a loss of valuable resources to the economy.

2.65 A number of submissions highlighted the environmental benefits of recovering both renewable and non-renewable materials including paper, cardboard, metals, plastic and glass.[79] The Boomerang Alliance estimated that recovery of all such materials would save:

- 7.6 million tonnes of $C0_2e$ p.a. (about the same as switching 1.26 million Australian homes to 100% renewable energy);
- 173 gigalitres of water per annum (enough to permanently supply some 514,000 Australian homes with water); and
- Improved air quality in the vicinity of 19.9 billion units of Smog Precursors (gC_2H_4-e) (similar to permanently removing 4.6 million cars from Australian roads).[80]

2.66 E-waste contains rare and non-renewable resources, some of which are reaching their extraction peak, including gallium, which according to the Total Environment Centre is already running out.[81]

2.67 In terms of other non-renewable resources, evidence focused on aluminium and plastics. Mr Ian Kiernan, Chairman of Clean Up Australia, highlighted that landfilling aluminium containers represented a lost opportunity to reduce environmental damage through a saving in embodied energy:

> We know that, for the same amount of energy it takes to make an aluminium can out of new material, you can make seven aluminium containers out of recycled material. It is just plain good sense. Australia would save 5.6 gigalitres of drinking water per annum without producing

79 Boomerang Alliance, *Submission 46*, p. 6; Ecos Corporation Pty Ltd, *Submission 42*, Attachment A, p. 1; Australian Council of Recyclers Inc, *Submission 81*, p. 2.

80 Boomerang Alliance, *Submission 46*, p. 6.

81 Total Environment Centre, *Submission 67*, p. 3.

> new bottles through this scheme [a national container deposit scheme]. That is enough to supply 16,784 homes with water.[82]

2.68 The Australian Council of Recyclers identify the resource savings from recycling plastics as 60 000 tonnes of oil equivalent (toe) of polyethylene terephthalate or PET and 90 000 toe saving of high density polyethylene (HDPE), which equate to 430 000 and 650 000 barrels of oil equivalents respectively.[83]

2.69 Renewable resources can cause environmental externalities in both their extraction and transformation. In the case of paper and cardboard, 51 per cent of the environmental impact of using virgin material is avoided by recycling.[84] The Australian Council of Recyclers note additional environmental benefits of recycling paper and cardboard:[85]

> The resource saving as a result of the reprocessing of Australian post consumer paper/cardboard is equivalent to three million trees. In the order of 365,000 tonnes of sand, over four million tonnes of iron ore and 1.6 million tonnes of bauxite is being saved through these reprocessing activities.

2.70 VISY Industries Australia noted that recycling 1000 tonnes of paper and cardboard would result in the following environmental benefits:

- energy saving of 18,000 gigajoules which is adequate to power 833 homes,
- a reduction of 3,231 cubic metres of landfill,
- 400 tonnes of CO_2 saved, equivalent to permanently removing 96 cars of the road, and
- water saving amounting to 23,700 litres of water, the equivalent of 9 Olympic size swimming pools.[86]

2.71 Whilst the current national recycling rate of paper and cardboard is difficult to ascertain, Mr Mike Ritchie, NSW President of the Waste Management Association of Australia stated that 89 per cent of office towel paper and 55 per cent of cardboard alone are going to landfill in Australia.[87] Providing consolidated figures across jurisdictions for 2002–03, the Boomerang Alliance maintains that of the 5 921 million

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82 Mr Ian Kiernan, Chairman, Clean Up Australia, *Committee Hansard*, 3 July 2008, p. 62.

83 Australian Council of Recyclers Inc, *Submission 81*, p. 2.

84 VISY Industries Australia Pty Ltd, *Submission 52*, p. 5.

85 Australian Council of Recyclers Inc, *Submission 81*, p. 2.

86 VISY Industries Australia Pty Ltd, *Submission 52*, p. 6.

87 Mr Mike Ritchie, New South Wales President, Waste Management Association of Australia, *Committee Hansard*, 3 July 2008, p. 27.

tonnes of paper, cardboard and pulp waste generated that year, 61 per cent was sent to landfill.[88]

Water consumption

2.72 Due to the severe drought conditions over the past decade, water conservation and security have become issues of considerable national importance. Opportunities to reduce and recycle water include the retrieval of water (along with energy and nutrients) from sewerage.[89] Recycling compared to the use of virgin materials generally requires far less water. According to the Boomerang Alliance, based on 2002–03 waste generation and recycling figures, the full recovery of recyclable material including paper, cardboard, metals, plastic and glass would save an estimated 173 gigalitres of water per annum which is enough to permanently supply about 514 000 houses with water.[90]

2.73 A reduction in organics to landfill not only reduces water pollutants substantially.[91] Once transformed into compost, its use in agricultural applications also improves the water retention capacity of soil thereby amounting to additional water savings.[92] Organic waste is discussed in greater depth in chapter 4.

Leachate contamination

2.74 A key aspect of the environmental management of landfill is leachate treatment systems. Leachate can damage human health and the environment if it comes into contact with surface or groundwater and enters the food chain or comes into contact with sensitive ecosystems. Contaminants in leachate considered to pose the greatest risks are heavy metals (such as lead, mercury, cadmium and copper), and metal oxoanions (including chromate, arsenate and selenate). Leachate can contain high amounts of ammonia and can have high biological oxygen demand, both of which can be harmful to aquatic life.[93]

2.75 The Productivity Commission recognised that estimates of the external costs of leachate damage should take into account the risk that leachate can damage human

88 This figure excludes the Northern Territory and Tasmania and Western Australia data relates to Perth only. Boomerang Alliance, *Submission 46*, p. 5.

89 Professor Stewart Burn, Stream Leader, CSIRO, *Committee Hansard*, 2 July 2008, p. 69.

90 Boomerang Alliance, *Submission 46*, p. 6.

91 Nolan-ITU, Global Renewables, *National Benefits of Implementation of UR-3R Process, A Triple-Bottom Line Assessment*, July 2004, p. 36 submitted by GRD Limited, *Submission 36*, Attachment A.

92 Nolan-ITU, Global Renewables, *National Benefits of Implementation of UR-3R Process, A Triple-Bottom Line Assessment*, July 2004, p. 36 submitted by GRD Limited, *Submission 36*, Attachment A.

93 Productivity Commission, *Waste Management*, Report no. 38, October 2006, p. 74.

health and the environment. The level of risk will depend on the location of the landfill, its construction including landfill liners, and how leachate is managed.[94]

2.76 Nolan-ITU estimated that the long-term environmental costs of leachate and landfill gas emissions would be substantially more than $150 per tonne of municipal solid waste disposed of to best practice landfill.[95] As an environmental externality of landfill, leachate poses a risk that must be effectively managed and therefore costed into the landfill price.

2.77 Hyder Consulting calculated leachate generation (including contaminated run-off) to be 187.6 litres/tonne over 30 years based on weighted average rainfall for Australian capital cities.[96]

94 Productivity Commission, *Waste Management*, Report no. 38, October 2006, p. 74.

95 GRD Limited, *Submission 36*, p. 5.

96 Hyder Consulting, *Waste and Recycling in Australia*, Paper prepared for the Department of Environment and Heritage, Short Paper, Report no. 4, 6 February 2006, p. 64.

Chapter 3

The effectiveness of current waste management strategies

3.1 This chapter addresses the effectiveness of existing strategies to reduce, reuse or recover waste from different waste streams. It is divided into the following sections:

- existing waste policies and practices;
- the use of landfill as the primary waste management response and its economic, environmental and social impacts; and
- a number of key issues in relation to the management of the municipal, commercial and industrial (C&I) and construction and demolition (C&D) waste streams.

Existing waste management strategies

3.2 The constitutional responsibility for waste management policy lies with state jurisdictions while significant carriage is often undertaken by local government.[1] Most states and territories have waste minimisation strategies supported by both environment protection legislation and waste minimisation legislation. The overall objectives of such strategies are to protect the environment and conserve natural resources.[2]

3.3 The Productivity Commission reported that two of the prominent features of waste minimisation strategies across all jurisdictions were, first the sharing of responsibility for waste reduction between industry and the community, and second the requirement to use or consider the waste hierarchy in decision-making.[3]

3.4 Recognition of shared responsibility as a principle of waste minimisation strategies is reflected in the number and range of extended producer responsibility (EPR) initiatives undertaken across jurisdictions. For example, the New South Wales Department of Environment and Climate Change targets 17 products for specific

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1 Department of the Environment, Water, Heritage and the Arts, Commonwealth Government, *Submission 78*, p. 1. The states often pass responsibility for day-to-day waste management administration to local government.

2 Productivity Commission, *Waste Management*, Report no. 38, October 2006, p. 51.

3 Productivity Commission, *Waste Management*, Report no. 38, October 2006, p. 53.

industry action under its EPR Priority Statement 2005–06 including batteries and paint.[4] EPRs are further discussed in chapter 5.

3.5 South Australia's approach to waste minimisation provides an example of the integration of the waste hierarchy into state waste management policy. The South Australian Government seeks to provide policy and legislative frameworks based on the waste hierarchy which enable state and local government, industry and the community to work together 'to drive a new strategy for waste avoidance and reduction, waste reuse and recycling and waste disposal.'[5]

3.6 The objective of waste minimisation in many states and territories has given rise to zero waste or towards zero waste goals. Victoria, the Australian Capital Territory, South Australia and Western Australia all have in place zero waste or towards zero waste goals.[6] The Australian Capital Territory Government, for instance, has adopted a strategy of no waste by 2010.[7] Other jurisdictions have established targets for each waste stream. New South Wales and Victoria recovery targets to be reached by 2014 are reproduced in Table 3.1.

Table 3.1—Waste recovery targets in NSW and Victoria

Waste stream	NSW	Victoria
Municipal recovery	66 per cent	65 per cent
C&I recovery	63 per cent	80 per cent
C&D recovery	76 per cent	80 per cent

Department of Environment and Climate Change, New South Wales Government, *Submission 16*, Attachment B, p. 50.

3.7 Whilst New South Wales, Victoria, South Australia, Western Australia and the Australian Capital Territory have waste management targets underpinned by strategies and timelines to meet them, Queensland, the Northern Territory and Tasmania do not have strategies with targets at all.[8] What results according to Hyder

4 Department of Environment and Conservation, New South Wales Government, *NSW Extended Producer Responsibility Priority Statement 2005–06*, March 2006, pp 7–28, www.environment.nsw.gov.au/resources/warr/2005624_prioritystatement2005_06.pdf (accessed 12 August 2008).

5 South Australian Government, *Submission 83*, pp 1 & 9.

6 Productivity Commission, *Waste Management*, Report no. 38, October 2006, p. 53.

7 Department of Territory and Municipal Services, Australian Capital Territory Government, *No Waste by 2010 – A Waste Management Strategy for Canberra,* www.tams.act.gov.au/__data/assets/pdf_file/0013/12460/nowasteby2010strategy.pdf (accessed 12 August 2008).

8 SITA Environmental Solutions, *Submission 53*, Attachments B and C.

Consulting is a 'lack of focus on the part of all players in respective waste/resource chains on what needs to be achieved and by whom.'[9]

3.8 The Productivity Commission recommended that governments should not directly or indirectly impose targets on the amount of waste diverted from landfill as part of waste management policy.[10] However, this recommendation was rejected in the government response which acknowledged that waste diversion targets:

> ...should only be included in waste management legislative, regulatory or quasi-regulatory instruments if rigorous analysis reveals that their pursuit will deliver net benefits to the community.
>
> The Commonwealth notes that aspirational, voluntary targets can be effective communication tools in drawing community attention to desirable outcomes in waste and recycling matters. Aspirational waste reduction targets, where appropriate, should be set in a sustainability context and be based on sound science.[11]

3.9 The committee agrees that there is a legitimate communication role for waste diversion targets. It also agrees that targets should be set in a sustainability context and based on rigorous analysis and sound science.

3.10 To establish realistic targets on waste reduction that are achievable, appropriate and obtainable, cost-benefit analyses that factor in environmental and social externalities need to be undertaken.

Recommendation 1

3.11 The committee recommends that state and territory governments implement waste reduction targets that are set in a sustainability context and based on rigorous analysis and sound science.

Landfill

3.12 Disposal of waste to landfill remains the primary means of waste management in Australia despite strong growth in recycling over recent years. As the following table demonstrates, of the 32.4 million tonnes of waste generated in 2002–03 in Australia, 54 per cent was landfilled and 46 per cent was recycled.

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9 Hyder Consulting, *Waste and Recycling in Australia*, Paper prepared for the Department of Environment and Heritage, Short Paper, Report no. 4, February 2006, p. 43.

10 Productivity Commission, *Waste Management*, Report no. 38, October 2006, p. 157.

11 Department of the Environment, Water, Heritage and the Arts, *Government Response to Productivity Commission's Final Report on the Inquiry into Waste Generation and Resource Efficiency in Australia*, July 2007, p. 3.

Table 3.2—Waste disposal and recycling rates of key jurisdictions, 2002–03

State/Territory	Total Generated (Tonnes)	Disposed (Tonnes)	Disposal Rate (%)	Recycled (Tonnes)	Diversion Rate (%)
NSW	12,170,000	6,341,000	52	5,830,000	48
Victoria	8,609,000	4,180,000	49	4,429,000	51
Queensland	3,973,000	2,722,000	69	1,251,000	31
WA	3,522,000	2,696,000[(a)]	77	826,000	23
SA	3,433,000	1,277,000	37	2,156,000[(b)]	63
ACT	674,000	207,000	31	467,000[(c)]	69
TOTAL	32,382,000		54	14,959,000	46

(a) Total disposal figure for WA is for metropolitan Perth.
(b) Total recycling figure for SA includes meat waste, a prescribed industrial waste.
(c) The total recycling figure for the ACT includes cooking oil and fat, motor oil, salvage and reuse, and paint.
* There was no data available for Tasmania and the Northern Territory at the time Hyder Consulting published the report from which this table is derived.

Hyder Consulting, *Waste and Recycling in Australia*, Paper prepared for the Department of Environment and Heritage, Short Paper, Report no. 4, February 2006, p. 6.[12]

3.13 A more recent estimate by WCS Market Intelligence & WME Media reveals that the rate of diversion has remained constant, while the overall quantity of waste generated and hence waste going to landfill increased by about eight per cent per annum. Of the estimated 38.3 million tonnes of waste generated in Australia in 2004–05, approximately 20.7 million tonnes (or 54 per cent) was disposed of in landfill.[13]

3.14 Of the 20.7 million tonnes landfilled:

- 6.9 million tonnes or 33 per cent was municipal waste;
- 6.3 million tonnes or 30 per cent was C&I waste; and
- 7.5 million tonnes or 36 per cent was C&D waste.[14]

12 Available from www.environment.gov.au/settlements/publications/waste/pubs/waste-recycling.pdf (accessed 12 August 2008).

13 WCS Market Intelligence & WME Environment Business Media, *The Blue Book – Australian Waste Industry,* 2008, p. 58.

14 Rounding errors exist. WCS Market Intelligence & WME Environment Business Media, *The Blue Book – Australian Waste Industry*, 2008, p. 49.

3.15 Despite the country's strong dependence on landfill as a waste management strategy, there are no national aggregated data on the number of landfills or the environmental performance of landfills across Australia.[15] Moreover, there are no minimum national environmental standards in relation to landfill operations and regulatory regimes differ across jurisdictions.[16]

3.16 As noted earlier, landfill can cause environmental and social costs through gas emissions, leachate discharge, foul odours and loss of visual amenity, and the harbouring of disease-carrying pests which are not charged to the landfill operator.[17] These external costs are rarely included in the pricing structure of landfill and as a result, tend to encourage an over reliance on landfill compared to various resource recovery options. Such externalities detailed by the New South Wales Department of Environment and Climate Change include:

- GHGE of between 0.08 and 1.01 tonnes CO_2-e/tonne of municipal solid waste from methane emissions from landfill depending on gas recovery and electricity generation;
- Opportunity costs of disposing materials which could otherwise replace the use of virgin resources;[18]
- Local amenity costs which can manifest in reduced property values and enjoyment for those who live or work near the landfill;
- Pollution of groundwater and odours;
- Windblown dust and litter; and
- Intergenerational costs associated with the lifetime of the landfill and beyond as resources are no longer available for the potential use of future generations.[19]

3.17 The greatest consideration for any business in relation to waste management options is cost.[20] Thus, the effectiveness of many strategies and initiatives to influence

15 Department of the Environment, Water, Heritage & the Arts, *Submission 78*, p. 4.

16 Mr Mike Ritchie, National General Manager, SITA Environmental Solutions, *Committee Hansard*, 3 July 2008, p. 30.

17 Productivity Commission, *Waste Management*, Report no. 38, October 2006, p. xxvii.

18 A US EPA study found that use of recycled aluminium rather than virgin resources saves 15.72 tonnes CO_2-e/tonne municipal solid waste which at \$15/t CO_2 is equivalent to \$235 savings per tonne of municipal solid waste. Similarly, the saving for mixed paper is \$44 a tonne of municipal solid waste. See also the discussion on the environmental impact of waste in chapter 2.

19 Department of Environment and Climate Change, New South Wales Government, *Submission 16*, Attachment A, p. 7.

20 Qubator Pty Ltd, *Submission 12*, p. 2.

waste avoidance and recovery is hampered by the comparatively low cost of landfill disposal.[21]

3.18 Another driver of landfill over resource recovery appears to be the much higher revenues received by the waste management industry for the collection, transportation, treatment, processing and disposal of waste. Data quoted in the Productivity Commission report demonstrate that collection, transportation, treatment, processing and disposal of waste generated around 90 per cent of the total revenue in the Australian waste industry in 2002–03.[22] By comparison treatment, processing and sale of recyclables only generated around 10 per cent. This is despite the fact that the amount of waste disposed (54 per cent) was broadly comparable to the amount of material recycled (46 per cent). This imbalance demonstrates the much greater financial incentive for the waste management industry to landfill material than to recover the resources.

3.19 A 2005 Waste Management Board of Western Australia study established that the high transportation costs and low landfill fees meant that recycling was not economically viable for most parts of the state outside the Perth metropolitan region. However, the study also found that the environmental benefits of recycling outweighed any financial losses for nearly all locations in the state. Indeed, according to the Western Australian Department of Environment and Conservation, in a number of regional and remote communities, recycling provides 'significant social benefits not quantified in the economic modelling.'[23] Nonetheless, the committee acknowledges that the proposals canvassed in this report may sometimes require adaptation for smaller, regional communities or not be appropriate at all.

3.20 Hyder Consulting maintain that over the course of the last two decades, a large body of scientific evidence has been developed both in Australia and internationally that 'clearly demonstrates that the recovery of material prior to landfilling and the treatment of residual waste has significant environmental benefits.'[24] Yet, across Australia, the social and environmental benefits of recycling have largely been undervalued, if valued at all, in consideration of waste management options. In the committee's view this situation must be remedied by jurisdictions fully accounting for the external social and environmental costs and benefits of landfill versus recycling. These externalities are discussed later in this chapter.

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21 Queensland Government Environmental Protection Agency, *Submission 80*, p. 3.

22 Productivity Commission, *Waste Management*, Report no. 38, October 2006, p. 43.

23 Western Australian Department of Environment and Conservation, *Submission 76*, p. 3.

24 Hyder Consulting, *Submission to the Productivity Commission Waste Generation and Resource Efficiency Inquiry*, Submission no. 147, p. 2.

Landfill levies

3.21 Evidence before the committee strongly supported the use of landfill levies as an incentive to change the behaviour of waste generators. Levies serve as a positive price signal for improved resource recovery. The principal beneficiaries of the levy would be the more efficient recyclers as the levy would be paid on residual materials that cannot be recovered. One witness put this point another way, 'removal of the levy would reward the less efficient recyclers.'[25]

3.22 According to Mr Timothy Rogers, Executive Director, Departmental Performance Management and Communication, New South Wales Department of Environment and Climate Change, the levy in New South Wales has been highly effective in driving resource recovery. He describes the levy as a 'simple market mechanism designed to support innovation in the marketplace.'[26]

3.23 Scheduled increases of $6 per tonne per annum over five years were introduced to the New South Wales Waste and Environment Levy in July 2006. Therefore, by 2010–11, the New South Wales levy is expected to reach $56 per tonne in the Sydney metropolitan area and $52 per tonne in the extended regulation area. The levy, as 'NSW's major economic instrument for waste' has assisted in driving increasing demand for new recycling technology to recover and utilise more materials and for alternative waste technologies to treat the residual portion of waste that would previously have been disposed of to landfill.[27]

3.24 Landfill levies vary considerable across the country as demonstrated below in Table 3.3.

25 Mr Mark Gorta, Manager, Waste Management, Department of the Environment and Climate Change, New South Wales Government, *Committee Hansard*, 3 July 2008, p. 9.

26 Mr Timothy Rogers, Executive Director, Departmental Performance Management and Communication, Department of Environment and Climate Change, New South Wales Government, *Committee Hansard*, 3 July 2008, p. 4.

27 Department of Environment and Climate Change, New South Wales Government, *Submission 16*, Attachment B, p. 22.

Table 3.3—Landfill levies on disposal, 2008–09

Jurisdiction	Region	Levy $ per tonne
NSW[28]	Sydney Metropolitan Area	$46.70
	Extended Regulation Area	$40.00
	State-wide	$46.70
VIC[29]	Metropolitan and Provincial – Municipal	$9.00
	Metropolitan and Provincial – Industrial	$15.00
	Rural – Municipal	$7.00
	Rural – Industrial Municipal Regional	$13.00
QLD		Nil
SA[30]	Metropolitan – Solid Waste	$24.20
	Non-Metropolitan – Solid Waste	$12.10
	State-wide – Liquid Waste	$10.10
WA[31]	Perth Metropolitan – Putrescible	$7.00
	Perth Metropolitan – Inert	$5.00 per m^3
NT		Nil
ACT[32]	Domestic Waste (up to 0.5 tonnes)	$8 to $24
	Domestic Waste (over 0.5 tonnes)	$62.00
	Commercial Waste (up to 0.25 tonnes)	$27.50
	Commercial Waste (over 0.25 tonnes)	$110.00
TAS		Nil

28 Figures are for 2008–09. Department of Environment and Climate Change, New South Wales Government, *Domestic Jurisdictional Comparison of Waste Levies*, 2008. Mr Timothy Rogers, Executive Director, Departmental Performance Management and Communication, Department of the Environment and Climate Change, New South Wales Government, *Committee Hansard*, 3 July 2008, p. 7. The figures for the Sydney metropolitan area and the extended regulation area exclude trackable liquid waste whereas the state-wide figures include trackable liquid waste.

29 WCS Market Intelligence & WME Environment Business Media, *The Blue Book – Australian Waste Industry,* 2008, p. 54. Department of Environment and Climate Change, New South Wales Government, *Domestic Jurisdictional Comparison of Waste Levies*, 2008.

30 Information compiled by Department of Environment and Climate Change, New South Wales Government, *Domestic Jurisdictional Comparison of Waste Levies*, 2008. It should be noted that information detailing levy rates is not readily available, clear or current.

31 Western Australian Department of Environment and Conservation, *Submission 76*, p. 5.

32 Australian Capital Territory Government, *2008 Guide to Waste Disposal Charges*, Effective 1 July 2008, www.tams.act.gov.au/__data/assets/pdf_file/0018/31554/2008_Brochure.pdf (accessed 24 July 2008).

3.25 WSN Environmental Solutions notes that whilst landfill levies are intended to drive alternatives to landfill, in most states such levies have been 'relatively insignificant and have failed to provide the economic drivers to either minimize waste generation or to facilitate the investment in resource recovery technologies.'[33] Moreover, in three jurisdictions, Queensland, Tasmania and the Northern Territory, there is no levy at all.

3.26 Consistent with the 'user pays' principle, the committee is of the view that landfill levies should be applied across all jurisdictions. Such levies should be calculated to include the costs of the full range of social and environmental externalities of landfills and be mindful of the impact on smaller communities. The Productivity Commission's report noted the need to tailor regulatory solutions to match the circumstances of particular landfills and address only the externalities produced by the landfill and not upstream issues. Such efforts should, however, be balanced with the need to maintain minimum environmental standards.[34] Evidence available to the committee suggests that the adoption of landfill levies across all jurisdictions will drive greater resource recovery from waste. What is unknown and requires detailed analysis is the impact of landfill levies as a price signal on the volume of waste generated across the three main waste streams and in relation to the rate of waste growth.[35]

3.27 The committee considers that the role of government in relation to landfill includes mandating the health and safety requirements of landfills. The committee took the view that, as landfill will remain a key aspect of waste management in Australia, it should be the least economically advantageous option for waste generators.

Recommendation 2

3.28 The committee recommends that landfill levies should be applied across all jurisdictions, adjusted for the impact on smaller communities, and should be calculated to include the full range of social and environmental externalities.

Hypothecation

3.29 One of the major concerns expressed by witnesses was the level of hypothecation in relation to landfill levies.[36] Hypothecation rates vary with the highest rate of 100 per cent in Victoria where the levy funds are used solely for the purposes

33 WSN Environmental Solutions, *Submission 31*, p. 4.

34 Productivity Commission, *Waste Management*, Report no. 38, October 2006, p. xxxiii.

35 WSN Environmental Solutions, *Submission 31*, p. 4.

36 Hypothecation means that the funds derived from the levies are set aside for waste management programs.

of environmental protection and to foster the environmentally sustainable use of resources and best practice in waste management.[37]

3.30 Evidence before the committee related not only to the importance of hypothecation *per se* but also of the need to invest levy revenue into resource recovery initiatives.[38] Infrastructure was highlighted throughout the inquiry as an area in need of considerable investment. Funds from the hypothecation of levy revenue could be invested into such initiatives. Moreover, one of the primary concerns raised in relation to community attitudes towards waste generation is that an 'out of mind, out of sight' attitude often prevails, given that community awareness of the waste lifecycle and waste externalities is limited. Investment of levy revenue into resource recovery is one step towards encouraging greater awareness of the fate of waste and of the consequences of waste generation.

3.31 The committee notes with interest the South Australian approach when in July 2007 it doubled the landfill levy and hypothecated the increased amount (i.e. 50 per cent of the new total) to Zero Waste South Australia, a body which 'offers a suite of financial incentives, advocacy and strategic partnerships, to facilitate the achievement of South Australia's Waste Strategy.'[39]

Recommendation 3

3.32 The committee recommends that state and territory governments pursue the hypothecation of landfill levies and their investment into resource efficiency initiatives and infrastructure to the fullest extent possible.

Resource efficiency

3.33 Whilst it is often used in the context of recycling or resource recovery, the term 'resource efficiency' is a broader concept which includes avoidance, reuse, recycling and recovery of energy from waste.

3.34 Improving Australia's resource efficiency rates is desirable due to the environmental and social benefits that can be delivered. High resource efficiency is also an indicator of a more productive economy – that is, achieving greater productive output for each unit of resource. Materials that are disposed of rather than reused or recycled are effectively abandoned potential resources.

3.35 Evidence presented to the committee strongly indicated that the optimal level of resource efficiency in Australia is far from being reached in relation to many reusable and recyclable materials.

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37 Department of Sustainability and Environment, Government of Victoria, *Towards Zero Waste Strategy*, September 2005, p. 51.

38 SITA Environmental Solutions, *Submission 53*, Attachment D.

39 South Australian Government, *Submission 83*, p. 11.

3.36 In terms of the growth of recycling in Australia, the Productivity Commission found that recycling rates have increased in recent years at a rate faster than disposal to landfill.[40] WSC Market Intelligence & WME Environment Business Media estimated that in 1999–2000, approximately 10.5 million tonnes of waste was recovered for recycling and/or reprocessing and in 2004–05, 17.6 million tonnes of waste was recovered.[41] Thus, about 46 per cent of waste was captured for recycling/reprocessing in 2004–05 compared to 37 per cent in 1999–2000.

3.37 Whilst there is variation between materials in terms of their recycling rates and despite an overall increase in recycling, more solid waste in Australia continues to be disposed to landfill (54 per cent) than is recycled (46 per cent).[42]

3.38 In 2002–03, an estimated 46 per cent of Australia's waste or approximately 15 million tonnes was recovered for recycling. Hyder Consulting estimated that in 2002–03, 30 per cent of municipal, 44 per cent of C&I and 57 per cent of C&D waste was recycled.[43] Estimates from 2005–06 suggest that the total resource recovery rate was 46 per cent of which rates across the three main waste streams were as follows:

- 35 per cent (or 3.851 million tonnes) of municipal waste;
- 50 per cent (or 6.279 million tonnes) of C&I waste; and
- 50 per cent (or 7.573 million tonnes) of C&D waste.[44]

3.39 A Hyder Consulting study estimated that in 2006, the Australian recycling industry had a turnover of $11.5 billion, contributing 1.2 per cent of GDP, and a capital investment of over $6 billion. The same year, the recycling industry employed approximately 10 900 people and indirectly an additional 27 700 people. The direct and indirect benefits of this investment and employment were estimated at $55 billion.[45]

3.40 The additional net benefits of recycling that have not translated into transaction costs primarily because of their social and environmental focus include:

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40 Productivity Commission, *Waste Management*, Report no. 38, October 2006, p. 15.

41 WSC Market Intelligence & WME Environment Business Media, *The Blue Book – Australian Waste Industry*, 2008, p. 49.

42 Productivity Commission, *Waste Management*, Report no. 38, October 2006, p. 15.

43 Hyder Consulting cited in Department of Environment of Environment and Heritage, Submission to Productivity Commission, *Submission 103*, Attachment A.

44 WSC Market Intelligence & WME Environment Business Media, *The Blue Book – Australian Waste Industry,* 2008, p. 49.

45 Hyder Consulting, *Australian Recycling Values – A net benefits assessment,* Final Report, prepared for the Australian Council of Recyclers Inc, 23 January 2008, p. ii.

- Environmental benefits such as greenhouse gas abatement savings, water and resource use, aquatic eco-toxicity and energy savings;[46]
- Economic benefits including annual turnover, employment and indicative multipliers; and
- Social benefits including employment, quality of life, sustainable future, economy and biodiversity.[47]

3.41 One of the key environmental benefits of recycling is greenhouse gas abatement. Submitters told the committee that there are a number of currently available technologies that can be implemented by the waste management and resource recovery sectors in Australia to deliver significant levels of greenhouse gas emission reduction (carbon abatement). The Boomerang Alliance's submission included the following options available to reduce the waste sector's carbon footprint (which contributes around 3 per cent or 16.6 Mt CO_2-e to the national total):

- abatement through improved landfill gas capture and use ('improved landfill gas flaring and recovery');
- avoiding future landfill gas emissions by stopping the disposal to landfill of waste materials with degradable organic carbon ('avoided emissions from avoided landfilling');
- saving energy by recycling high embodied energy materials ('embodied energy savings from recycling');
- using renewable fuels derived from waste ('displacing the use of fossil fuels'); and
- converting suitable waste materials to 'biochar' for land application ('developing new 'carbonising' technologies as a form of carbon capture and storage').[48]

3.42 Assuming 80 per cent of waste currently destined for landfill ca be diverted, Warnken ISE estimates annual abatement of 37.8 Mt CO_2-e, which is approximately a 7 per cent reduction on current national net GHGE. Whilst acknowledging the immediate practical challenges of achieving such additional resource recovery, Warnken ISE notes that this level of performance is technically possible with

46 As one case in point, it takes the same amount of energy to make one aluminium can from virgin material as it does to make seven aluminium containers out of recycled material. Mr Ian Kiernan, Chairman, Clean Up Australia, *Committee Hansard*, 3 July 2008, p. 62.

47 Hyder Consulting, *Australian Recycling Values – A net benefits assessment,* Final Report, prepared for the Australian Council of Recyclers Inc, 23 January 2008, p. i.

48 Warnken ISE, *Potential for Greenhouse Gas Abatement From Waste Management and Resource Recovery Activities in Australia*, Prepared for SITA Environmental Solutions, March 2007, p. i, submitted by Boomerang Alliance, *Submission 46*, Attachment F.

currently available technology.[49] Even if this high level of recovery is overly optimistic, it demonstrates the large potential for GHGE abatement from within the sector. As Australia transitions to a low carbon economy, the demand for additional abatement in this sector is likely to increase dramatically.

3.43 Evidence before the committee strongly supported the view that the link between recycling and greenhouse gas abatement must be clearly articulated within waste management policy. According to Mr Matthew Warnken, Managing Director of Crucible Carbon, the carbon abatement benefit of recycling should be recognised in any waste cost-benefit analysis:

> To date a lot of the assessment in the public arena has devalued, first of all, the quantum of carbon benefit associated with the increase in recycling and, secondly, the value that should be associated with that.[50]

3.44 Conversely, Mr Mike Ritchie, New South Wales President of the Waste Management Association of Australia argued that the forthcoming Carbon Pollution Reduction Scheme needs to send a direct and undiluted price signal to the market to recognise the greenhouse benefits of recycling:

> ...we need to recognise recycling within or beside an emissions-trading regime. At the moment, if I recycle 1,000 tonnes of Bunnings aluminium from Bunnings stores, the beneficiary of that recycling is the aluminium smelter. They are the ones, under the emissions-trading scheme, that reduce their emissions and therefore buy fewer permits. There is a market trade process which may give some benefit through me back to Bunnings, but it is a very small and very diluted signal. We need a far more direct signal to encourage people to recycle, whether that is a business owner-manager or a Bunnings general manager. We need some kind of parallel system to an emissions-trading scheme that says, 'You created the following embodied energy savings upstream and here is a certificate or some recognition of that which is tradable and has value.' At the moment that is a very indirect signal.[51]

3.45 Given the Commonwealth Government is currently considering the arrangements for a national emissions-trading scheme the committee is of the view that it is timely that the government takes recycling into account.

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49 Warnken ISE, *Potential for Greenhouse Gas Abatement From Waste Management and Resource Recovery Activities in Australia*, Prepared for SITA Environmental Solutions, March 2007, p. 10 submitted by Boomerang Alliance, *Submission 46*, Attachment F.

50 Mr Matthew Warnken, Managing Director, Crucible Carbon, *Committee Hansard*, 3 July 2008, p. 66.

51 Mr Mike Ritchie, New South Wales President, Waste Management Association of Australia, *Committee Hansard*, 3 July 2008, p. 17.

Recommendation 4

3.46 The committee recommends that the Commonwealth Government calculates options to send a direct and undiluted price signal to the market and publishes the greenhouse benefits of recycling or landfill gas reduction, capture and use as part of its deliberations on the Carbon Pollution Reduction Scheme.

3.47 The committee is mindful of the fact that the carbon abatement value should not be seen in isolation of the other environmental and social benefits of recycling, including water and energy savings. Indeed, one of the key messages throughout the inquiry from a range of stakeholders was that waste generation and management require a holistic yet multi-dimensional, rather than selective and singular, approach.

3.48 The availability and accessibility of kerbside recycling has been the primary driver behind the growth in recycling across the country.[52] Other drivers include international commodity markets and rising commodity prices for recovered materials such as metals, and landfill levies which have created incentives, particularly in the C&I and C&D sectors, to utilise alternatives to landfill.[53] Kerbside recycling, and opportunities in the C&I and C&D sectors are discussed below.

3.49 To date Australia has largely relied on encouragement and persuasion to increase rates of recycling, particularly from the household waste steam, along with the subsidising of collection services and introduction of waste disposal levies. In Europe, increased recycling is primarily achieved through legislation.[54]

Municipal waste

3.50 There are two main options for improving the level of recycling and resource efficiency from the municipal waste stream. First, there is kerbside recycling which has become widespread throughout Australia, and second there is away-from-home recycling which has a much lower uptake rate. Before discussing each of these options, the committee first makes some observations about the level of community engagement in dealing with the municipal waste stream.

Community engagement

3.51 The need for a paradigm shift in our attitudes towards waste was emphasised throughout this inquiry. Many stakeholders recognised the need to reduce our impact on the environment or face 'profound changes and consequences that will affect every aspect of our environment, our lives, our economies and our societies.'[55] Others

52 Department of the Environment, Water, Heritage and the Arts, *Submission 78*, p. 13.

53 Australian Bureau of Statistics, *Australia's Environment: Issues and Trends, Solid waste in Australia*. 2006.

54 Australian Bureau of Statistics, *Australia's Environment: Issues and Trends, Solid waste in Australia*, 2006.

55 Government of South Australia, *Submission 83*, p. 3

highlighted the waste industry's contribution to Australia's GHGE and the need to focus on carbon abatement initiatives and alternatives to landfill. Although this sentiment was strong throughout the evidence, it was particularly so within community groups in relation to municipal waste.

3.52 A number of community groups and private individuals, (many of whom voluntarily collect and recycle litter) highlighted the negative environmental and aesthetic impact of waste. Whilst the motives, perspectives and views of such stakeholders varied considerably, the common thread was the need to transform Australia from a 'throwaway society to a recycling society.'[56] In order to do so, a paradigm shift is required in which waste is viewed as a resource of positive economic, environmental or social value.

3.53 The obverse to the proposition that people throw away items that are no longer wanted or valued, because they are considered waste, is that people don't throw away items that are valuable or recognised as a resource. The transforming element which imports a value onto such items may be economic, environmental, social or a combination of all these factors.

3.54 In South Australia for example, the economic value of container deposits brought about by the state's 30 year old container deposit scheme, has contributed to a general intolerance towards litter in the environment. This view is supported by the fact that there is less rubbish collected in South Australia than any other state on a per capita basis on Clean Up Australia Day.[57] In other words, South Australians recognise the environmental and social impacts of waste and therefore the environmental and social value in its removal from the environment.

3.55 During its hearings in Adelaide the committee heard that the container deposit scheme had imbued a culture of collection and recycling. For example, Mr John Phillips OAM, Executive Director of Keep South Australia Beautiful Environmental Solutions explained to the committee:

> I think it is important to understand that we have had it for 30 years, so it is built into our culture. People understand CDL, and it is just automatic.[58]

3.56 Mr Phillips went onto explain that because the CDL scheme had provided the recycling infrastructure, that the materials returned for recycling had expanded well beyond containers:

> If you look at the recycling depot network in South Australia, their metropolitan regional consists of over 100 recycling depots. They do not just collect CDL. They get paper, cardboard and mixed plastic and they take

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56 Mr John Lawson, President, Australian Council of Recyclers Inc, *Committee Hansard*, 3 July 2008, p. 18.

57 Mr Ian Kiernan, Chairman, Clean Up Australia, *Committee Hansard*, 3 July 2008, p. 68.

58 Mr John Phillips OAM, Executive Director, Keep South Australia Beautiful Environmental Solutions, *Committee Hansard*, 30 June 2008, p. 35.

> car batteries. This morning you heard that they take metal and all those sorts of things, so that is a culture of being able to return product with a value on it...[59]

3.57 Finally, he explained some of the associated social, economic and environmental benefits that flowed from the CDL:

> Some of the economic benefits flow back into the community through the Scouts, the footy club, the netball club or whatever it is. That is their annual fundraising method. Businesses do the same. They collect their 5c deposits in the kitchen and then they have their staff Christmas party based on how much is raised during the year. So I think it is part of the culture, but there are a lot of economic benefits and social benefits that flow. It is the mechanism that allows us to be engaged with the community about other things. The average person really does not know how to wrap their mind around emissions trading or global warning. They just do not understand it. But simply by talking about litter, purchasing habits and recycling, you can engage with them on some of those complex issues in a simple way. We see that with our education centres and our school programs, whether they are about water, energy, waste or biodiversity. You can use it as a tool. I think the community need to have that sort of simplicity when it comes to understanding how they need to respond to something that is becoming more urgent every day but that they do not know how to touch.[60]

3.58 Whilst the level of community support to engage in tangible local and global efforts to reduce impacts on the environment is well demonstrated, such commitment has not been adequately harnessed. Reasons include limited infrastructure to enable more recycling and thus limited accessibility to recycling services, coupled with a lack of leadership on recycling.[61] This has led to a growing frustration on the part of community groups and private individuals engaged in the voluntary collection of litter. Ms Terrie-Anne Johnson, Chief Executive of Clean Up Australia, stated that this frustration was of 'being responsible for being the solution to the issue rather than being part of the solution to the issue.'[62] On the other hand, there is considerable frustration amongst people looking for alternatives to waste disposal.[63]

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59 Mr John Phillips OAM, Executive Director, Keep South Australia Beautiful Environmental Solutions, *Committee Hansard*, 30 June 2008, pp 35–36.

60 Mr John Phillips OAM, Executive Director, Keep South Australia Beautiful Environmental Solutions, *Committee Hansard*, 30 June 2008, p. 36.

61 Community support is reflected in recent littering behaviour studies. Whereas in the past people associated litter with aesthetics, contemporary research on littering behaviour suggests that people now identify litter with the environment and safety concerns rather than aesthetics alone. Department of Environment and Climate Change, New South Wales Government, *Litter Research,* www.environment.nsw.gov.au/warr/litterresearch.htm (accessed 30 July 2008).

62 Ms Terrie-Anne Johnson, Chief Executive, Clean Up Australia, *Committee Hansard*, 3 July 2008, p. 66.

63 Ms Alexandra Graham, GreenHome New South Wales Coordinator, Australian Conservation Foundation, *Committee Hansard*, 4 July 2008, p. 15.

3.59 The committee heard that part of the solution requires greater investment in recycling services which are convenient, accessible, supported by adequate infrastructure, and provide an incentive to engage. Mr Jeff Angel, Director of Total Environment Centre stated:

> Education strategies have been used a lot, but by themselves they are useless as they do not produce viable or accessible collection systems. It is all very well to tell people to recycle, but if they do not have easy access to facilities such as kerbside or beverage container deposit systems to put in practice their recycling aspirations then it falls apart.[64]

3.60 A container deposit scheme (CDS) is one such option highlighted throughout the inquiry as a means of providing the necessary infrastructure for drink containers specifically and other recyclable materials more broadly. Whilst the committee will await the outcomes of the EPHC investigation into container deposit legislation (CDL), it recognises that the network of collection centres established under such a scheme would also likely provide the infrastructure for the collection of other recyclable materials.

Kerbside recycling

3.61 An estimated 90 per cent of Australian households had access to kerbside recycling in 2006.[65] Of the costs involved, Boomerang Alliance indicated that:

> [K]erbside recycling (nett of the sale of recyclate) is estimated to cost $374 million p.a to local government and the estimated costs for state and local government to address litter are estimated at over $200 million p.a.[66]

3.62 Estimates suggest that kerbside recycling delivers external benefits of approximately $420 per tonne of mixed recyclables collected, almost all of which arises upstream.[67] The Productivity Commission conceded that the net external benefits of kerbside recycling vary according to the circumstances but noted that that this figure was probably inflated.[68]

3.63 The Local Government and Shires Associations of New South Wales noted the 'immense cost' of kerbside recycling services to local councils and communities.[69] The costs are primarily collection and sorting costs which are particularly high in relation to materials such as glass and containers given the problems with compaction and low density. The Western Australian Local Government Association notes that

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64 Mr Jeff Angel, Director, Total Environment Centre, *Committee Hansard,* 3 July 2008, p. 50

65 Australian Bureau of Statistics, *Environmental Issues: People's Views and Practices*, Report no. 4602.0, March 2006.

66 Boomerang Alliance, *Submission 46*, p. 9.

67 Productivity Commission, *Waste Management*, Report no. 38, October 2006, p. 83.

68 Productivity Commission, *Waste Management*, Report no. 38, October 2006, p. 83.

69 Local Government and Shires Associations of New South Wales, *Submission 72*, p. 3.

recycling services provided by local councils have to deal with the growing complexity of waste:

> Those local governments providing a recycling service are faced with an increasing diversity of materials used, particularly in packaging, leading to the need for more complex recycling infrastructure and greater expense in order to separate the material.[70]

3.64 One of the issues raised in relation to kerbside recycling was the lack of knowledge in the community about recyclable material. The common misperception that the triangular recycling symbol on plastic containers implies that the container can be recycled is one case in point. The plastic identification code which is a triangle with a number in it is used by the industry to identify the type of plastic, rather than whether or not it can be recycled. It does not necessarily mean that the item can be recycled in a particular council area.[71] Mr David West, National Campaign Director of the Boomerang Alliance noted the lack of community knowledge:

> As an example, if I can pop-quiz the panel: how many of you recycle your margarine containers? It is probable that your local council does not recycle that form of plastic when it goes into a kerbside bin—in fact, you are actually contaminating it…So there is a huge amount of confusion with people about what is recyclable, because every plastic has a recycling symbol on it, even if it is not commonly collected through the kerbside system.[72]

3.65 As much practical information as possible on recyclable material in each council area would assist households in determining what is recyclable in their council area.

3.66 Another practical issue raised during the inquiry in relation to kerbside recycling was the lack of consistency of wheelie bin lid colours that are used in different jurisdictions. The committee takes the view that streamlining such colours to ensure national consistency to the fullest extent possible would benefit householders when they move or travel interstate.

Glass contamination

3.67 Glass, which has a recovery rate of 50 per cent, poses a particular problem in kerbside collections because glass compaction in pressurised collection vehicles causes breakage and thus contamination of paper. This leads to more wastage and

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70 Western Australian Local Government Association, *Submission 44*, p. 2.

71 Planet Ark Environmental Foundation, *Recycling Myths: Sorting the Facts from the Fiction.* 2006, p. 17, www.planetark.com/nrw/media/NRW_RecyclingMythsReport.pdf (accessed 13 August 2008).

72 Mr David West, National Campaign Director, Boomerang Alliance, *Committee Hansard*, 2 July 2008, p. 12.

lower values for recycled paper.[73] The presence of glass in kerbside bins limits compaction rates for trucks thereby reducing productivity.[74]

3.68 As glass fines contaminate paper fibre ensuring that most paper is sent to landfill.[75] However, technology is now available which appears to be able to address the problem of sorting broken glass by colour as it enables optical sorting to minimise contamination of the waste stream. Mr Trevor Hockley, Consultant for Recyclers of South Australia informed the committee:

> You have the fact that the paper is being contaminated with glass shards from breakage—that is a problem for them and they try to use screens and whatever else to separate it—then you have glass being all together, being broken and then needing to be optically sorted, in most cases, to get colour separation and clean, on-spec streams...[76]

3.69 Glass and paper along with plastics are highly tradable commodities.[77] Glass can be endlessly recycled whereas paper gradually breaks down and can only be used a number of times.[78] The Forever Glass Group of Companies details the benefits of glass recycling including:

- Energy savings of up to 74 per cent compared to making glass from raw materials;
- A saving of 1.1 tonnes of raw materials for each tonne of crushed glass (cullet) used;
- Fuel oil saving of about 34 litres for every tonne of glass recycled;
- Recycling a glass jar saves enough energy to light a bulb for four hours.[79]

3.70 At present, paper is one of few materials that is cheaper to recycle than send to landfill.[80] Moreover, the recycling of paper has carbon abatement value as every

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73 Mr Markus Fraval, Chief Executive Officer, Revive Recycling Pty Ltd, *Committee Hansard*, 2 July 2008, p. 29.

74 Mr Mike Ritchie, National General Manager, Marketing and Communications, SITA Environmental Solutions, *Committee Hansard*, 3 July 2008, pp 33–34.

75 Mr Mike Ritchie, National General Manager, Marketing and Communications, SITA Environmental Solutions, *Committee Hansard*, 3 July 2008, p. 34.

76 Mr Trevor Hockley, Consultant, Recyclers of South Australia Inc, *Committee Hansard*, 30 June 2008, pp 44–45.

77 Mr Tony Gray, Director of Sustainability, VISY Industries Pty Ltd, *Committee Hansard*, 2 July 2008, p. 22.

78 Mr Andrew Vanstone, Group General Manager Sustainability, AMCOR Australasia, *Committee Hansard*, 2 July 2008, p. 50. Aluminium is another product that can be recycled absolutely along with some plastics.

79 Forever Glass Group of Companies, *Submission 35*, p. 4.

80 Mr Mike Ritchie, New South Wales President, Waste Management Association of Australia, *Committee Hansard*, 3 July 2008, p. 22. Other materials that are cheaper to recycle than send to landfill are aluminium, steel, cardboard and, by a small margin, plastic.

tonne of wastepaper and carton board in landfill produces an estimated 2.5 tonnes of CO_2-e emissions.[81]

3.71 Mr David West, National Campaign Director of the Boomerang Alliance describes the lost revenue resulting from glass contamination:

> We lose about 80,000 tonnes of paper, worth $120 a tonne, a year to landfill at the moment because of little tiny glass fines. You can have a technology fix for that, but that technology fix will add another $20-odd to the cost of reprocessing paper. In trying to get the cost of reprocessing glass right, we have got to a point now where it costs $370 a tonne to process glass for a product that you can sell for $70. If we do not recycle it, we cannot recover paper.[82]

3.72 Whilst there was general agreement that contamination of kerbside recycling was a problem, particularly in relation to glass, there was considerable diversity in views in relation to the extent of the problem, its implications for resource recovery, and the need of an alternative solution. According to Mr Vaughan Levitzke, Chief Executive of Zero Waste South Australia, the beverage container deposit scheme operational in South Australia has effectively taken glass out of the kerbside system ensuring that the amount of glass is considerably less, and thereby enabling greater compaction, and less contamination of paper.[83] This view was endorsed by Mr Neville Rawlings, President of Recyclers of South Australia, who stated that South Australia had an 80 per cent recovery rate for glass as a consequence of the container deposit system which, in diverting glass away from the kerbside system, had enabled the state to recover cleaner paper.[84]

3.73 However, both VISY Industries Australia and AMCOR Australasia were of the view that contamination came from multiple sources. Neither stakeholder was unable to confirm or deny any distinction between levels of contamination in South Australian paper compared to paper recovered in other jurisdictions. Whilst Mr Tony Gray, Director of Sustainability of VISY Industries Australia stated that the company would know the levels of contamination of the million tonnes of paper that it recycles in Australia, there was no elaboration on what these levels were.[85]

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81 The December 2007 technical guideline for the estimation of greenhouse emissions and energy at facilities cited by Mr Andrew Vanstone, AMCOR Australasia, *Committee Hansard*, 2 July 2008, p. 47.

82 Mr David West, National Campaign Director, Boomerang Alliance, *Committee Hansard*, 2 July 2008, p. 4.

83 Mr Vaughan Levitzke, Chief Executive, Zero Waste South Australia, *Committee Hansard*, 30 June 2008, pp 16–17.

84 Mr Neville Rawlings, President, Recyclers of South Australia Inc, *Committee Hansard*, 30 June 2008, p. 42.

85 Mr Tony Gray, Director of Sustainability, VISY Industries Australia Pty Ltd, *Committee Hansard*, 2 July 2008, p. 27.

3.74 Whilst the committee recognises that there are efforts underway to address the issue of contamination including optically sorting glass to minimise contamination of the stream,[86] consideration should be given to initiatives which remove or separate glass from the main kerbside recycling. The committee recognises that such initiatives may include a container deposit system and the separation of glass from other recyclables at the kerbside. One the one hand, the committee acknowledges the concerns of stakeholders that the removal of higher value commodities including glass from the kerbside system will impact on the viability of kerbside collection and materials recovery facilities (MRFs).[87] However, on the other hand, an alternative system has the potential to reduce paper contamination, improve the recovery of both glass and paper leading to higher returns and greenhouse gas abatement, and by enabling greater compaction rates collection of trucks, improve productivity.

Recommendation 5

3.75 The committee recommends that the Environment Protection and Heritage Council undertake a cost-benefit analysis of glass in the kerbside recycling system including economic, social and environmental externalities. Such an analysis should consider alternatives to kerbside recycling for glass, including container deposit schemes, and their potential economic, social and environmental impacts.

Away-from-home recycling

3.76 Effective recycling of materials consumed away from home is a particular challenge for those engaged in municipal recycling. These materials include refuse from food halls, shopping centres, public parks and public events. The ever-present take-away coffee cup and flavoured milk cartons are two key cases in point.[88]

3.77 Changes in consumer behaviour have resulted in a significant increase in the purchase and disposal of food and drink packaging outside of the home.[89] According to Mr Ian Kiernan, Chairman of Clean Up Australia, 50 per cent of major food and grocery items are now consumed away from home, for which there is little infrastructure to enable recovery.[90] The commercial sector does not have a sustainable economic mechanism to support of public place recycling.[91] In this regard Mr Markus Fraval, Chief Executive Officer of Revive Recycling stated:

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86 Mr Paul Hilton, General Manager, AMCOR Recycling, AMCOR Australasia, *Committee Hansard*, 2 July 2008, p. 53.

87 Mr Paul Hilton, General Manager, AMCOR Recycling, AMCOR Australasia, *Committee Hansard*, 2 July 2008, p. 53.

88 Mr John Phillips OAM, Executive Director, Keep South Australia Beautiful Environmental Solutions, *Committee Hansard*, 30 June 2008, p. 31.

89 Boomerang Alliance, *Submission 46*, p. 20.

90 Mr Ian Kiernan, Chairman, Clean Up Australia, *Committee Hansard*, 3 July 2008, p. 61.

91 Mr Jeff Angel, Director, Total Environment Centre, *Committee Hansard*, 3 July 2008, p. 58.

> Kerbside collection is very well suited to much packaging, but its flaw is that it deals only with items consumed at home. In the case of beverage containers, approximately 50 per cent are consumed away from home. Only 23 per cent of rigid containers are actually recycled at the moment through Australia's kerbside system. When you add commercial and industrial waste, a further 16 per cent, the total recovery is around 39 per cent—but only 23 per cent goes through kerbside. What that shows is that there really is a need for additional infrastructure.[92]

3.78 Widespread recognition across the industry of the need to improve away-from-home recycling has not translated into agreement on the best method to recover such resources. The second National Packaging Covenant (the Covenant) was expanded to include away-from-home recycling as a means of assisting the Covenant to reach its goals and targets.[93] According to the Packaging Council of Australia, away from home recycling is the best opportunity for a 'substantial increase in packaging recycling rates.'[94] However, views are strongly divided on the effectiveness of the Covenant as a co-regulatory arrangement partly because it has produced a lack of measurable action.[95] The Covenant is considered further in chapter 5.

3.79 Prominent in the away-from-home debate is container deposit legislation, around which extremely polarised views are held. The South Australian container deposit system (CDS) has provided an economic incentive for away-from-home recycling of beverage containers for individual consumers and the commercial sector alike which does not exist in other jurisdictions. Evidence before the committee suggests that the recycling rate of beverage containers in South Australia is currently around 70 per cent[96] compared to the national rate of approximately 41 per cent.[97]

3.80 Whilst there was no agreement on whether the Covenant is adequate, or on the usefulness of any alternative model (including the national application of the South Australian CDS), key requirements for such an initiative which are considered in greater detail in chapter 5 include:

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92 Mr Markus Fraval, Chief Executive Officer, Revive Recycling Pty Ltd, *Committee Hansard*, 2 July 2008, p. 29.

93 National Packaging Covenant Council, *The National Packaging Covenant*, 15 July 2005 to 30 June 2010, p. 10.

94 Packaging Council of Australia, *Submission 33*, Attachment C, p. 2.

95 Mr David West, National Campaign Director, Boomerang Alliance, *Committee Hansard*, 2 July 2008, p. 2.

96 Mr Peter Dolan, Director, Science and Sustainability, South Australian Environment Protection Authority, *Committee Hansard*, 30 June 2008, p. 14.

97 Mr David West, National Campaign Director, Boomerang Alliance, *Committee Hansard*, 2 July 2008, p. 5.

- An incentive to recycle (of which the strongest is economic).[98]
- Convenience or accessibility of the recycling service.[99]
- The provision of adequate infrastructure to enable accessibility.[100]
- Education and awareness campaigns to encourage ownership of the problem accompanying away-from-home recycling initiatives.[101]

3.81 The committee also heard evidence about the use of reverse vending machines (RVMs) to improve away-from-home recycling. When located at convenient public places, RVMs enable recycling to become part of a regular shopping routine with no additional transportation costs. According to evidence before the committee, RVMs offer high quality sorting cost savings. Through the compaction of recyclable materials at the point of collection, moreover, RVMs have the potential to reduce transport and logistics costs.[102] RVM data (both in terms of number of containers by material and by brand) is collected automatically. The process is described by Mr Markus Fraval, Chief Executive Officer, Revive Recycling:

> Consumers typically feed their containers into an RVM. These machines will accept aluminium, steel, plastics and glass—basically the whole range of beverage containers. They are identified by material, colour and brand. The technologies used are barcode readers, shape recognition, material recognition, colour recognition and also weight sensors. A combination of those gives a unique identification for each container that is put through—after a significant amount of programming work and database building initially. A receipt is then issued to the consumer and that receipt can then be taken to cooperating retailers or other parties and redeemed for cash. The benefit to retailers of that is that it provides a flow through of traffic into their premises.[103]

3.82 The committee sees clear scope for improvement in the rate of away-from-home recycling. Options such as a national CDL, strengthening the National Packaging Covenant and the use of RVMs should be canvassed by jurisdictions for their relative costs and benefits.

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98 Mr Markus Fraval, Revive Recycling Pty Ltd, *Committee Hansard*, 2 July 2008, p. 34; Total Environment Centre, *Submission 67*, p. 5.

99 Mr Markus Fraval, Revive Recycling Pty Ltd, *Committee Hansard*, 2 July 2008, p. 34; Mr Jeff Angel, Director, Total Environment Centre, *Committee Hansard*, 3 July 2008, p. 50.

100 Mr Ian Kiernan, Clean Up Australia, *Committee Hansard*, 3 July 2008, p. 61; Ms Alexandra Graham, GreenHome New South Wales Coordinator, Australian Conservation Foundation, *Committee Hansard*, 4 July 2008, p. 13.

101 Mr Robert Verhey, Strategy Manager Environment, Local Government and Shires Associations of New South Wales, *Committee Hansard*, 3 July 2008, p. 94.

102 Mr Markus Fraval, Chief Executive Officer, Revive Recycling Pty Ltd, *Committee Hansard*, 2 July 2008, p. 30.

103 Mr Markus Fraval, Chief Executive Officer, Revive Recycling Pty Ltd, *Committee Hansard*, 2 July 2008, p. 30.

Recommendation 6

3.83 The committee recommends that the Environment Protection and Heritage Council consider initiatives, including container deposit schemes, to improve away-from-home recycling. Such initiatives should include elements such as an incentive to recycle, convenience, adequate infrastructure and a supporting education and awareness program.

Commercial and industrial waste

3.84 As noted in chapter 2, the wide-ranging nature of commercial and industrial (C&I) waste, as well as the diversity of those who produce it, pose particular problems for its recycling.[104]

3.85 One of the key problems in capturing waste generated in the C&I sector, despite the existence of a market for many such materials, is that there is currently little economic incentive for businesses operating in commercial premises to establish suitable infrastructure for recycling. Disposal to landfill remains the cheaper and more convenient option.[105] In the case of office paper, recycling costs and a lack of infrastructure in offices, combine to make recovery difficult.[106]

3.86 A number of submitters highlighted the need to improve paper recycling rates in relation to office paper in the C&I sector.[107] SITA Environmental Solutions argue that white paper recycling rates are as low as 11 per cent because landfill is cheaper than installing separate collection transportation services.[108]

3.87 Ms Jane Castle, Resource Conservation Campaigner with the Total Environment Centre, explains why millions of tonnes of office paper are going to landfill each year:

> Because there is no economic incentive for, largely, businesses in commercial premises to separate the office paper out from other waste. At the moment it is a cost for a business to have their office paper recycled, and there is no infrastructure in offices to separate it. There are some businesses out there that are looking for those opportunities, and people are

104 Mr Timothy Rogers, Executive Director, Departmental Performance Management and Communication, Department of Environment and Climate Change, New South Wales Government, *Committee Hansard*, 3 July 2008, p. 3.

105 Mr Trevor Hockley, Consultant, Recyclers of South Australia Inc, *Committee Hansard,* 30 June 2008, p. 49.

106 Ms Jane Castle, Resource Conservation Campaigner, Total Environment Centre, *Committee Hansard*, 3 July 2008, p. 54.

107 Mr John Phillips OAM, Executive Director, Keep South Australia Beautiful Environmental Solutions, *Committee Hansard*, 30 June 2008, p. 31; Ms Jane Castle, Resource Conservation Campaigner, Total Environment Centre, *Committee Hansard*, 3 July 2008, p. 52; SITA Environmental Solutions, *Submission 53*, Attachment A.

108 SITA Environmental Solutions, *Submission 53*, Attachment A, p. 16.

> coming on board if they can get the infrastructure into their offices. And there is a market for office paper, which is largely overseas at the moment—it gets exported. The barrier is that primarily it is not a business priority.[109]

3.88 Ms Castle identified a lack incentive for businesses to get involved in recycling office paper.[110] Mr Jeff Angel, Director of Total Environment Centre recognised that the lack of infrastructure hindered recycling. He maintained that suggestions for councils to extend their kerbside collection would impose substantial cost on councils because kerbside collections are not operating at a profit. Small businesses would incur increasing rate levies for waste collection. Mr Angel explained that the importance of business presenting to the public as environmentally responsible would provide the incentive to get involved in reprocessing and recycling:

> [T]he pressure is on business—big, small and medium—to have a good environmental reputation. The whole issue of carbon footprints and people trying to present themselves as having a good green reputation is coming to the fore. When you talk to businesses about addressing their carbon footprint, one of the core issues is how they handle waste.[111]

3.89 SITA Environmental Solutions argue that white office paper recycling rates can only be improved when there is:

- an increase in the cost of the alternative landfill disposal,
- recycling rebates payable on tonnes recovered,
- regulations requiring office paper recycling, and
- government purchasing requirements positively biased in favour of recycled office paper.[112]

3.90 The National Packaging Covenant (the Covenant) recycling target for paper and cardboard is 70–80 per cent by 2010.[113] According to the National Packaging Covenant Council, however, from 2003 to 2005, the recycling rate increased from 64 to 66 per cent.[114] If this gradual rate of increase is maintained the Covenant is likely to just achieve the lower end of its paper and cardboard target.

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109 Ms Jane Castle, Resource Conservation Campaigner, Total Environment Centre, *Committee Hansard*, 3 July 2008, p. 54.

110 Ms Jane Castle, Resource Conservation Campaigner, Total Environment Centre, *Committee Hansard*, 3 July 2008, p. 54.

111 Mr Jeff Angel, Director, Total Environment Centre, *Committee Hansard*, 3 July 2008, p. 55.

112 SITA Environmental Solutions, *Submission 53*, Attachment A, p. 16.

113 National Packaging Covenant Council, *Annual Report 2005–06*, p. 14.

114 National Packaging Covenant Council, *Annual Report 2005–06*, p. 14.

3.91 AMCOR Australasia notes that whilst paper recycling has increased across all waste streams, most of the increase has come through the kerbside system.[115] The Covenant is currently undergoing a mid-term review to consider progress towards objectives and goals. The results of the review are expected to be presented by the National Packaging Covenant Council to the EPHC at its next meeting in November 2008.[116]

3.92 The committee recognises, that while its recommendation to introduce landfill levies across all jurisdictions may provide some incentive to recycle office paper, other complementary incentives may also be required. In this regard, the committee encourages the ongoing review of the Covenant and its respective National Environment Protection Measure (NEPM), recognising that reaching the target of 70–80 per cent recycling is likely to require a reduction in office paper disposal to landfill.

Construction and demolition waste

3.93 The observations of Qubator Pty Ltd affirmed the view that the most powerful motive for recycling C&D waste is the generator's desire to reduce the cost of disposal:

> The cost of dumping waste is therefore a critical factor in determining whether or not waste will be used, irrespective of the fact that it can be used.[117]

3.94 This dynamic was clear in New South Wales where the landfill levy is substantial:

> ...construction waste has a high recovery rate, driven largely by the waste levy, the weight of the material and the ease of recycling it.[118]

3.95 According to Qubator, corporate policy may prevent waste from being reused or recycled and where this is the case, it is generally to avoid the possibility of litigation in the event that 'something goes wrong'.[119] Such policies may well reflect industry standards. In relation to product standards, the Productivity Commission recommended that jurisdictions responsible for specifying the use of materials for production (including building and construction materials) should review all product standards that 'unjustifiably frustrate the use of recycled products and/or call for the

115 AMCOR Australasia, *Submission 57*, p. 3.

116 Environment Protection and Heritage Council, *Communiqué*, 17 April 2008, p. 3

117 Qubator Pty Ltd, *Submission 12*, p. 2.

118 Mr Timothy Rogers, Executive Director, Departmental Performance Management and Communication, Department of Environment and Climate Change, New South Wales Government, *Committee Hansard*, 3 July 2008, p. 3.

119 Qubator Pty Ltd, *Submission 12*, p. 3.

use of virgin materials.'[120] The Commonwealth responded with agreement that performance-based standards for materials are generally preferable and recognition that examination of mandatory standards in the building and food packaging industries to determine whether such standards are appropriate had merit.[121]

3.96 The committee notes the Productivity Commission recommendation and the Commonwealth's response and encourages jurisdictions to review their mandatory standards to enable the recycling of materials wherever possible rather than the use of virgin materials.

Pricing externalities

3.97 Evidence before the committee suggested that many of the zero and limited waste to landfill targets of various jurisdictions are not going to be reached. One of the primary reasons for this is the fact that price and regulatory signals indicate that landfill is still the most economically attractive means of waste management.[122] As Hyder Consulting observed, with the exception of businesses subject to, or engaged in, negotiations with jurisdictions about their extended producer responsibilities and those signatories of the National Packaging Covenant, 'there is virtually no reason for business to improve their resource recovery performance.'[123]

3.98 The primary policy instruments available to government in relation to waste management are pricing signals, or regulation, or a combination of both by way of regulatory signals.[124] Pricing signals such as a landfill levy and other market based instruments (including an advanced disposal fee) are one mechanism designed to capture the societal and environmental cost of waste management. The objective ought to be to set price signals at a level which serves as an incentive for producers, users, and end-of-life managers to take full account of the external impacts of waste management practices. The lack of cost-benefit analysis, which takes the full costs of GHGE and other environmental and social externalities into account, has meant that landfill remains the major waste management option in Australia.

3.99 There are obvious difficulties in quantifying the societal and environmental impacts of current landfill practices. For example, how is it possible to determine the

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120 Productivity Commission, *Waste Management*, Report no. 38, October 2006, Recommendation 12.5, p. 366.

121 Department of the Environment, Water, Heritage and the Arts, *Government Response to Productivity Commission's Final Report on the Inquiry into Waste Generation and Resource Efficiency in Australia*, July 2007, p. 9.

122 Mr Mike Ritchie, New South Wales President, Waste Management Association of Australia, *Committee Hansard,* 3 July 2008, p. 17.

123 Hyder Consulting, *Waste and Recycling in Australia*, Paper prepared for the Department of Environment and Heritage, Short Paper, Report no. 4, February 2006, p. 43.

124 Mr Mike Ritchie, New South Wales President, Waste Management Association of Australia, *Committee Hansard*, 3 July 2008, p. 17.

social and environmental cost of a waterway contaminated by landfill leachate? According to the New South Wales Department of Environment and Climate Change, recent cost-benefit analyses have tended to overestimate compliance costs of recycling and waste reuse whilst underestimating their environmental and social benefits.[125] Submitters raised the Productivity Commission's *Waste Management* report with the committee as an issue of major concern given its low pricing assumptions in relation to the cost of carbon. The Productivity Commission assumed that the external cost of greenhouse gas emissions was between $5 and $20 per tonne of carbon dioxide emissions (CO_2-e) [126] which several witnesses indicated is towards the lower end of expected carbon permit prices.[127]

3.100 Another issue is the inclusion of an 'inconvenience cost' in economic assessments of environmental and recycling infrastructure. The issue is whether separating waste into recyclables and non-recyclables by the end-user is inconvenient and should be costed accordingly.[128]

3.101 The Productivity Commission held the view that waste generators must consider the financial costs of waste disposal and recycling, the value of time and effort taken to manage their waste, and any preference for recycling or reuse that arise which all amount to private cost rather than social benefit.[129] Other stakeholders such as the Total Environment Centre submitted that such an approach gives more weight to alleged business and convenience costs over the real environmental, resource and social costs from waste.[130] The convenience factor is discussed in more detail in chapter 4.

Recommendation 7

3.102 The committee recommends that waste management policy must be grounded in rigorous cost-benefit analysis which encompass economic, environmental and social externalities.

125 Department of Environment and Climate Change, New South Wales Government, *Submission 16*, Attachment A, p. 7.

126 Productivity Commission, *Waste Management*, Report no. 38, October 2006, p. 430.

127 For example, the Garnaut Climate Change Review Draft Report examines a range of permit prices between $10 and $40 (June 2008, p. 208). The Australian Government's Carbon Pollution Reduction Scheme Green Paper uses $20 as an example (July 2008, p. 281).

128 Productivity Commission, *Waste Management*, Report no. 38, October 2006, p. 62

129 Productivity Commission, *Waste Management*, Report no. 38, October 2006, p. 62.

130 Total Environment Centre, *Submission 67*, p. 5.

Chapter 4

Potential new waste management strategies

4.1 This chapter considers the issues under items (c), (d), and (e) of the inquiry's terms of reference. It deals with new strategies, the benefits and costs of such strategies, and policy priorities to maximise the efficiency and efficacy of efforts to reduce, recover or reuse waste from different waste streams.

4.2 The previous chapter highlighted state-level inconsistencies in areas such as landfill targets and landfill levies. Many submissions and witnesses raised concerns about the escalating problems created by this divergent and inconsistent approach across the country. There was an overwhelming call for consideration of a national strategy to guide the formulation of policies to better manage Australia's growing waste generation.

Establishing a national resource efficiency strategy

4.3 Over the past two decades the only national waste minimisation strategy that has been established was the National Waste Minimisation and Recycling Strategy (NWMRS). The over-arching goals of the NWMRS are to:

- encourage the ecologically sustainable non-wasteful use of resources;
- reduce potential hazards to human health and the environment posed by pollution and wastes; and
- maintain or improve environmental quality.[1]

4.4 Now out-dated, the NWMRS was adopted in 1992 and included a target of reducing the amount of waste per capita going to landfill by 50 per cent by 2000 (with 1991 as the baseline year). There were no targets set beyond the year 2000.

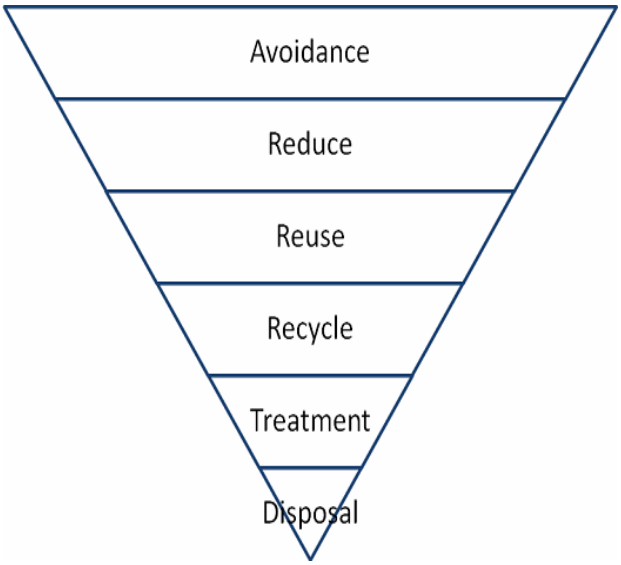
4.5 For completeness, the committee notes the existence of two other national strategies, but distinguished them from a holistic national strategy as they focus on specific waste streams or sectors, rather than on the entirety of waste generation. In the same year the NWMRS was established, governments agreed to the National Kerbside Recycling Strategy, which amongst other things, specified agreed recycling targets for municipal waste such as plastic, glass, aluminium, steel and liquid paper board containers, newsprint and paper packaging. The other national strategy is the Environment Protection and Heritage Council (EPHC) National Waste Framework. This strategy, which is discussed further in chapter 5, provides a systematic framework to assist the EPHC to identify and address waste management issues of national importance. Current examples of waste management issues of national

1 Quoted in Productivity Commission, *Waste Management*, Report no. 38, 2006, p. 46.

importance under consideration by the EPHC are various e-waste streams, used oil and used tyres.

4.6 The two key principles of the NWMRS that continue to influence state and territory policy are the waste hierarchy and targets for the amount of waste going to landfill. The waste hierarchy specifies a preferred order of waste management options. It recognises disposal as the last and least desirable option, with waste avoidance the first and most desirable option. In accordance with this approach, many jurisdictions have established targets for diverting waste and include the objective of zero waste to landfill.[2] Whilst there are variations of the hierarchy, the common structure is demonstrated in Figure 4.1 below.

Figure 4.1—Typical waste hierarchy structure



4.7 Because of constitutional constraints, the Commonwealth Government's engagement in the solid waste arena is largely confined to working with the states through the EPHC and the National Environment Protection Council (NEPC) in the development of harmonised national approaches for significant waste issues.[3] The Commonwealth does not have the constitutional powers to legislate and implement national strategies. It must work with the states which have the primary constitutional responsibility for waste management policy.

4.8 With the Commonwealth Government's limited ability to provide national leadership, the committee heard evidence that the states have tended to develop waste management policies in an uncoordinated and at times inconsistent fashion. Mr Mike Ritchie, New South Wales President of the Waste Management Association of

2 Although Mike Ritchie, National General Manager, Marketing and Communication, SITA Environmental Solutions told the committee that zero waste to landfill policies cannot be met with current technology at a reasonable cost, *Committee Hansard*, 3 July 2008, p. 17.

3 Department of the Environment, Water, Heritage and the Arts, *Submission 78*, p. 1.

Australia highlighted the problems created through the lack of an overarching national strategic framework. He told the committee:

> In the absence of a national strategy, we have all state and territory governments going off and doing their own things. From a policy and infrastructure development and a program delivery perspective we need some leadership at the federal level.[4]

4.9 Mr Ritchie spoke of the importance of moving away from a pick-and-choose approach to waste management, towards providing an overarching framework for all waste streams. He stated that 'we have activity happening around particular product streams between state governments, but it is not coherent within any national framework'.[5] This 'trophy-cabinet approach' to waste management implies that there have been some successes in pockets, but no overall national strategy to systematically address resource recovery in Australia.[6]

4.10 More specifically, the lack of a comprehensive national resource efficiency strategy, one that takes a holistic approach to the entire waste cycle, results in complexities that arise from the differences across jurisdictions in terms of legislation, definitions, targets, strategies and policies.

4.11 The widespread support for a national strategy was evident across waste managers, recyclers, the business sector and governments as the following quotes demonstrate.

4.12 Mr Ritchie told the committee that an overall national strategic framework for waste is required with clear principles and goals rather than a piecemeal approach:

> At the moment we have activity happening around particular product streams between state governments, but it is not coherent within any national framework. What are we trying to achieve here? What are our goals in terms of resource recovery, recycling, emissions, climate change et cetera? It is a complete vacuum.[7]

4.13 The Australian Council of Recyclers (ACOR) stated:

> ACOR is calling for a national strategy for resource recovery, as opposed to waste disposal, that seeks to maximise the recovery of resources while continuously improving resource efficiency.[8]

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4 Mr Mike Ritchie, New South Wales President, Waste Management Association of Australia, *Committee Hansard*, 3 July 2008, p. 17.

5 Mr Mike Ritchie, New South Wales President, Waste Management Association of Australia, *Committee Hansard*, 3 July 2008, p. 28.

6 Mr Mike Ritchie, National General Manager, Marketing and Communication, SITA Environmental Solutions, *Committee Hansard*, 3 July 2008, p. 29.

7 Mr Mike Ritchie, National General Manager, Marketing and Communication, SITA Environmental Solutions, *Committee Hansard*, 3 July 2008, p. 28.

8 Australian Council of Recyclers Inc, *Submission 81*, p. 3.

4.14 The Cement Industry Federation also supported a nationally consistent approach to resource recovery:

> The most significant issue that is preventing a higher uptake [alternative fuels and alternative raw materials] is the inconsistent environmental regulations across all states. That is why we have said in the submission that we are interested in a nationally consistent approach to resource recovery to address the regulatory impediments to the uptake of secondary materials. We want to clarify 'resource recovery' with definitions and classifications that promote the recycling of materials and not the old adage of 'everything is a waste'. We regard materials as a resource; they have a value, so they are not a waste.[9]

4.15 The Queensland Environmental Protection Agency highlighted the benefits of national action:

> Many strategies to reduce, recover or reuse wastes would benefit from a national approach, particularly end-of-life products where there are national or international companies involved in production or distribution where movement between jurisdictions may be impacted by a system in one jurisdiction or where economics of scale would result from national action.[10]

4.16 At the most practical level, greater national consistency would counter any 'jurisdictional' shopping undertaken on the part of companies to identify the lowest level of regulation.[11]

4.17 In light of widespread support from both business and government, and acknowledging growing community expectations about reducing the environmental damage of waste generation and disposal, the committee considers that it is time for the establishment of a principles-based national strategic framework for waste which emphasises the objectives such as sustainability and resource efficiency rather than waste disposal.

Recommendation 8

4.18 The committee recommends that the Environment Protection and Heritage Council develop a national resource efficiency strategy. The strategy should seek consistent policies between the states and adopt a principles-based approach; including sustainability, the waste hierarchy, extended producer responsibility and user pays cost reflective pricing as guiding principles.

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9 Mr Andrew Farlow, Sustainability Development Policy Manager, Cement Industry Federation, *Committee Hansard*, 4 July 2008, p. 3.

10 Queensland Environmental Protection Agency, *Submission 80*, p. 3.

11 Queensland Environmental Protection Agency, *Submission 80*, p. 3.

Fundamental principles of a national strategic framework

4.19 In the committee's view, a national resource efficiency strategy should be a principle-based tool providing guidance for all participants in the waste sector. The committee recognises that these principles are not absolutes. They must be balanced with each other as well as other social, economic and environmental goals.

4.20 Based on the evidence received throughout this inquiry the committee now enunciates a number of principles it sees as fundamental to a national resource efficiency strategy. Many of these principles were succinctly conveyed by the Australian Conservation Foundation (ACF):

> ACF believes the need for ecological sustainability requires waste minimisation and pollution prevention to be the core drivers for a new national waste management strategy. Waste should be viewed primarily as a resource to be utilised by current or future generations, rather than as material for which society has no further use. The management of waste matter should be assessed within the hierarchy of avoidance, reduction, reuse and recycling. The environment does not have unlimited capacity to assimilate waste and pollution.[12]

Resource efficiency

4.21 One of the key issues repeatedly raised throughout the inquiry was the need to shift away from a linear extraction-production-consumption-disposal approach to waste management, to a life-cycle, closed-loop, resource efficiency model. According to many witnesses this will require a paradigm shift to valuing as a resource what is currently seen as a 'waste'. As Mr Timothy Rogers from the New South Wales Department of Environment and Climate Change succinctly put it 'waste represents a loss of valuable resources to the economy'.[13] Representatives from the cement industry told the committee:

> We want to clarify ‘resource recovery’ with definitions and classifications that promote the recycling of materials and not the old adage of ‘everything is a waste’. We regard materials as a resource; they have a value, so they are not a waste.[14]

4.22 To a large degree this will require a change in the incentive structure of current waste management practices. According to Hyder Consulting, there is currently limited commercial benefit derived from the voluntary resource recovery

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12 Australian Conservation Foundation, *Submission 71*, p. 5.

13 Mr Timothy Rogers, Executive Director, Departmental Performance Management and Communication, Department of Environment and Climate Change, New South Wales Government, *Committee Hansard*, 3 July 2008, p. 2.

14 Mr Andrew Farlow, Sustainability Development Policy Manager, Cement Industry Federation, *Committee Hansard*, 4 July 2008, p. 3.

activities encouraged by government for many businesses.[15] This reality is reflected in the sale of recyclables which accounted for only two per cent of the total revenue in the Australian waste management industry in 2002–03.[16] Without adequate financial incentives, the waste sector will continue to adopt the most cost-effective option, which is often disposal in landfill. As discussed elsewhere in this report, one of the key constraints is the non-inclusion of certain environmental and social costs in current waste management pricing structures. Allowing the market to target cost-effective resource efficiency options has the potential to improve the productive capacity of the Australian economy.

4.23 The Productivity Commission held that waste management policy should not be used to promote resource efficiency because such measures often involve aggregated quantities of different materials which does not take into account their individual market values or environmental impacts.[17] However, the government response emphasised that resource efficiency is an important goal fundamental to environmentally sustainable policies:

> Considerations such as potential improvements in the pattern of how materials are used within the economy, reductions in greenhouse gas emissions, water and energy savings, or recycling are important considerations in making decisions about optimal waste management solutions. They can help inform policies aimed at achieving long term environmental sustainability and economic efficiency and help achieve productivity gains. Policy in any given area should not be developed and implemented in isolation from other relevant policy goals.[18]

Waste hierarchy

4.24 The waste hierarchy was supported by many as a meaningful tool to guide waste management as it seeks to minimise waste generation and maximise resource recovery. As Councillor Samantha Dunn stated:

> The waste hierarchy—refuse, reuse, recycle, recover energy, treat, contain, dispose—should be used to guide all community consideration and management of waste products.[19]

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15 Hyder Consulting, *Waste and Recycling in Australia*, Paper prepared for the Department of Environment and Heritage, Short Paper, Report no. 4, 6 February 2006, p. 44.

16 The sale of organic and green-waste recyclables generates 1 per cent. Productivity Commission, *Waste Management*, Report no. 38, 2006, p. 43.

17 Productivity Commission, *Waste Management*, Report no. 38, 2006, Recommendation 6.2, p. xlvii.

18 Department of the Environment, Water, Heritage and the Arts, *Government Response to Productivity Commission's Final Report on the Inquiry into Waste Generation and Resource Efficiency in Australia*, July 2007, pp 1–2.

19 Councillor Samantha Dunn, Yarra Ranges Shire Council, *Committee Hansard*, 2 July 2008, p. 37. See also Cement Industry Foundation, *Submission 47*, p. 3, and AMCOR, *Submission 57*, p. 3.

4.25 In commenting on the Victorian Government's waste management policy, *Sustainability in Action: Towards Zero Waste Strategy*, Dr Ruth Lane and Associate Professor Ralph Horne from RMIT University, reminded the committee that the waste hierarchy is already included in state government waste management policies:

> In common with equivalent policies in other Australian states, it [the Victorian Government's waste management policy] also reiterates a commitment to the 'waste hierarchy' as a guiding principle, with its options based on environmental impact, ranking 'reduction' over 'reuse', over 'recycling', over 'recovery', with 'disposal' the last resort. Recycling, despite being only the third most desirable option in the waste hierarchy, has received the most attention to date with support for the establishment of bulk materials recycling industries.[20]

4.26 Although the Productivity Commission recommended against using the waste hierarchy[21] it was supported as a principle to guide policy-making by the government response which stated that:

> ...whilst the waste hierarchy should not be the sole guide to policy making it is a useful communication tool when used to provide information to the community about a range of alternative options for waste management...[22]

Sustainability

4.27 In the committee's view, another guiding principle that ought to be adopted as part of a national resource efficiency strategy is sustainability. The committee was often reminded that waste management policy must be viewed in the broader context of sustainability, including its contribution to climate change, water scarcity and the management of renewable and non-renewable resource. In this regard Ms Mary Harwood, First Assistant Secretary, Environment Quality Division, Department of the Environment, Water, Heritage and the Arts stressed:

> In the past, the main focus of waste policy has been on preventing or minimising the environmental impacts of particular waste on health and on the environment. Increasingly, other drivers are influencing waste policy—for example, sustainability, climate change, green design, resource recovery and resource efficiency.[23]

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20 Dr Ruth Lane and Associate Professor Ralph Horne, RMIT University, *Submission 21*, p. 1.

21 Productivity Commission, *Waste Management*, Report no. 38, 2006, Recommendation 7.1, p. xlvii.

22 Department of the Environment, Water, Heritage and the Arts, *Government Response to Productivity Commission's Final Report on the Inquiry into Waste Generation and Resource Efficiency in Australia*, July 2007, p. 2.

23 Ms Mary Harwood, First Assistant Secretary, Environment Quality Division, Department of the Environment, Water, Heritage and the Arts, *Committee Hansard*, 4 July 2008, p. 63.

4.28 Submitters acknowledged the importance of developing waste policy within a sustainability paradigm linking issues such as energy efficiency, resource efficiency, greenhouse gas emissions and water conservation to the waste agenda.[24]

User pays, cost-reflective pricing

4.29 As a general principle those who benefit from activities which generate pollution and waste should bear the full costs associated with those activities. When the costs of waste management are either not reflected in the price (as is the current situation with greenhouse gas emissions) or alternatively spread across society more generally (such as the inclusion of municipal waste treatment cost in council rates) users and consumers do not experience a price signal for the waste they are generating. The Productivity Commission recognised this point and the resulting adverse environmental consequences:

> Charging for waste services at less than the full cost, and failing to charge according to the quantity of waste disposed, tend to encourage too much waste generation and disposal, and can unnecessarily add to environmental impacts.[25]

4.30 There are a range of market-based instruments (such as unit pricing or levies on disposal, advance disposal fees, deposit-refund schemes and tradeable property rights), that enable more cost-reflective pricing and provide more direct financial incentives to encourage the appropriate treatment of end-of-life materials.[26] One approach which encapsulates many aspects of a user pays, cost-reflective pricing principle is Extended Producer Responsibility which is discussed at length in chapter 5.

Improving waste data

4.31 Understanding and quantifying the impact of waste streams and their economic, social and environmental costs is central to effective national waste policy development. In this regard the Department of the Environment, Water, Heritage and the Arts (Environment Department) submitted:

> ...it is important that governments have access to sufficient data to support policy making for emerging government priorities, including the contribution that wastes and recycling make to national greenhouse accounts.[27]

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24 For example Mr Mike Ritchie, New South Wales President, Waste Management Association of Australia, *Committee Hansard*, 3 July 2008, p. 17; Mr John Lawson, President, Australian Council of Recyclers Inc, *Committee Hansard*, 3 July 2008, p. 18;

25 Productivity Commission, *Waste Management*, Report no. 38, 2006, p. 125.

26 See for example: Productivity Commission, *Waste Management*, Report no. 38, 2006, pp 219–258.

27 Department of the Environment, Water, Heritage and the Arts, *Submission 78*, p. 2.

4.32 However, there is currently a lack of national data on many waste issues that would otherwise underpin the sustainable management of Australia's waste streams.[28] The Environment Department noted:

> Understanding the extent of the problem, or determining whether there is, in fact, a problem with particular waste streams in Australia requires good information. However, while there is some good sectoral information and some jurisdictions have better information than others, at a national level Australia lacks reliable, comprehensive, contemporary waste information.[29]

4.33 The department noted the consequences of inadequate data:

> In the absence of a full understanding of life cycle impacts, strategies may be selected which may move us away from more sustainable outcomes.[30]

4.34 Initiatives to provide nationally consistent data and reporting have faced a series of obstacles in the past for reasons including the different regulatory and methodological approaches operating in each state.[31] The Australian Waste Database (AWD) is one such initiative which was put on hold in 2005 because some jurisdictions were unwilling to release their data to the Commonwealth Scientific and Industrial Research Organisation (CSIRO).[32] Originally designed to provide information to allow national reporting and facilitate the matching of waste generators and processes with potential opportunities for use of waste streams, the AWD provided three primary benefits identified by Professor Stewart Burn, Stream Leader, CSIRO:

> The database has benefits for policymakers in that it provides the information needed to make valid policy decisions. It provides information to local manufacturers in that they can identify synergistic relationships for waste reutilisation—where you have a waste generator, it can be reutilised in a local area—and it also provides major benefits to the community in that landfill and other waste disposal processes should be minimised.[33]

4.35 National waste policy should be informed and underpinned by national waste data derived from a national waste data system. Such a system, which could draw on the AWD model and lessons emanating from it, could provide not only standardisation in terms of definitions and classifications but also include

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28 Department of the Environment, Water, Heritage and the Arts, *Submission 78*, p. 2.

29 Department of the Environment, Water, Heritage and the Arts, *Submission 78*, p. 4.

30 Department of the Environment, Water, Heritage and the Arts, *Submission 78*, p. 10.

31 Department of Environment and Climate Change, New South Wales Government, *Submission 16*, Attachment A, p. 12, and Department of the Environment, Water, Heritage and the Arts, Commonwealth Government, *Submission 78*, p. 4.

32 Professor Stewart Burn, Stream Leader, Commonwealth Scientific and Industrial Research Organisation, *Committee Hansard*, 2 July 2008, pp 75–76.

33 Professor Stewart Burn, Stream Leader, Commonwealth Scientific and Industrial Research Organisation, *Committee Hansard*, 2 July 2008, p. 76.

methodologies to calculate volumes of waste generation.[34] In addition, such a database could be used as an eco-efficiency tool. Professor Stewart Burn, Stream Leader CSIRO noted of the AWD in this regard:

> The Australian Waste Database is a project that is on hold at the moment. It was originally designed to provide information to allow national reporting and to provide information to allow eco-industrial applications, which means you link up waste suppliers and waste users at a postcode level.[35]

4.36 The work undertaken by the Australian Bureau of Statistics in relation to establishing consistency in frameworks and standards and to facilitate the provision of consistent information across jurisdictions could also be drawn upon in the development of a national database.[36]

4.37 The reinvigoration of a national data system should take into consideration the ongoing work of the Waste Management Association of Australia in relation to its review of the AWD.[37]

4.38 The diversity and lack of consistency in relation to waste classification and methodology in calculating waste generation volumes is highlighted by the debate around national beverage container deposit legislation. Numerous studies and analyses over years and across jurisdictions have fed into the ongoing debate over the potential impact of national container deposit legislation (CDL) and of the actual volume of container waste generated that it would impact upon.[38] Comprehensive nationally agreed data sets and application across all waste streams have the potential to provide greater clarity to such debates and the policy decisions emanating from them.

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34 Department of Environment and Climate Change, New South Wales Government, *Submission 16*, Attachment A, p. 12.

35 Professor Stewart Burn, Stream Leader, Commonwealth Scientific and Industrial Research Organisation, *Committee Hansard*, 2 July 2008, p. 75.

36 Mr Denis Farrell, Division Head, Population and Environment Statistics Division, Australian Bureau of Statistics, *Committee Hansard*, 4 July 2008, p. 57.

37 Ms Lillias Bovell, National President, Waste Management Association of Australia, *Committee Hansard*, 3 July 2008, p. 16.

38 CDL is contentious partly because the data is open to interpretation and subject to manipulation. Mr John Phillips OAM, Executive Director, Keep South Australia Beautiful Environmental Solutions told the committee 'You can do anything with figures', *Committee Hansard*, 30 June 2008, p. 29. Many stakeholders including the Food and Grocery Council maintain that beverage containers represent less than three per cent of waste going to landfill. Food and Grocery Council of Australia, *Submission 56*, p. 2. Others such as the Boomerang Alliance and Total Environment Centre contend that the figure is actually over ten per cent and that the three per cent figure is aggregated across household, C&I and C&D waste streams rather than where major consumption actually occurs which is in the municipal sector. Mr Matthew Warnken, Managing Director, Crucible Carbon, *Committee Hansard*, 3 July 2008, p. 66.

Recommendation 9

4.39 The committee recommends that the Environment Protection and Heritage Council re-establish the national waste data system. Once the Waste Management Association of Australia's review of the Australian Waste Database is complete, governments should consider whether to fund the CSIRO and/or the Australian Bureau of Statistics to re-establish the national waste data system.

Infrastructure

4.40 A number of submitters emphasised the importance of providing adequate infrastructure across the country to support resource recovery initiatives. The need for infrastructure for recycling initiatives as well as specifically in relation to Extended Producer Responsibility (EPR) schemes are discussed in more detail in chapter 5.

4.41 In evidence before the committee, Mr Trevor Hockley, Consultant for Recyclers of South Australia, stated that national EPR schemes require a network of transfer stations which would serve as the infrastructure for the recovery of targeted materials.[39]

4.42 The need for adequate infrastructure was highlighted by other witnesses before the committee including Mr David West, National Campaign Director of Boomerang Alliance, who stated that the establishment of necessary infrastructure was central to EPR schemes. Using an EPR scheme for packaging as an example, Boomerang Alliance maintains that the infrastructure required can serve for other waste reduction programs:

> Because packaging is the most pervasive and widespread "waste of concern" it can provide the "critical mass" to develop recycling centres and new collection infrastructure. This infrastructure in turn allows governments to introduce cost-effective schemes for electronics, batteries, paint and chemical residuals, mobile phones etc. Our research indicates that if a national container deposit system was introduced over 2,000 convenience collection points would be established to collect common recyclables and a further 400 large scale "Drive Through Recycling Centres" to accept all forms of recyclables and problem wastes would be established at no cost to all 3 tiers of government. This level of infrastructure and investment would lead to the single largest improvement in recycling in Australia.[40]

4.43 The benefits of national schemes in relation to EPR are not limited to coordination and consistency across jurisdictions. EPRs should also provide opportunities to improve broader resource recovery infrastructure. The committee encourages the EPHC to consider options that will provide waste generators with a

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39 Mr Trevor Hockley, Consultant, Recyclers of South Australia Inc, *Committee Hansard*, 30 June 2008, p. 47.

40 Boomerang Alliance, *Submission 46*, p. 9.

convenient and accessible location to return a range of end-of-life products, in its current deliberations over products of national significance.

4.44 The need for greater investment in recycling infrastructure was also highlighted as a means of providing a more environmentally appropriate alternative to landfill. Adequate landfill levies were recognised as a means of contributing to investment in resource recovery infrastructure. Using the UK landfill avoidance scheme as one such example, Mr Nicholas Harford, General Manager, Environment, of VISY Industries Australia Pty Ltd noted:

> That kind of scheme is about putting a price signal around the landfill to create that incentive for the investment in infrastructure not only to keep the material out of landfill but to manufacture it into some valuable product.[41]

4.45 Similarly, Mr Mike Ritchie of SITA Environmental Solutions, made the point that infrastructure and planning are fundamental:

> We believe there needs to be a much more coordinated approach to waste and recycling infrastructure, both planning and funding, and we do not have a consistent planning regime for waste infrastructure in any state.[42]

4.46 Evidence before the committee emphasised the importance of recognising waste within its wider environmental, social and economic context in order to understand and address its ramifications on the community. Similarly, such evidence focused on recognising the interrelationship between waste policy with other policy spheres such as infrastructure. The committee recognises that without adequate infrastructure, the potential and effectiveness of resource recovery initiatives will be limited. Indeed, without adequate infrastructure to support resource recovery initiatives, landfill is likely to remain the country's primary response to waste generation.

Recommendation 10

4.47 The committee recommends that the Commonwealth Government, and state and territory governments audit the adequacy of existing resource recovery infrastructure and commit funding or implement policy changes which will address any deficiencies.

Organic waste management

4.48 Organic waste (comprising timber, paper, cardboard, green waste and food) disposed in landfill is recognised as one of the 'big-ticket items' of waste due to its

41 Mr Nicholas Harford, General Manager, Environment, VISY Industries Australia Pty Ltd, *Committee Hansard,* 2 July 2008, p. 18.

42 Mr Mike Ritchie, National General Manager, Marketing & Communications, SITA Environmental Solutions, *Committee Hansard*, 3 July 2008, p. 30.

significant carbon impact.[43] Table 4.1 provides a breakdown of the various types of organic waste including the weight and proportion recycled and landfilled. It shows that in aggregate, more than two-thirds of organic waste is currently disposed of in landfill rather than recycled. None of the sub-streams of organic waste achieve a recycling rate of greater than 50 per cent. The recycling rate of food waste, which makes up nearly one third of the total of organic waste, is extremely low (10 per cent).

Table 4.1—Organic waste generation in Australia 2002–03

	Total Generated (million tonnes p.a.)	Total Recycled (million tonnes p.a.)	% Recycled	Total Landfilled (million tonnes p.a.)	% Landfilled
Paper & cardboard	5	2.31	46	2.7	54
Garden organics	3.8	1.55	41	2.25	59
Food & other organics	3.2	0.3	10	2.89	90
Wood / timber	2.1	0.44	21	1.63	79
Total Organics	**14.1**	**4.6**	**32**	**9.5**	**68**

Warnken ISE, *Potential for Greenhouse Gas Abatement from Waste Management and Resource Recovery Activities in Australia*, March 2007, p. 3, submitted by Boomerang Alliance, *Submission 46*, Attachment F.

4.49 The committee acknowledges the strong commitment of certain councils which are bucking the national trend. For instance, the NSW Port Stephens Council composts approximately 81 per cent of its domestic waste, thereby diverting 16 200 tonnes (or 60 per cent) of its overall domestic organic waste from landfill.[44] The committee also heard evidence of three council areas in South Australia working with residents to separate organic waste out and to collect it separately.[45]

4.50 Approximately half of the 20 million tonnes of waste going to landfill in Australia each year is organic material. Approximately half decomposes into methane which has up to 25 times the carbon impact of carbon dioxide.[46] Organic waste disposed of in landfill is primarily responsible for the 15 million tonnes of greenhouse

43 Ms Anne Prince, Chief Executive Officer, Australian Council of Recyclers Inc, *Committee Hansard*, 3 July 2008, p. 26.

44 Port Stephens Council, *Submission 5*, p. 1.

45 Mr Jeff Angel, Director, Total Environment Centre, *Committee Hansard*, 3 July 2008, p. 53.

46 Mr Mike Ritchie, New South Wales President, Waste Management Association of Australia, *Committee Hansard*, 3 July 2008, p. 21.

gas emissions (GHGE) each year of the waste sector.[47] Mr Vaughan Levitzke, Chief Executive, Zero Waste South Australia, explained what happens to organic waste in landfill:

> If it goes into landfill it is an anaerobic environment. So this material is covered, usually within 24 hours, with soil. More waste goes in the next day on top and it is like a layer cake. Finally it is capped. Whilst it is being filled this material is breaking down, and the deeper you go in the landfill the more anaerobic the conditions and the more likelihood you have of methane generation. Landfills generate methane.[48]

4.51 In comparison, aerobically composed organics have a carbon neutral impact as Mr Mike Ritchie, New South Wales President, Waste Management Association of Australia explained:

> If the plant matter, the organics, are aerobically composted in the presence of oxygen then it has zero effect on the carbon cycle. It is a natural process that would have happened in a forest anyway, so its effect is zero. If you put those same organics into landfill, half of that organic matter decomposes into methane. That methane has a 25 times carbon-forcing effect. That contributes 15 million tonnes of emissions to Australia's emissions profile today.[49]

4.52 A number of stakeholders are successfully engaged in efforts to extract methane gas generated in the current landfill stock. In 2005, gross waste sector emissions were reduced by about 3.9 Mt CO_2-e through the capture and flaring of methane gas from landfill sites.[50] An estimated 26 per cent of methane emissions from landfill sites is either flared or used to generate renewable electricity.[51]

4.53 There are around 450 active solid-waste handling sites in Australia, however most waste volume is managed by the larger landfill sites. Fewer than 100 sites (around 20 per cent) account for more than 80 per cent of waste volume.[52]

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47 Mr Mike Ritchie, New South Wales President, Waste Management Association of Australia, *Committee Hansard*, 3 July 2008, p. 18.

48 Mr Vaughan Levitzke, Chief Executive, Zero Waste South Australia, *Committee Hansard*, 30 June 2008, p. 20.

49 Mr Mike Ritchie, New South Wales President, Waste Management Association of Australia, *Committee Hansard*, 3 July 2008, pp 20–21.

50 Australian Greenhouse Office, *Analysis of recent trends and greenhouse indicators 1990 to 2005*, September 2007, p. 45, www.greenhouse.gov.au/inventory/2005/pubs/trends2005.pdf (accessed 22 July 2008).

51 Department of Climate Change, *National Greenhouse Gas Inventory*, 2006, cited in Department of Climate Change, *Carbon Pollution Reduction Scheme Green Paper*, July 2008, p. 106.

52 Hyder Consulting, *Review of Methane Recovery and Flaring from Landfills*, October 2007, cited in Department of Climate Change, *Carbon Pollution Reduction Scheme Green Paper*, July 2008, p. 106.

4.54 However, many landfills have inadequate gas capture and management systems, which are not a regulatory requirement of some jurisdictions, whilst other landfills have no gas capture system at all.[53] In Western Australia, for example, whilst there are commitments on the part of the State Government to require landfill sites to capture or destroy methane gas emissions, there is no regulatory requirement for gas extraction systems in Western Australian landfills.[54]

4.55 The committee was told that even the most effectively run landfill cannot capture enough gas to be carbon neutral.[55] Mr Gerry Gillespie of Zero Waste Australia told the committee of recent research in the United States which estimates that capture rates may be as low as eight to fifteen per cent.[56] The overall effect is that an estimated 15 million tonnes of GHGE are generated from landfills each year.[57]

4.56 However, a contrary opinion was presented by LMS Generation who stated that emissions from well run landfills were now minimal:

> The United States Environment Protection Agency (1998) calculated that with a 75% gas collection efficiency (which is low compared to Australia) and where electricity generation from landfill gas replaces fossil fuels, it is possible to reduce the net greenhouse gas emissions from landfilled municipal waste by as much as 92%.[58]

4.57 The committee questions the logic of continuing to put organics in landfill without restraint and thereby creating an environmental liability for future generations. This is particularly so given the available alternatives which are either carbon neutral or carbon negative, including converting organics to compost, anaerobic digestion, pyrolysis to form biochar, and alternative waste treatment.[59] As long as price signals dictate that sending organic waste to landfill is the cheapest option, it will remain the primary response. Yet, the environmental costs are substantial as Mr Lawson, President of the Australian Council of Recyclers submitted to the committee:

> The issue with putting organics into landfill is that about a third of the mass of those organics decays anaerobically into methane. It has 23 to 25 times the carbon impact of carbon dioxide. So by landfilling those organics in the first place you are purposely designing to multiply your impacts by at least

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53 Mike Ritchie, New South Wales President, Waste Management Association of Australia, *Committee Hansard*, 3 July 2008, p. 20.

54 Western Australian Department of Environment and Conservation, *Submission 76*, p. 5.

55 Mr Mike Ritchie, New South Wales President, Waste Management Association of Australia, *Committee Hansard*, 3 July 2008, p. 20.

56 Mr Gerry Gillespie, President, Zero Waste Australia, *Committee Hansard*, 4 July 2008, p. 41.

57 WSN Environmental Solutions, *Submission 31*, p. 6.

58 LMS Generation, *Submission 54*, p. 2.

59 Mr John Lawson, President, Australian Council of Recyclers Inc, *Committee Hansard*, 3 July 2008, p. 20.

> eight times if you do not convert that gas to something or other. Even if you capture 75 per cent of the gas—75 per cent of that eight times—you still have double the [climate change] impact of recycling those organics, using the nutrients on land, building organic matter in Australian soils, stopping the acidification of soils and holding water…[60]

4.58 The committee takes the view that a range of measures are required to utilise rather than dispose of organic waste. As a first step, national standards in relation to gas capture of landfills must be established and applied to all landfill sites above an agreed threshold. The committee recognises the efforts of the Western Australian Government at the EPHC in this regard and encourages the EPHC to develop a nationally consistent approach for regulating landfill gas emissions.[61]

Recommendation 11

4.59 The committee recommends that the Environment Protection and Heritage Council establish national minimum environmental standards in relation to emissions from landfill operations including the reduction, capture and use of landfill gas emissions. Such standards should be applied to all landfill sites above an agreed threshold.

4.60 Organic waste can also be recycled for fertiliser and soil conditioner. The benefits of compost in terms of improving plant growth and soil structure are well known. According to the Environment Department, modern agricultural techniques have depleted organic carbon levels in Australia's soil from an estimated three per cent to less than one per cent.[62] In addition to replenishing organic carbon levels, applying recycled organic material can provide water savings in excess of 25 per cent, reduced chemical and fertiliser inputs, reduced run-off and consequent soil erosion and waterway pollution, and increased plant vitality.[63]

4.61 Organic waste returned to the food chain through farmland application as a quality composted product would eliminate the problem of landfill contamination, create local employment, provide some relief to the degradation of soils through the overuse of chemical fertiliser, boost agricultural production and save money.[64] As Mr Gerry Gillespie, President of Zero Waste Australia noted in relation to the state of the country's agricultural land:

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60 Mr John Lawson, President, Australian Council of Recyclers Inc, *Committee Hansard*, 3 July 2008, p. 20.

61 Environment Protection and Heritage Council, *Communiqué*, 17 April 2008, p. 3.

62 Department of the Environment, Water, Heritage and the Arts, *Organics and horticulture*, www.environment.gov.au/settlements/waste/organics.html (accessed 11 August 2008). The department does not, however, elaborate on the length of time over which that this depletion has occurred.

63 Department of the Environment, Water, Heritage and the Arts, *Organics and horticulture*.

64 Zero Waste Australia, *Submission 28*, p. 6.

> Seventy-five per cent of the agricultural land in this country has less than one per cent organic material, and farming is a mining, extractive industry. It takes between 60 to 90 minerals, nutrients and trace elements to grow a plant. So we are taking out to 60 to 90 and we are putting back three [nitrogen, phosphorus, and potassium by way of chemical fertilisers].[65]

4.62 According to the Fertiliser Industry Federation of Australia, around 50 per cent of the five to six million tonnes of fertiliser used in Australia each year is manufactured in Australia with the remainder imported.[66] The cost of high-nitrogen phosphate fertiliser has risen in the last twelve months from $600 a tonne to $1,700 a tonne.[67] Initiatives such as Zero Waste's *City to Soil Project*, demonstrate that organic waste in the form of compost could be substituted for expensive fertilisers. However, current price signals remain a critical obstacle to increased composting, as they indicate that it is more cost-effective to dispose of organics in landfill. As Mr Mike Ritchie, National General Manager, Marketing and Communications, of SITA stated in relation to the use of organics for compost:

> At the end of the day, that is of course the solution that Australia needs. It is amazing that, in the driest continent with the worst quality soils in the world, we did not wise up to that 50 years ago. Hopefully, as part of an emissions-trading scheme and a debate about waste and elevating these issues, that kind of cost economics would come to the fore. At the moment, it is so much cheaper to dispose of green garden waste into a dry-waste landfill in Sydney or leave it in the residual waste and send it to a putrescible landfill than it is to take it out, compost it and transport it those distances.[68]

4.63 Increasing fuel costs have ensured that it is even harder for compost to compete with nitrous fertilisers. According to Mr Gillespie, there is a stockpile of 680 000 tonnes of Australian Standard certified compost in Sydney without a market primarily because of the transportation costs.[69] Price signals need to change if compost is to become more economically viable.

4.64 The committee is of the view that the evidence adduced provides compelling reasons to reduce the large quantities of organic material going into landfill. The committee notes that there is a range of policy options that would achieve this outcome. Consideration should be given to these various options, including utilisation of Alternative Waste Technology and a landfill cap and trade scheme. These options are discussed below. The committee makes a recommendation in this regard at the end of this chapter.

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65 Mr Gerry Gillespie, President, Zero Waste Australia, *Committee Hansard*, 4 July 2008, p. 41.

66 Fertiliser Industry Federation of Australia, *Fertilizer Prices Continue to Rise*, Media Release, 5 February 2008.

67 Senator John Williams, *Committee Hansard*, 3 July 2008, p. 35.

68 Mr Mike Ritchie, National General Manager, Marketing and Communications, SITA Environmental Solutions, *Committee Hansard*, 3 July 2008, p. 36.

69 Mr Gerry Gillespie, President, Zero Waste Australia, *Committee Hansard*, 4 July 2008, p. 39.

Alternative Waste Technology

4.65 Warnken ISE has claimed that Alternative Waste Technology or Advanced Waste Treatment (AWT) has better GHGE performance than landfill.[70] AWT applies a combination of mechanical, biological and in some instances, thermal processing to recover resource value from mixed municipal waste. In Australia, AWT has generally focused on addressing the organic fraction, which is comprised of approximately half food and half garden organic waste.[71] The various options compared to landfill and their respective GHGE per 1000 tonnes of food waste are detailed in Table 4.2. This demonstrates that landfilling organic matter, even with very high levels of methane capture, are approximately twice as greenhouse intensive as the best AWT technology. Whilst AWT and other initiatives which divert waste from landfill have a demonstrated greenhouse gas benefit, the scale of the benefit will depend on the nature of the alternative.

Table 4.2—Comparative GHGE for processing 1000 tonnes of food waste

	Aerobic Compost (including AWT Mechanical Biological Treatment)	AWT Mechanical Biological Treatment combination of compost and Anaerobic Digestion	AWT Anaerobic Digestion	Landfill with 70 per cent gas capture	Landfill with best practice cap and no gas capture
Gross GHGE (tCO_2-e)	275.0	353.2	431.3	521.4	1,096.3

Warnken ISE, *Potential for Greenhouse Gas Abatement from Waste Management and Resource Recovery Activities in Australia*, Prepared by Warnken ISE for SITA Environmental Solutions, Draft for Review, March 2007, p. 33 submitted by Boomerang Alliance, *Submission 46*, Attachment F.

4.66 AWTs generally recover more resources than materials recovery facilities (MRFs). However, the principal advantage of AWTs over landfill is the environmental benefit of stabilising the material to reduce leachate formation and landfill gas generation and the production of outputs including energy, compost and other recyclables, and gas. Indeed, the New South Wales Department of Environment

70 Warnken ISE, *Potential for Greenhouse Gas Abatement From Waste Management and Resource Recovery Activities in Australia*, Prepared for SITA Environmental Solutions, Draft for Review, March 2007, Executive Summary, submitted by Boomerang Alliance, *Submission 46*, Attachment F.

71 Mr John Lawson, President, Australian Council of Recyclers Inc, *Committee Hansard*, 3 July 2008, p. 21.

and Climate Change expect that their investment in twelve AWT facilities will provide 'substantial gains in both reduction to landfill and greenhouse gas capture.'[72]

4.67 AWT have generally focused on diverting municipal waste from landfill and whilst there are substantial opportunities for diversion of C&I waste, the price signals are currently discouraging. According to WSN Environmental Solutions, AWT can recover approximately 70 per cent of materials from household residual waste by extracting recyclables whilst creating products including compost, combustible fuel, water and green energy.

4.68 The waste management industry argues that economic incentives are required if the industry is to invest in AWT facilities in any substantial way.[73] Estimates suggest that Australia requires approximately $4 billion of investment in modern waste infrastructure if it is to meet the various state government waste reduction and recycling targets.[74] This would amount to approximately fifty 100 000-tonne C&I material recovery facilities and at least fifty 100 000-tonne AWT.[75] In other words, without a substantial paradigm shift to resource recovery, and away from disposal, coupled with significant investment in infrastructure such as AWT, jurisdictions are unlikely to achieve their diversion from landfill targets.[76]

4.69 Advanced waste processing and treatment technologies designed to decrease the volume of waste disposed of in landfill are largely dependent upon the minimisation of the input of hazardous waste into the domestic waste stream. Campbelltown City Council has recently entered into a contract for the construction of an advanced waste processing and treatment facility which is expected to result in the re-use or recycling of 88 per cent of domestic waste. However, the success of this project, like any other of its kind, will depend on minimising inputs such as paints, oils, treated timber, computer hardware, motor vehicle tyres and batteries.[77] The presence of hazardous waste in the municipal waste stream can contaminate otherwise re-useable waste. One solution to addressing this potential risk is the introduction of extended producer responsibility (EPR) schemes involving take-back arrangements where waste generators can return hazardous items free of charge to the point of sale. EPR schemes are addressed specifically in chapter 5.

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72 Mr Timothy Rogers, Executive Director, Sustainability Programs Division, Department of the Environment and Climate Change, New South Wales Government, *Committee Hansard*, 3 July 2008, p. 3.

73 WSN Environmental Solutions, *Submission 31*, p. 5.

74 Waste Management News 21 April 2008 cited in WSN Environmental Solutions, *Submission 41*, p. 5.

75 Mr Mike Ritchie, New South Wales President, Waste Management Association of Australia, *Committee Hansard*, 3 July 2008, p. 24.

76 GRD Limited, *Submission 36*, p. 7.

77 Campbelltown City Council, *Submission 18*, p. 3.

Landfill cap and trade schemes

4.70 The Productivity Commission established that initiatives imposing a cap on activities such as landfill disposal, when strengthened with penalties for non-compliance would 'effectively guarantee that the target is reached.'[78] Such initiatives, termed tradeable property right (TPR) mechanisms, work by setting a quota or cap on the aggregate level of a certain activity and allocating shares of that quota to those undertaking the activity. One such initiative identified as a possibility during the course of the inquiry was the UK Landfill Allowance Trading Scheme (LATS).

4.71 Initiated in 2005, LATS sets a cap on the volume of biodegradable municipal waste sent to landfill. It was initiated as part of the European Commission Landfill Directive which sets targets for the total volume of landfilled biodegradable waste of 75 per cent by 2010, 50 per cent by 2013 and 35 per cent by 2020 relative to the 1995 level. The Schedule to the Landfill Allowances and Trading Scheme (England) Regulations 2004 determine the proportions of certain waste types deemed to be biodegradable. These range from card, paper and putrescible (green) waste at 100 per cent, to footwear, furniture and textiles at 50 per cent, to glass, plastic and metal waste at 0 per cent.[79]

4.72 Under the LATS, allowances are allocated to local government bodies responsible for municipal waste on the basis of historic landfill volumes. These allowances can be traded and surplus entitlements can be banked for future use except in target years. A credit of five per cent of entitlements from the following year's allowance is permitted except in target years. The penalty for non-compliance is £150 per tonne (equivalent to AUD $324 in August 2008). However, at the end of each scheme year (1 April to 31 March), authorities have the opportunity to trade or borrow allowances over a six month reconciliation period to ensure that they comply with their obligations.[80]

4.73 Whilst the committee recognises that differences apply in the Australian context, it recommends the consideration of a cap and trade scheme for landfill of organic matter drawing on the lessons learnt from the LATS scheme.

4.74 As noted above the committee considers there is strong evidence that authorities should seek to reduce the quantities of organic material going into landfill, and that there are different policy options that would achieve this outcome. In the

78 Productivity Commission, *Waste Management*, Report no. 38, 2006, p. 255.

79 Department for Environment, Food and Rural Affairs, *Landfill Allowance Trading Scheme (LATS), a practical guide*, February 2005, p. 4, www.defra.gov.uk/Environment/waste/localauth/lats/pdf/lats-leaflet-0405.pdf (accessed 28 July 2008).

80 Department for Environment, Food and Rural Affairs, *Landfill Allowance Trading Scheme (LATS), a practical guide*, February 2005, p. 8.

committee's view, the relative merits of each of these options should be given due consideration, including environmental, economic and social externalities.

Recommendation 12

4.75 The committee recommends that the Environment Protection and Heritage Council recommend measures to reduce the quantities of organic material going into landfill. The options considered should include utilisation of alternative waste technologies and a cap and trade scheme.

Chapter 5

Extended Producer Responsibility

5.1 This chapter considers extended producer responsibility (EPR) as a policy approach to addressing specific waste streams. It considers the principles of EPR, current national product stewardship initiatives and specific materials that may warrant further product stewardship action.

What is Extended Producer Responsibility?

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

> (1) the shifting of responsibility (physically and/or economically; fully or partially) upstream toward the producer and away from municipalities; and
>
> (2) the provision of incentives to producers to take into account environmental considerations when designing their products. While other policy instruments tend to target a single point in the chain, EPR seeks to integrate signals related to the environmental characteristics of products and production processes throughout the product chain.[1]

5.3 The Total Environment Centre identifies the key elements of EPR as:

- a financial incentive or support system that encourages maximum collection for recycling and provides a sustainable support base;
- regulation to prevent 'free riders' from undercutting those that have EPR programs;
- targets, transparency and monitoring.[2]

5.4 EPR initiatives serve as a 'polluter pays' system because a price of pollution is embedded in the supply chain.[3] Therefore, they apply a 'cradle to grave principle' to products. Under an EPR, a company must concern itself with what will become of the product at the end of its useful life as well as with making the product and how it functions. In relation to consumer goods, Boomerang Alliance maintains that 'this

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1 Organisation for Economic Co-Operation and Development (OECD), *Extended Producer Responsibility,* www.oecd.org/document/19/0,3343,en_2649_34395_35158227_1_1_1_1,00.html (accessed 31 July 2008).

2 Total Environment Centre, *Submission 67*, p. 5.

3 This was also described as an initiative which applies a 'cradle to the grave principle'. Councillor Samantha Dunn, Yarra Ranges Shire Council, *Committee Hansard*, 2 July 2008, pp 37–38.

principle shifts responsibility for recycling and waste disposal from local government to private industry and onto their customers, thereby internalizing the costs of waste management into product prices.' Thus, consumers pay for waste management at the time of purchase rather than as homeowners through local taxes.[4]

5.5 Providing an inbuilt incentive to reduce waste was identified by the Australian Conservation Foundation as a primary feature of EPR schemes:

> ...a key benefit of EPR programs is that if the producer is required to pay for waste they have an incentive to adopt designs, production processes and packaging that is less wasteful in order to gain a competitive edge in the market place. It is inherently an incentive to be less wasteful.[5]

5.6 The Boomerang Alliance argues that EPRs can be applied across the waste sector:

> EPR can be applied to all waste streams as it is based on a preventative approach to waste management rather than dealing with 'post consumer stage' issues. The physical, financial and environmental responsibility of a product's life cycle is therefore passed onto the producer.[6]

5.7 A key advantage of EPRs is that various models offer different features so as to suit the particular waste stream under consideration. EPR and product stewardship (PS) schemes can include take-back schemes, advance disposal fees, deposit refunds, tradable credits, performance targets, and awareness raising.[7] Ms Jane Castle, Resource Conservation Campaigner, Total Environment Centre, explained:

> There are lots of models, and the refundable deposit is one of those models. But there are also up-front levies, which is a system that the tyre industry, for example, is looking at. There are also systems where the levy is not actually transparent to consumers but is added to the initial price of the product. Then the producer responsibility organisation, which is the group of producers undertaking the recovery, will fund their own system to collect and recycle those products. So EPR is an umbrella and there are plenty of tools—and they can be used in combination as well.[8]

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4 Boomerang Alliance, *Submission 46*, p. 8.

5 Australian Conservation Foundation, *Submission 71*, p. 2.

6 Boomerang Alliance, *Submission 46*, p. 8.

7 Witnesses tended to use the term 'EPR' rather than product stewardship and for that reason, it will be used throughout the report unless reference is made to specific product stewardship initiatives. The Productivity Commission defines product stewardship (PS) as an approach which recognises shared responsibility for the environmental impacts of a product throughout its full life cycle, including end of life management, and seeks to reduce adverse impacts and internalise unavoidable costs within the product price, through action at the point(s) in the supply chain where this can be most effectively and efficiently achieved. Productivity Commission, *Waste Management,* Report no. 38, 2006, pp xxii, xxxvi & 266.

8 Ms Jane Castle, Resource Conservation Campaigner, Total Environment Centre, *Committee Hansard*, 3 July 2008, pp 52–53.

5.8 The Australian Council of Recyclers, describes the various options in relation to EPR as follows:

> Approaches could include the implementation of 'deposit' legislation applied to both materials and complex products to facilitate multi-material processing and recovery or an EPR/PS payment at point of sale, with graduated benefit payments made on the sale of recycled commodity, relative to highest resource value and scaled according to the delivery of eco-service benefits.[9]

5.9 The New South Wales Department of Environment and Climate Change highlighted the need for flexibility in EPR design:

> The EPR challenge for governments and industry sectors in Australia stems from the fact that there is no single solution or system for managing end of life products and solutions will need to be purpose-designed and tailored to the characteristics of the Australian supply chain for each particular product.[10]

5.10 According to the Productivity Commission, the effectiveness of EPR schemes will depend on the extent to which any resulting change in behaviour addresses the market failures:

> This [the effectiveness of EPR schemes] will be a function of a range of factors, including the extent of non-participation or free riding; how important the Australian market is to producers; how orphaned and existing products are dealt with; the extent to which a scheme's administration is centralised; and the ability to target the most appropriate parties.[11]

5.11 SITA Environmental Solutions call for EPR schemes to be introduced for waste materials which:

- Can be classified as uniquely identifiable;
- Have a known generator who can be identified;
- Can be diverted from landfill cost effectively; and
- Have a higher and better resource value or assist in protecting the environment through pollution avoidance.[12]

5.12 The New South Wales, Victorian and Western Australian Governments have each identified a range of specific waste streams that are considered suitable for management by an EPR scheme.[13] The New South Wales Government's EPR list, for

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9 Australian Council of Recyclers Inc, *Submission 81*, p. 5.

10 Department of Environment and Climate Change, New South Wales Government, *Submission 16*, Attachment B, p. 29.

11 Productivity Commission, *Waste Management*, Report no. 38, 2006, p. 276.

12 SITA Environmental Solutions, *Submission 53*, Attachment A, p. 29.

13 Productivity Commission, *Waste Management*, Report no. 38, 2006, p. 268.

instance, targets 17 products ranging from cigarette butts to treated timber.[14] At the same time, national EPRs have been established, or are being pursued by the Environment Protection and Heritage Council (EPHC), to address key waste issues considered to be of national interest. In the case of New South Wales, of its 17 products, four (lightweight plastic bags, tyres, televisions and computers) have been identified as priorities for national action by the EPHC.[15] Specific examples are detailed later in this chapter.

5.13 Each of the state governments listed above have developed similar, but nonetheless distinct criteria for assessing which waste streams to target.[16] The Productivity Commission noted in its report that the EPR criteria of jurisdictions tended to be unfocused and potentially inconsistent:

> For example, the NSW Government lists community concern about a waste as one of its criteria, but such concern may not reflect the waste's actual impact, which is another criterion used by the Government. There is little indication of the weight given to different criteria when such inconsistencies arise, or whether specific criteria take precedence over others.[17]

5.14 The need for regulatory consistency across jurisdictions in terms of an EPR approach was highlighted in evidence before the committee given that many such products are traded nationally. As Mr Mike Ritchie, New South Wales President of the Waste Management Association of Australia, noted:

> It is important that the Senate look at EPR schemes around things like TVs and computers, and industry would encourage that. Business models have been developed by industry that are ready to go. What we need is the national government to introduce those co-regulatory arrangements... We have this plethora of schemes with no consistency in planning regimes...[18]

5.15 One of the key arguments of submitters in support of national EPR initiatives was in relation to the expected coordination and streamlining benefits across all jurisdictions. The Queensland Government Environmental Protection Agency stated the following of nationally driven product stewardship initiatives:

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14 Department of Environment and Climate Change, New South Wales Government, *NSW Extended Producer Responsibility Priority Statement 2007, Public Consultation Report*, June 2008, p. 2, www.environment.nsw.gov.au/resources/warr/08322EPRstatement07consRpt.pdf (accessed 14 August 2008).

15 Department of Environment and Climate Change, New South Wales Government, *NSW Extended Producer Responsibility Priority Statement 2007, Public Consultation Report*, June 2008, p. 2.

16 These are reproduced in Productivity Commission, *Waste Management*, Report no. 38, 2006, p. 270.

17 Productivity Commission, *Waste Management*, Report no. 38, 2006, p. 270.

18 Mr Mike Ritchie, New South Wales President, Waste Management Association of Australia, *Committee Hansard*, 3 July 2008, p. 18.

> This will provide a truly nationally consistent approach, rather than relying on state and territories to implement consistent and complementary legislation within a reasonable period.
>
> The Commonwealth Government has already demonstrated leadership in establishing the Used Oil Product Stewardship Scheme. There may be a number of other end-of-life products that would benefit from a similar Commonwealth approach, particularly where it may be more efficient for the Commonwealth to use its excise powers.[19]

5.16 As flagged in chapter 4, the EPHC has adopted a National Waste Framework, which provides a systematic framework for the EPHC to identify and address waste management issues of national importance. The framework, which dates back to 2002,[20] sets out a number of standard 'filter criteria' relating to the significance of the problem, the extent of the market, the role of government, the benefits of national action and which level of government has the power and responsibility to act.[21]

5.17 Once waste issues of national importance have been identified, it is up to the EPHC to determine the preferred approach. If a national regulatory approach is being considered, the EPHC's related body, the National Environment Protection Council (NEPC) is responsible for making National Environmental Protection Measures (NEPMs) and assessing and reporting on their implementation. The EPHC has nominated eight 'threshold criteria' for EPR schemes involving co-regulation arrangements. These include clearly-identified costs and benefits, commitment and participation by most firms in the industry, a national approach, and a clear case that regulation is needed to ensure the scheme is effective.[22]

5.18 Despite the limited powers of the Commonwealth Government to engage directly in waste management issues, it has played an increasing role in the development of harmonised national approaches for key products.[23] This strategic involvement is primarily focused on the development of consistent national approaches for key product sectors.

5.19 The Department of the Environment, Water, Heritage and the Arts, (Environment Department) suggested that in light of the emergence of national priorities including climate change and water conservation, it is timely to review the

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19 Queensland Government Environmental Protection Agency, *Submission 80*, p. 4.

20 Environment Protection and Heritage Council, *Communiqué – National Environment Ministers act on air quality and waste management,* Second meeting of the EPHC, 11 October 2002, www.ephc.gov.au/pdf/EPHC/communique_oct_2002.pdf (accessed 14 August 2008).

21 The EPHC National Waste Framework is reproduced in Department of the Environment, Water, Heritage and the Arts, *Submission 78*, Appendix A.

22 Environment Protection and Heritage Council, *Industry Discussion Paper on Co-regulatory Frameworks for Product Stewardship*, December 2004, p. 10.

23 Department of the Environment, Water, Heritage and the Arts, *Submission 78*, p. 12.

'adequacy and transparency' of the EPHC waste framework for 'setting nationally agreed waste priorities.'[24] The committee agrees with this assessment.

Recommendation 13

5.20 The committee recommends that in light of the emergence of national priorities including climate change and water conservation, the Environment Protection and Heritage Council (EPHC) review the adequacy and transparency of the EPHC waste framework.

National Extended Producer Responsibility initiatives

5.21 After a brief discussion of the implementation options for national EPR initiatives, the remainder of this chapter explores the specific detail of the following prominent national EPR schemes:

- Used oil;
- Consumer packaging;
- Beverage containers;
- Newsprint;
- Tyres;
- E-waste; and
- Compact fluorescent lamps.

5.22 National Environment Protection Measures (NEPMs) provide the regulatory underpinning for state, territory and Commonwealth governments to harmonise legislation. Current waste-related NEPMs include the Used Packaging NEPM which underpins the National Packaging Covenant. A draft NEPM on used tyres and a regulatory impact statement have been released for public consultation.[25]

5.23 The EPHC, through its working groups, is currently considering different strategies to address other product stewardship options for waste it considers to be of national significance. These include televisions, computers, litter reduction and nationally consistent approaches to methane capture from landfill.[26] According to the Environment Department:

Products currently on the EPHC waste work program include: newsprint, packaging (including the National Packaging Covenant and container deposit schemes), plastic bags and degradable plastics, electrical and electronic goods (televisions, computers

24 Department of the Environment, Water, Heritage and the Arts, *Submission 78*, p. 13.

25 Environment Protection and Heritage Council, *Tyres NEPM*, www.ephc.gov.au/nepms/product_stewardship/product_stewardship.htm (accessed 14 August 2008).

26 Department of the Environment, Water, Heritage and the Arts, *Submission 78*, p. 2.

and mobile phones) and tyres. In addition, the EPHC is investigating whether there is justification for some form of national recycling scheme for compact fluorescent lamps.27

5.24 NEPMs provide the legislative basis for co-regulatory arrangements. Other types of strategies utilised across jurisdictions to address waste management issues include regulatory schemes (of which used oil is a current national example) and voluntary schemes (including newsprint).[28]

5.25 Under co-regulatory arrangements, for example, industry is responsible for the establishment of a self-regulatory scheme with Commonwealth, state and territory governments having responsibility to support the scheme with regulation that addresses non-compliers or free-riders under a NEPM.

5.26 The benefits of a national approach to EPRs are highlighted by the EPHC which recognised the benefits that co-regulatory arrangements enable:

> It is important for Australia to develop a national approach to product stewardship that ensures measurable environmental improvement within the Australian context while maintaining consistency with approaches and outcomes internationally. Voluntary sector initiatives underpinned by a regulatory safety net to capture non-participants (known as co-regulation) is an approach that is supported by industry in Australia.[29]

5.27 In terms of prioritising waste streams and meeting community expectations in relation to resource recovery, Ms Mary Harwood, First Assistant Secretary, Department of the Environment, Water, Heritage and the Arts, made the following remarks:

> There is strong community interest in recycling and in addressing the various waste streams, in terms of both greater efficiency in production and creating less waste in the first place, as well as handling better the waste that is produced. The initiatives that flow through the EPHC are a reflection of what the ministers see as the priority areas for action...[30]

5.28 Evidence before the committee highlighted the slow progress that has been made by the EPHC in establishing EPR initiatives for various products identified as waste issues of national significance. Most notable in this regard are the negotiations regarding a product stewardship initiative for televisions and tyres which have taken

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27 Department of the Environment, Water, Heritage and the Arts, *Submission 78*, p. 5.

28 Department of the Environment, Water, Heritage and the Arts, *Submission 78*, p. 6.

29 Environment Protection and Heritage Council, *Product Stewardship,* www.ephc.gov.au/nepms/product_stewardship/product_stewardship.htm (accessed 5 August 2008).

30 Ms Mary Harwood, First Assistant Secretary, Department of the Environment, Water, Heritage and the Arts, *Committee Hansard*, 4 July 2008, p. 74.

the best part of a decade.[31] The committee is concerned that effectively addressing key waste areas requires timely and productive action on the part of the EPHC.

Recommendation 14

5.29 The committee recommends that the Environment Protection and Heritage Council expedite the establishment of Extended Producer Responsibility arrangements for identified products of national significance.

5.30 The committee recognises that whilst expediting EPR arrangements for identified products is necessary, reducing the risk of delays in establishing new arrangements in the future is essential.

5.31 The need for greater responsiveness and flexibility on the part of the EPHC in relation to EPR initiatives is heightened given the growing number and range of products identified for EPR initiatives by state and territory governments in their own jurisdictions (see paragraph 5.12). Without a timely and effective national response, national markets can be disrupted by 'unnecessarily inconsistent measures.'[32]

5.32 In July 2005, the NEPC initiated the development of a generic NEPM for product stewardship. The concept was to develop a NEPM that was a broad and flexible co-regulatory arrangement which could be used as a tool for dealing with a range of future products. Of the concept, the EPHC noted:

> The NEPM was to consist of a generic framework that establishes guidelines and principles to be applied by governments in determining the merits of a co-regulatory approach for a particular sector, and guides the development of product stewardship agreements for particular sectors. The NEPM was also to include schedules relating to sector-specific product stewardship agreements setting out the requirements for non-participants captured under the regulatory safety net for a particular sector.[33]

5.33 In June 2007, the NEPC resolved to limit the scope of the proposed product stewardship NEPM to cover only used tyres.[34] Of this decision, Ms Mary Harwood of the Environment Department stated:

> There has been work on looking at a generic product stewardship NEPM to which you could add products by way of particular schedules with targets et cetera. For the moment, the ministers have decided to hold that work pending development of a robust regime for tyres, essentially because that

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31 Department of the Environment and Heritage cited in Productivity Commission, *Waste Management*, Report no. 38, 2006, p. 279.

32 Ms Mary Harwood, First Assistant Secretary, Department of the Environment, Water, Heritage and the Arts, *Committee Hansard*, 4 July 2008, p. 74.

33 Environment Protection and Heritage Council, *NEPMs, Product Stewardship*, www.ephc.gov.au/nepms/product_stewardship/product_stewardship.htm (accessed 29 August 2008).

34 Environment Protection and Heritage Council, *NEPMs, Product Stewardship*, www.ephc.gov.au/nepms/product_stewardship/product_stewardship.htm (accessed 29 August 2008).

> work was more advanced and they wanted to see how it developed. The work that is out at the moment for public consultation is a draft NEPM on used tyres and a regulatory impact statement for it.[35]

5.34 A generic product stewardship NEPM that is adequately flexible to provide for product stewardship initiatives, including a container deposit system, which is applicable to a range of products and sectors should be re-considered. It should enable the addition of products and sectors in a timely and streamlined fashion via regulation in the future. The overall objective being to provide the underpinning legislative basis for EPR initiatives.

5.35 To establish an effective generic product stewardship NEPM may require changes to the *National Environment Protection Act 1994* (the Act). The committee considers that such deliberations should extend to an overall review of the adequacy of the Act. This review would be timely given its proposed national resource efficiency strategy and recommendation to review the EPHC waste framework.

Recommendation 15

5.36 The committee recommends that the Environment Protection and Heritage Council revitalise the product stewardship National Environment Protection Measure to address waste issues of national significance in a timely and coordinated manner.

5.37 In addition, the committee is concerned by the lack of available information on the EPHC's work program and encourages review of the EPHC website in order to ensure that clear and adequate information is provided in a timely manner.

Oil

5.38 Each year, more than 500 million litres of lubricating oil is sold in Australia while approximately 280 to 300 million litres of used oil, a highly concentrated and toxic material, is generated by industry and the community and is available for recycling.[36]

5.39 In 2000, an estimated 150–165 million litres of used oil was recycled in Australia. Of the remaining 100 million litres of oil not recycled, some found its way into catchments, waterways and soils leading to environmental degradation.[37] In 2001, the Australian Government implemented a mandated product stewardship levy scheme for oil under the *Product Stewardship (Oil) Act 2000*. Directed at protecting the environment from inappropriate disposal of used oil, the scheme comprises three components:

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35 Ms Mary Harwood, First Assistant Secretary, Department of the Environment, Water, Heritage and the Arts, *Committee Hansard*, 4 July 2008, p. 74.

36 Australian Bureau of Statistics, *Australia's Environment: Issues and Trends*, *Solid Waste in Australia*, Report no. 4613.0, 2006.

37 Department of the Environment, Water, Heritage and the Arts, *Submission 78*, p. 6.

- a levy collected through Tax and Customs legislation;
- a benefit payment to recyclers to encourage increased collection and recycling of used oil; and
- transitional assistance funding of $34.5 million provided for strategic initiatives to increase used oil recycling and ensure a sustainable oil recycling industry. This funding commenced in July 2000 and ceased in June 2007.[38]

5.40 Under the initiative, the levy (which is fixed at 5.449 cents per litre) is paid by oil producers and importers for petroleum-based oils and their synthetic equivalents. The levy is used to provide an incentive for oil recyclers to increase the amount of used oil recycled:

> This ensures that some of the costs of used oil recycling are borne by the markets that gain the benefit from the production and use of that oil, rather than from public monies or other markets. In economic terms, it 'internalises the externalities'.[39]

5.41 Since the program's inception, there has been an increase in used oil recycling by approximately 40 per cent from 150–165 million litres before 2001 to 220 million litres in 2005–06.[40] The Environment Department considers, however, that despite the gains the program has made, between 60 and 100 million litres of used oil remains unaccounted for.[41] This figure may be considerably higher given that in Queensland alone, up to 100 million litres of oil are unaccounted for each year with only about 30 million litres recycled.[42]

5.42 The importance of an incentive for industry to recycle waste oil was highlighted by the Western Australian Local Government Association (WALGA). According to its evidence, the initiative has led to a situation in Western Australia where oil recovery had increased, but without any parallel market development and industry responsibility to accompany it, local government was left with stockpiles of used oil and no method of disposal.[43]

5.43 Whilst such initiatives are directed at shifting the onus to deal with such materials away from local councils and towards consumers and industry, under current

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38 Department of the Environment, Water, Heritage and the Arts, *Submission 78*, p. 6.

39 Department of the Environment, Water, Heritage and the Arts, *Product Stewardship Levy (excise),* www.oilrecycling.gov.au/levy.html (accessed 14 August 2008).

40 Department of the Environment, Water, Heritage and the Arts, *Submission 78*, p. 6.

41 Department of the Environment, Water, Heritage and the Arts, *Product Stewardship for Oil program*, www.oilrecycling.gov.au/program/index.html (accessed 14 August 2008).

42 Queensland Environmental Protection Agency, *Recycle used oil: don't spoil our environment*, Fact Sheet, WasteWise Queensland, August 2006. www.epa.qld.gov.au/publications/p01566aa.pdf/Recycle_used_oil_dont_spoil_our_environment.pdf (accessed 14 August 2008).

43 Western Australian Local Government Association, *Submission 44*, p. 3.

dynamics, WALGA maintain that local governments are left to pay for the recycling of used oil in Western Australia.[44] Ms Rebecca Brown, Manager, Waste and Recycling, WALGA, stated that the problem was that 'there is a levy on the products but there is no direct responsibility on the person or company producing the product, for its end of life.'[45]

5.44 Ms Brown pointed to DrumMUSTER, the recycling program for used agricultural chemical containers, as a successful EPR scheme where 'industry have actually taken responsibility for running the scheme.'[46] Mr John Pritchard, Executive Director, Policy and Research, Australian Local Government Association described the program:

> DrumMUSTER was a collaboration involving the National Farmers' Federation, which are the primary users of farm chemicals and veterinary products that are used and manufactured by agricultural and chemical producers. The partnership between the National Farmers' Federation, the chemical manufacturers and the Australian Local Government Association was formed. We were able to get ACCC approval for the levying of the 4c per litre of chemicals which funds the scheme. The drumMUSTER management board, in cooperation with councils, established the infrastructure, which consists of depots at the landfill facility run by a council, where farmers are required to return used and properly washed chemical containers, which are left at the depot and subsequently picked up by contractors and put into the recycling system.[47]

5.45 The used oil and DrumMUSTER initiatives demonstrate that when producers take responsibility for their products at end-of-life, they have a strong incentive to 'maximise the ease and affordability of discharging that responsibility.'[48] As previously discussed in this chapter, evidence before the committee highlighted the importance of incorporating an incentive into EPRs for producers to ensure that their product is recyclable and recycled.

5.46 At its June 2007 meeting, the EPHC discussed what it termed the 'acute problem' facing Western Australia in the disposal of used oil:

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44 Western Australian Local Government Association, *Submission 44*, p. 3.

45 Ms Rebecca Brown, Manager, Waste and Recycling, Western Australian Local Government Association, *Committee Hansard*, 30 June 2008, p. 53.

46 Ms Rebecca Brown, Manager, Waste and Recycling, Western Australian Local Government Association, *Committee Hansard*, 30 June 2008, p. 53.

47 Mr John Pritchard, Executive Director, Policy and Research, Australian Local Government Association, *Committee Hansard*, 30 June 2008, pp 53–54.

48 Western Australian Local Government Association, *Submission 44*, p. 3.

> Previous users of waste oil as burner fuel have converted to using fuel such as natural gas, and waste oil collections have therefore slowed or stopped, resulting in most of the State's storage capacity for used oil being filled.[49]

5.47 Subsequently at its April 2008, the EPHC noted that:

> Short-term relief from the over abundance of used oil has been achieved in Western Australia via the export of used oil, blended to make burner fuel. However, this is considered an interim measure and Western Australia may face continuing challenges in managing used oil in the future. Ministers asked [the] Standing Committee to make a submission to the independent review of the Product Stewardship for Oil Program, identifying issues and solutions to the problem of excess used oil and recommending preventive measures to avoid similar occurrences in the future.[50]

5.48 Section 36 of the *Product Stewardship (Oil) Act 2000* (the Act) requires an independent review of the Act four years after its commencement. Focused on the operation of the Act, relevant provisions of customs and excise legislation, and the extent to which the Act's objectives have been achieved, the second independent review is due for completion at the end of 2008. A discussion paper for consultation in this regard is due for release in September 2008.

5.49 The committee notes the successes achieved by the waste oil program in increasing the amount of waste oil being recovered. At the same time, the need for a review of the used oil product stewardship initiative is clear, especially given the stockpiles of oil in Western Australia and conflicting statistics from Queensland. The review provides an opportunity for modifications to the initiative enabling greater producer responsibility.

5.50 The committee encourages the EPHC Standing Committee to identify possible solutions to increase used oil recycling in Western Australia and any modifications required to the product stewardship initiative to enable greater producer responsibility.

Consumer packaging

5.51 Total packaging waste generated in Australia each year is just over 4.2 million tonnes, or around 10 per cent of Australia's waste generation.[51] The National Packaging Covenant (the Covenant) is the voluntary component of a co-regulatory arrangement between industry and governments which is based on the principle of shared responsibility amongst all stakeholders in the packaging supply chain and all

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49 Environment Protection and Heritage Council, *Communiqué – Climate Change and Water Top Ministers' Agenda*, 2 June 2007, www.ephc.gov.au/pdf/EPHC/Comm_02_06_07.pdf (accessed 14 August 2008).

50 Environment Protection and Heritage Council, *Communiqué – Ministers Seek Sustainable Solutions*, 17 April 2008, www.ephc.gov.au/pdf/EPHC/Comm_17_04_08.pdf (accessed 14 August 2008).

51 Australian Food and Grocery Council, *Submission 56*, p. 2.

spheres of government.[52] In operation since 1999 as part of efforts to promote shared responsibility and lifecycle management of packaging and paper, the Covenant has 647 industry and government signatories representing approximately 80 per cent of packaging used in Australia.[53]

5.52 This industry self-regulating instrument addresses all stages of the packaging chain and is designed to 'minimise the environmental impacts arising from the disposal of used packaging, conserve resources through better design and production processes and facilitate the re-use and recycling of used packaging materials.'[54] The Covenant seeks to improve the sustainability of packaging and the efficiency of kerbside and away-from-home recycling.

5.53 Signatories to the Covenant are expected to apply its principles in relation to the purchase of raw materials; purchase of packaging goods and paper; disposal of used packaging and paper; and materials recovery and the purchase of recovered materials.[55] The regulatory underpinning is provided by the Used Packaging Materials National Environmental Protection Measure, designed to deal with free riders and non-signatories and is applied at the jurisdictional level.[56]

5.54 Phase one of the Covenant and its respective NEPM expired in July 2005. A 2004 evaluation and subsequent agreement of all stakeholders to strengthen the model led to changes to the Covenant. Phase two of the Covenant (2005–2010) provides an upgraded version of the Environmental Code of Practice for Packaging which is a statement of general principles for the design of environmentally responsible packaging. The 2004 review established that delivering measurable results, implementing increased compliance and enforcement regimes and providing adequate resources and funding for administration were required if the Covenant model was to continue.[57] Thus, signatories have committed to three overarching targets relating to waste reduction and increased recycling:

- increasing the amount of post-consumer packaging recycled to 65 per cent by 2010 from its current rate of 48 per cent (2003 baseline data);

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52 The National Packaging Covenant Council, *The National Packaging Covenant*, 15 July 2005 to 30 June 2010, p. 1, www.ephc.gov.au/pdf/upm/Covenant_July_05.pdf (accessed 2 June 2008).

53 Department of the Environment, Water, Heritage and the Arts, *Submission 78*, p. 7.

54 The National Packaging Covenant Council, *The National Packaging Covenant*, 15 July 2005 to 30 June 2010, p. 1

55 Department of the Environment and Water Resources, *National Packaging Covenant*, Action Plan July 2006 to June 2008, p. 4, www.environment.gov.au/settlements/publications/waste/covenant/pubs/national-packaging-covenant-action.pdf (accessed 2 June 2008).

56 Environment Protection and Heritage Council, *Used Packaging Materials NEPM*, www.ephc.gov.au/nepms/upm/upm_intro.html (accessed 19 August 2008).

57 National Packaging Covenant Council, *Annual Report,* June 2004, p. 25, www.packagingcovenant.org.au/documents/File/NPC_June_2004_report.pdf (accessed 18 August 2008).

- increasing the recycling of materials that are currently either not recycled or recycled at low rates (due to their design, lack of collection/processing infrastructure or lack of markets), from the existing 10 per cent recycling rate (2003 baseline data) to 25 per cent by 2010;
- ensuring that there is no increase in the amount of packaging disposed of to landfill (against 2003 baseline data).[58]

5.55 To assist the Covenant reach its goals, it has been modified to include key performance indicators and improved compliance procedures and has expanded the recovery schemes to include material generated away from home and in workplaces (commercial, industrial and government premises) as well as in the home.[59]

5.56 Under the Covenant, an independent evaluation will report on progress towards the goals by 31 December 2008. The review is currently underway and its results are expected to be presented by the National Packaging Covenant Council at the next EPHC meeting in November 2008.[60] If the evaluation demonstrates that progress against targets is not satisfactory, the 'EPHC and/or participating jurisdictions will give due consideration to the development and implementation of alternative policy options in full consultation with all stakeholders, as a replacement for the Covenant/NEPM model upon its expiry.'[61]

5.57 In regard to whether the Covenant would reach its 65 per cent recycling target for post-consumer packaging, Mr Tony Mahar, Director, Sustainable Development, Australian Food and Grocery Council stated:

> When the covenant was established, the agreed baseline was at 48 per cent and the targets were set at 65 per cent, which leaves a 17 per cent increase over the five years. We would like to think that we would have achieved half of that increase by the end of the covenant…[62]

5.58 The Covenant was strongly criticised by a number of submitters. Mr Jeff Angel, Director of the Total Environment Centre and community representative on the National Packaging Covenant Council noted:

> The covenant is the prime defence of the packaging industry against regulation it does not like. It was born in a political environment; it was not born as an effective strategy on waste recycling for post-consumer

58 The National Packaging Covenant Council, *The National Packaging Covenant*, 15 July 2005 to 30 June 2010, p. 16.

59 The National Packaging Covenant Council, *The National Packaging Covenant*, 15 July 2005 to 30 June 2010, p. 2.

60 Environment Protection and Heritage Council, *Communiqué*, 17 April 2008, p. 3

61 The National Packaging Covenant Council, *The National Packaging Covenant*, 15 July 2005 to 30 June 2010, p. 20.

62 Mr Tony Mahar, Director, Sustainable Development, Australian Food and Grocery Council, *Committee Hansard*, 4 July 2008, p. 24.

> packaging. It has sector-whole and material-specific targets, which are currently well below their levels. There are claims of big improvements that will come from new projects that the packaging covenant is currently contributing to. But in fact those claims are pure speculation based on figures supplied by the grant applicants. The projects have not been completed, in the main, nor has any sustainable collection infrastructure been put in place to continue any claim recovery from a single project. They are single, one-off exercises and the projected recovery figures are simply the optimistic claims of the applicants for the grants.[63]

5.59 In a similar vein, Mr David West, National Campaign Director of the Boomerang Alliance explained that the Covenant has not shown any improvement in recycling rates:

> We have had a National Packaging Covenant in place to manage packaging for some eight years, with some $20 million of federal and state government revenues being invested in that, that does not show any improvement in recycling rates, any measurable actions in litter or any measurable action on the priority of dealing with the away-from-home sector.[64]

5.60 Although it appears, based on Mr Mahar's evidence, that the Covenant is likely to fall well short of one of its key overarching targets, the committee is of the view that the EPHC should fully consider the information presented by the National Packaging Covenant Council in November 2008 before deciding on what further action or new policy options are required.

Beverage containers

5.61 Although there is some uncertainty about the precise figure, beverage containers account for around 10 per cent of municipal waste generation.[65] The committee received considerable evidence both in support of and against container deposit legislation (CDL) as an extended producer responsibility initiative. The committee recognises that it is an issue in which industry stakeholders on both sides of the argument have invested considerable time and energy over many years.

5.62 The committee notes EPHC investigations in relation to a national container deposit scheme are currently underway. The committee recognises that CDL has the potential to increase drink container recycling and also acknowledges the potential for a national CDL to:

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63 Mr Jeff Angel, Director, Total Environment Centre, *Committee Hansard*, 3 July 2008, pp 49–50.

64 Mr David West, National Campaign Director, Boomerang Alliance, *Committee Hansard*, 2 July 2008, p. 2.

65 Mr Matthew Warnken, Managing Director, Crucible Carbon, *Committee Hansard*, 3 July 2008, p. 66.

- utilise reusable containers;
- include all forms of containers;
- provide infrastructure that can be utilised for the collection of other material under similar product stewardship arrangements;
- serve as a system that will complement rather than compete with kerbside recycling;
- provide environmental and social benefits including GHGE abatement, water, energy and raw material savings, and employment;
- encourage a cultural shift from littering to recycling behaviour evidenced in South Australia in relation to away-from-home recyclable waste;
- enjoy considerable public support and community engagement; and
- improve the corporate image of beverage companies.

5.63 The committee encourages the EPHC to fully explore these opportunities as well as the cost impacts and all the options available to it in relation to a national container deposit system.

South Australia container deposit legislation

5.64 South Australian container deposit legislation (CDL) was introduced in 1977 and extended in 2003 beyond beer and soft drink containers to include non-carbonated (non-alcoholic) soft drinks; fruit juice and flavoured milk containers under one litre; and alcoholic beverages in containers up to three litres.[66] With the extension of the scheme, the overall recycling rate has dropped from 84 per cent to 70 per cent. However, the recycling rate varies across commodities as the rate for newly introduced materials such as liquid paperboard (used for flavoured milk cartons) is about 42 per cent compared to 80 per cent for glass beer bottles which were part of the original scheme.[67]

5.65 Equating to 33 cents per container in today's monetary value, the 5 cent redeemable deposit introduced in 1977 provided a strong economic incentive to recycle.[68] In the intervening years, the relative value of the 5 cent deposit has decreased as the purchase price for beverage containers has increased. As a means of increasing its incentive value and to encourage more recycling, South Australia has

66 WCS Market Intelligence & WME Environment Business Media, *The Blue Book – Australian Waste Industry*, 2008, p. 29.

67 Mr Peter Dolan, Director, Science and Sustainability, South Australian Environment Protection Authority, *Committee Hansard*, 30 June 2008, p. 14.

68 Mr Neville Rawlings, President, Recyclers of South Australia Inc, *Committee Hansard*, 30 June 2008, p. 42.

announced an increase of the deposit amount to 10 cents to be introduced from 1 September 2008.[69]

5.66 In terms of the operation of the system, beverage manufacturers pay a 5 cent deposit and an agreed handling fee (usually 3 cents per item) to a collection coordinator. These funds are retained by the collection coordinator until the container is returned to a recycling depot for recycling. The depot sorts the containers and sends them to the relevant collection coordinator. The collection coordinator pays the recycling depot back the 5 cent deposit and handling fee and the containers are then sold to recyclers.[70]

5.67 There are 110 privately operated drop-off centres for CDL materials and other recyclables in South Australia enabling convenience and accessibility.[71] These centres account for about 66 per cent by weight of all commodities returned through recycling centres and kerbside recycling combined in South Australia.[72] This amounts to over 420 million containers each year of which 168 million are aluminium cans and 140 million glass bottles.[73]

5.68 Evidence before the committee suggested that the South Australian CDL is effective as a financial incentive-based recycling scheme given the return rates which are set to improve with a higher deposit.[74] Evidence also highlighted the effectiveness of the scheme in reducing litter and capturing waste generated away-from-home. Mr Ian Kiernan, Chairman of Clean Up Australia noted:

> We know that South Australia has enjoyed a recycling rate for cans and bottles of up to 85 per cent, while the rate in other states is less than half of this. The incentive works there. South Australia is the only state where beverage containers are not among the five most commonly collected types of rubbish on Clean Up Australia Day.[75]

5.69 A number of witnesses including the Boomerang Alliance and its affiliates, and the Australians for Refunds on Cans and Bottles highlighted the environmental

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69 Mike Rann, Premier of South Australia, *Empty drink containers now worth more*, 31 August 2008, www.ministers.sa.gov.au/news.php?id=3619 (accessed 2 September 2008), Environment Protection Authority (South Australia), *Container deposit refunds*, www.epa.sa.gov.au/cdl.html (accessed 2 September 2008).

70 Productivity Commission, *Waste Management*, Report no. 38, 2006, p. 239.

71 Government of South Australia, *Submission 83*, pp 8–9.

72 Government of South Australia, *Submission 83*, p. 17.

73 Government of South Australia, *Submission 83*, p. 8.

74 Mr Dan Ryan, Chief Executive Officer, Scouts South Australia, *Committee Hansard*, 30 June 2008, p. 7; Mr Peter Dolan, Director, Science and Sustainability, South Australian Environment Protection Authority, *Committee Hansard,* 30 June 2008, p. 22.

75 Mr Ian Kiernan, Chairman, Clean Up Australia, *Committee Hansard,* 3 July 2008, p. 62.

benefits of the CDL in terms of substantial greenhouse gas, water and energy saving.[76] Moreover, the Boomerang Alliance noted:

> In addition, CDL provides materials for remanufacturing that offset the need for virgin materials. CDL in South Australia contributes in the order of $720,000 or 40% towards the total value of replacement of virgin materials each year. In addition to this figure, energy savings from utilising recycled material rather than processing virgin materials are estimated to be up to 95%, resulting in not only cost savings but reduced greenhouse gas emissions.[77]

5.70 The CDL scheme has made a positive contribution as a fund-raising mechanism for charities and community groups including Scouts South Australia.[78] Finally, the scheme has contributed to a culture of intolerance to litter and awareness of waste. These social and awareness-raising benefits, which are often overlooked were described by Mr John Phillips OAM, Executive Director of Keep South Australia Beautiful Environmental Solutions:

> Some of the economic benefits flow back into the community through the Scouts, the footy club, the netball club or whatever it is. That is their annual fundraising method. Businesses do the same. They collect their 5c deposits in the kitchen and then they have their staff Christmas party based on how much is raised during the year. So I think it is part of the culture, but there are a lot of economic benefits and social benefits that flow. It is the mechanism that allows us to be engaged with the community about other things. The average person really does not know how to wrap their mind around emissions trading or global warning. They just do not understand it. But simply by talking about litter, purchasing habits and recycling, you can engage with them on some of those complex issues in a simple way. We see that with our education centres and our school programs, whether they are about water, energy, waste or biodiversity. You can use it as a tool. I think the community need to have that sort of simplicity when it comes to understanding how they need to respond to something that is becoming more urgent every day but that they do not know how to touch.[79]

Drink Container Recycling Bill 2008

5.71 The committee heard evidence both in support of and against national CDL. Such evidence focused primarily on the percentage of the waste stream that would be captured, the possible impacts on kerbside recycling, its expected financial,

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76 Boomerang Alliance, *Submission 46*, p. 4; Australians for Refunds on Cans and Bottles, *Submission 6*, p. 1.

77 Boomerang Alliance, *Submission 46*, p. 30.

78 Mr Dan Ryan, Chief Executive Officer, Scouts South Australia, *Committee Hansard*, 30 June 2008, p. 2.

79 Mr John Phillips OAM, Executive Director, Keep South Australia Beautiful Environmental Solutions, *Committee Hansard*, 30 June 2008, p. 36.

environmental and social ramifications, potential models, and the effectiveness of CDL as a recycling strategy.

5.72 In particular the committee acknowledges the evidence on the potential financial impact that may flow from the introduction of national CDL. Opinions were divided on whether such a move would be an overall cost burden or benefit.[80] The overall financial impact is likely to be dependent on the particular model in question. However, even if there were to be a financial cost to the scheme, which would likely to be passed onto consumers, the committee acknowledges evidence that consumers were not opposed to paying an additional impost if it meant waste would be recycled.[81] The committee would expect that the minimisation of financial impacts on businesses and consumers, would be taken into account as part of EPHC and government deliberations on the introduction of a national CDS.

5.73 Evidence for and against national CDL was not, however, rigorously applied to the Drink Container Recycling Bill 2008. The committee is not satisfied, therefore, that all the likely effects of the bill are well understood.

5.74 However, the committee was convinced by the evidence before it of the benefits of a national container deposit system *per se*. The success of the South Australian scheme provides a tried and tested model that could be the basis of a national scheme. In light of the expected environmental, social and economic benefits (highlighted in paragraph 5.62) and demonstrated public support, the committee offers in-principle support for the establishment of a national container deposit system.

5.75 The committee is aware of the number of studies that have been conducted over the past decade on CDL in specific jurisdictions. Given the volumes of information on CDL and the need for an overarching and comprehensive review of CDL literature in Australia, the EPHC review is timely.

5.76 Evidence throughout this inquiry has focused on the need for greater coordination and less duplication in waste management. The committee does not intend to duplicate the work of the EPHC review. However, the committee strongly recommends the EPHC consider a national container deposit system as part of its ongoing deliberations.

Recommendation 16

5.77 The committee recommends the Environment Protection and Heritage Council work towards a national container deposit system. As part of its review

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80 See for example Dr Steward White, *Independent Review of Container Deposit Legislation in New South Wales, Final Report - Volume I*, Institute of Sustainable Futures, University of Technology Sydney, prepared for Hon Bob Debus MP, Minister for the Environment, November 2001, p. i; Australian Food and Grocery Council, *Supplementary Information*, tabled 4 July 2008, p. 5; and Boomerang Alliance, *Submission 46*, Attachment A, p. 21.

81 Boomerang Alliance, *Submission 46*, p. 30

the committee recommends that the Environment Protection and Heritage Council consider the South Australian model and the Drink Container Recycling Bill 2008.

Newsprint

5.78 The National Environmental Sustainability Plan (Newspapers) or the Newsprint EPR is a national, voluntary industry–government agreement. Whilst both industry and government are involved, individual firms can choose not to participate.[82] The incentive around which the scheme is focused and which is central to its success is the fact that using 40 per cent recycled fibre produces a superior quality paper compared to virgin material.

5.79 In 1990, newspaper and magazine publishers committed to using recycled newsprint in their manufacturing processes under a national agreement. The original goal was to reduce newspaper waste going to landfill. However, significant upstream benefits have also been achieved. According to the Environment Department, the use of recycled newsprint by publishers led to an increase in newsprint recycling from 37 per cent in 1991 to 74.5 per cent in 2004 thereby reducing the amount of paper waste going to landfill by 500 000 tonnes in 2004 alone. In 2006, the recycling rate reached 75.4 per cent. Whilst yet to be confirmed, according to the Environment Department, the recycling rate for 2007 is expected to have risen above 76 per cent.[83]

5.80 The newsprint scheme works as a voluntary scheme because of the clear benefits in terms of the better quality paper produced from recycled fibres. There are also significant energy saving from using recycled compared to virgin materials. The Environment Department explained:

> The smoother printing surface obtained by the addition of recycled fibres and clay (from recycled magazines) achieved a superior printing surface with less show-through (increased opacity). Thickness was reduced, as well giving a better, more easily stacked product. Paper roll yields were improved and waste was reduced by about 7 per cent with flow-on environmental benefits in handling and road transport. A further significant benefit of recycling old newspapers into newsprint is the reduction in energy used. Mechanical pulping of wood is an energy intensive process. It takes one-sixth the energy to make pulp from old newspapers rather than from wood.[84]

5.81 The committee acknowledges the success of this voluntary scheme but also notes that other voluntary schemes without such co-benefits have not been nearly as successful.

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82 Productivity Commission, *Waste Management*, Report no. 38, 2006, p. 263.

83 Department of the Environment, Water, Heritage and the Arts, *Submission 78*, p. 7.

84 Department of the Environment, Water, Heritage and the Arts, *Submission 78*, p. 7.

5.82 One such example is MobileMuster which was initiated in 1999. Under the program, consumers and retailers can dispose of mobile phones free of charge through a network of over 1000 mobile phone retail outlets, government agencies and businesses. Funded by a sales levy on participating manufacturers (which comprised 90 per cent of the market), the program has recovered and recycled over 330 tonnes of mobile phones.[85] However, the Total Environment Centre notes that the recycling rate is less than three per cent:

> To date, over 30 million mobile phones have been sold in Australia, and 8 million more are being sold each year. Yet less than 3% are recycled. With an average life-span of 18 months, this means that millions of mobile phones are making their way to landfills across Australia, putting the environment and community at risk.[86]

5.83 The Total Environment Centre maintains that the initiative fails for reasons including the fact that less than 20 per cent of mobile phone retailers participate in the scheme and of those that do, performance varies. Overall, the scheme is not cost-effective:

> This low recovery rate achieves minimal environmental benefits, and does not promote development of better collection and recycling infrastructure. If mobile phones were recovered by the millions, demand would be created for new and improved recycling facilities. This would in turn reduce the recycling cost per phone, making recycling more cost effective.[87]

5.84 The contrasting levels of success of the Newsprint and MobileMuster voluntary initiatives demonstrate the importance of an incentive for producers to take responsibility for their products at the end of their life.

Tyres

5.85 An estimated 170 000 tonnes of waste tyres are generated in Australia each year. This is equal to around 18 million passenger tyres.[88] Of this, an estimated 57 per cent of waste tyres end up in landfill and 13 per cent are disposed of inappropriately, primarily through illegal dumping. According to the EPHC:

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85 Productivity Commission, *Waste Management,* Report no. 38, 2006, p. 235.

86 Total Environment Centre, *Busted! The 'Mobile Muster' Myth Exposed*, Mobile Phone Recycling Survey, July 2007, p. 2, www.tec.org.au/index.php?option=com_content&task=view&id=581&Itemid=270 (accessed 15 August 2008).

87 Total Environment Centre, *Busted! The 'Mobile Muster' Myth Exposed*, Mobile Phone Recycling Survey, July 2007, p. 2.

88 Environment Protection and Heritage Council, *A National Approach to Waste Tyres: Policy Discussion Paper,* www.ephc.gov.au/ephc/waste_tyres.html (accessed 15 August 2008).

> Apart from the associated environmental, health and amenity issues, these practices are a lost opportunity as various re-use, recycling and waste-to-energy options exist for tyres.[89]

5.86 Most tyres are left by motorists with the tyre dealers or retailers who replace them. However, used tyres are expensive to collect due to their weight, bulk and geographical spread.[90] The availability of relatively low cost landfill disposal for used tyres is a disincentive to recycle them.[91] The estimated cost of cleaning up tyres that have been illegal disposed is $4 million a year and $35 million over ten years.[92] This excludes the clean-up cost of Australia's large illegal stockpiles of used tyres which are likely to double the overall clean-up costs from $35 million to $70 million over ten years.[93]

5.87 Negotiations on a national EPR began in 1999 between the tyre industry and government. In April 2008, the EPHC released a consultation package detailing a proposed co-regulatory product stewardship initiative for used tyres. Ms Rosalind Hall, Director Frameworks and Product Stewardship, New South Wales Department of Environment and Climate Change, explains:

> Industry has developed a voluntary approach to managing used tyres. It has proposed a target of 90 per cent recovery, or less than 10 per cent going to landfill, within about 10 years. It will be done via a proposed levy on tyres at the point of purchase—or up a bit higher in the chain but essentially that. Basically, it will be using market pool process such that people who are recycling or using recycled tyres will get a subsidy on the cost. So it is a market pool, if you like, and it will be there to subsidise the bona fide use of tyres. There will be different subsidies according to the level and the type of beneficial reuse of the tyres. So that is out for consultation.[94]

5.88 The Boomerang Alliance raised a number of concerns in relation to the package including regulatory contingency embedded in the NEPM to guarantee the environmental outcomes by way of the targets proposed. The Boomerang Alliance also noted that there is no commitment to a permanent and sustainable tyre recycling market given that the scheme is to operate for ten years. Moreover, the manner in

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89 Environment Protection and Heritage Council, *A National Approach to Waste Tyres: Policy Discussion Paper.*

90 Australian Bureau of Statistics, *Australia's Environment: Issues and Trends: Solid waste in Australia.* 2006.

91 URS, *Market Failure in End-of-life Tyre Disposal, Final Report*, Prepared for Department of Environment and Heritage, 8 September 2006, p. 36.

92 URS, *Market Failure in End-of-life Tyre Disposal, Final Report*, Prepared for Department of Environment and Heritage, 8 September 2006, pp 43–44.

93 URS, *Market Failure in End-of-life Tyre Disposal, Final Report*, Prepared for Department of Environment and Heritage, 8 September 2006, p. 45.

94 Ms Rosalind Hall, Director Frameworks and Product Stewardship, Department of Environment and Climate Change, New South Wales Government, *Committee Hansard*, 3 July 2008, p. 15.

which stockpiles of illegally dumped or landfilled tyres are to be handled is not addressed.[95] In terms of the benefit payment, the Boomerang Alliance highlights:

> As the Scheme is currently proposed, there is no explanation of the rationale behind the benefit payment. A rationale based on highest resource value and environmental benefit should be proposed, with reference to reuse being the highest form of recovery, followed by recycling and, lastly, waste to energy. Such a rationale should be backed up by data and opened for consultation. To properly reflect the accepted waste hierarchy, reuse should be added to the definitions and the description of recycling should not exclude retread tyres.[96]

5.89 The Productivity Commission took the position that focus should be given to directly addressing the externalities associated with illegal dumping and stockpiles rather than the goal of recycling 90 per cent of all tyres. The committee takes the view that there should be a balance established between ensuring a high recycling rate and addressing the stockpiles and illegal dumping practices.

5.90 Given that the used tyre EPR has been negotiated for nearly a decade, the committee is pleased that the consultation package is now under active consideration. The committee encourages the EPHC and the tyre industry to work collaboratively in order to bring this long-planned project to fruition.

E-waste

5.91 The potential for nationally-driven EPR initiatives to enable a coordinated response to key waste issues was repeatedly reinforced during the course of the inquiry. It was particularly evident in relation to e-waste[97] (or electronic and electrical materials that have reached the end of their life) which is discussed below.

5.92 E-waste is considered one of the fastest growing and most complex waste categories in Australia.[98] As Ms Mary Harwood, First Assistant Secretary, Environment Quality Division of the Environment Department noted:

> E-waste is probably the largest emerging issue…in terms of the relative change in volume, the challenges of dealing with it, and the challenges of looking at what the actual impacts are and how they might be addressed.[99]

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95 Boomerang Alliance, *Submission 46*, p. 15.

96 Boomerang Alliance, *Submission 46*, pp 15–16.

97 See for example Mr Vaughan Levitzke, Chief Executive, Zero Waste South Australia, *Committee Hansard*, 30 June 2008, pp 18–19.

98 E-waste comprises obsolete electronic and electrical products including computers, televisions, VCRs, stereos, phones, automobile and manufacturing components, and small electrical appliances.

99 Ms Mary Hardwood, First Assistant Secretary, Environment Quality Division, Department of the Environment, Water, Heritage and the Arts, *Committee Hansard*, 4 July 2008, p. 68.

5.93 According to the Australian Bureau of Statistics, each year, Australians buy more than 2.4 million personal computers and 1 million televisions. With more purchases of electronic products, the stockpile of used, obsolete electronic products continues to grow.[100] In 2006, an estimated 1.6 million computers were disposed of in landfill and another 1.8 million were held in storage in addition to an already 5.3 million kept in garages and other storage areas.[101]

5.94 All electronic and electrical goods have a limited life span. On average, computers last for four years, mobile phones between 18 months and two years, and media players between two and three years.[102] Given such factors and the current growth in electronic goods, Australia is expected to have an e-waste stockpile of over 350 million items by 2015.[103]

5.95 According to Mr Jeff Angel, Director of the Total Environment Centre, without a national e-waste strategy, existing initiatives that are 'basically one-off voluntary schemes' will continue to operate. Mr Angel noted that such schemes have yet to develop a sustainable strategy or establish adequate support mechanism for the collection of e-waste.[104] The MobileMuster initiative discussed above is a prime example.

5.96 The need for adequate infrastructure to enable the effective recovery of target materials was a concern raised in evidence in relation to many EPR initiatives. One possible solution identified by Mr David West, National Campaign Director for Boomerang Alliance, was the establishment of collection centres that would serve as drop-off points for a range of materials including, but not restricted to, e-waste.[105]

5.97 The New South Wales Department of Environment and Climate Change noted that challenges in establishing an EPR arrangement for computers include addressing the large number of players in the sector, and its fragmentation, which makes coordination of a voluntary approach problematic.[106] One of the benefits of co-regulatory EPR arrangements is the regulatory safety net which picks up 'free riders'.

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100 Australian Bureau of Statistics*, Year Book Australia 2008, Waste and Recycling Practices of Households*, Report no. 1301.0, 2008.

101 Australian Bureau of Statistics, Australia's Environment: Issues and Trends, *Media Alert – Environment snapshot: recycling up, but e-waste a looming issue,* Report no. 4613.0, 10 November 2006.

102 Total Environment Centre, *Submission 67*, p. 4.

103 This figure includes DVDs, digital cameras, games consoles, media players, camcorders, DVD players, mobile phones, multifunctional devices, televisions, scanners, printers and computers. Total Environment Centre, *Submission 67*, p. 4.

104 Mr Jeff Angel, Director, Total Environment Centre, *Committee Hansard*, 3 July 2008, p. 50.

105 Mr David West, National Campaign Director, Boomerang Alliance, *Committee Hansard*, 2 July 2008, p. 4.

106 Department of Environment and Climate Change, New South Wales Government, *Submission 16*, Attachment B, p. 29.

Orphan brands or unbranded products (otherwise called 'white boxes') are a major problem in relation to computers and other electronic goods. In the computer industry, orphan brand computers are often supplied by small businesses that enter and exit the industry rapidly, providing for difficulties in relation to compliance.[107] Mr Ian Kiernan, Chairman of Clean Up Australia summed up the issue of orphan brands in relation to computers:

> The major proportion of that e-waste is finishing in landfill. If you go to the more responsible brands—say, IBM or Dell—with a laptop, they will take it, give you something for it and sell you the new one, whereas the orphan brands will probably only last a quarter of the time, and you are stranded with the problem of disposing of it. It is extremely expensive to collect and dismantle. A laptop is probably $70.[108]

5.98 Sustainability Victoria's current 'Byteback' scheme is one example of a computer EPR.[109] Under the initiative which began in June 2005, the public and small businesses can return up to ten items of unwanted computer equipment free of charge to approved sites. The equipment is broken down into components including plastics and metals for recycling. Whilst the Victorian Government provides base funding for the scheme, industry partners are expected to cover the cost of recycling their branded equipment.[110] The scheme is expected to run until the end of 2008 with lessons learnt assisting industry to prepare for a national approach to computer recycling.[111]

5.99 Fuji Xerox maintain that a regulatory underpinning to the computer EPR scheme would enable the inclusion of otherwise 'free riders' (who comprise 25 per cent of the industry) into the scheme:

> We believe there is currently real potential to move this agenda into an accelerated timetable for a solution. We need to see more than 75% of the industry sitting at the table and willing to pay their way. Then we need to see firm resolve by government to provide an underpinning regulatory framework that ensures that those that do no volunteer to do the right thing bear an equivalent cost (of recycling end of life product) to those that do.[112]

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107 Productivity Commission, *Waste Management*, Report no. 39, 2006, p. 276.

108 Mr Ian Kiernan, Chairman, Clean Up Australia, *Committee Hansard*, 3 July 2008, p. 74.

109 Sustainability Victoria is running Byteback in partnership with the Australian Information Industry Association (AIIA) and founding partners Apple, Canon, Dell, Epson, Fujitsu, Fuji-Xerox, HP, IBM, Lenovo, and Lexmark. Byteback, *What is Byteback*, 2008, www.bytebackaustralia.com.au/ (accessed 5 August 2008).

110 Byteback, *What is Byteback?,* 2008.

111 Byteback, *FAQ*, 2008.

112 Fuji Zerox, *Submission 91*, p. 1.

Resource depletion

5.100 Computer monitors and old television picture tubes contain an average of two kilograms of lead and require special handling at the end of their lives. In addition to lead, electronic goods can contain chromium, cadmium, mercury, beryllium, nickel, zinc and brominated flame retardants. These toxic materials can pose serious environmental problems when not disposed of or recycled properly.[113]

5.101 According to the Total Environment Centre, electrical and electronic appliances contain a number of rare and non-renewable resources, some of which are reaching their extraction peak. These resources are listed in Table 5.1.

Table 5.1−Rare and non-renewable resources in electrical and electronic appliances

Resource	**Estimated Extraction Peak**
Gallium (solar cells)	Already running out
Terbium (fluorescent bulbs)	Four years left
Hafnium (computer chips)	Nine years left
Indium (LCD screens and computer chips)	Ten years left
Silver	Ten years left
Antimony (flare retardants)	Fifteen years left

Total Environment Centre, *Submission 67*, p. 3, citing University of Augsburg in Germany and US Geological Survey.

5.102 The committee encourages the timely consideration and application of an EPR scheme in relation to e-waste given the rapid growth of the problem and the use of rare and non-renewable resources. Moreover, the ongoing transition away from cathode ray tube televisions and computer monitors suggests the need for timely action in relation to televisions. In evidence before the committee, Mr Mike Ritchie, National General Manager of SITA Environmental Solutions, stated that such a transition from televisions to the new digital network is going to mean 'an enormous pulse in TVs coming through the waste stream, which we need to deal with.'[114]

113 Australian Bureau of Statistics, *Australia's Environment: Issues and Trends, Solid waste in Australia*, 2006.

114 Mr Mike Ritchie, National General Manager, Marketing and Communications, SITA Environmental Solutions, *Committee Hansard*, 3 July 2008, p. 31.

Recommendation 17

5.103 The committee recommends that the Environment Protection and Heritage Council finalise and/or develop Extended Producer Responsibility initiatives for the various forms of e-waste as a matter of priority.

Compact fluorescent lamps

5.104 Compact fluorescent lamps (CFLs) were raised during the inquiry as a product appropriate for an EPR initiative. The mandatory replacement of incandescent light bulbs with CFLs is an initiative which has substantial benefits from a greenhouse point of view but, raises problems from a waste perspective because CFLs contain mercury. The key issue therefore is ensuring that CFLs are recovered and do not contaminate compost or end up in landfill.[115]

5.105 The Municipal Waste Advisory Council (MWAC) of WALGA raised the possibility of an EPR for CFLs:

> MWAC indicated that it considers that best management of CFL's would be achieved through a product stewardship arrangement incorporating industry responsibility for establishing and maintaining adequate CFL bulb collection and reprocessing infrastructure. Further, that the stewardship should include an industry commitment for an ongoing national public education campaign to raise community understanding of why and how to dispose of CFL bulbs correctly.[116]

5.106 The committee encourages the EPHC to consider an EPR initiative to address CFLs. The advice offered by the Environment Department states:

> CFLs can generally be disposed of in regular garbage bins - where the garbage goes to landfill. You should check with your local authority, who manages garbage collection, as to their advice on disposal of CFLs as different local authorities may have different arrangements. For example, some garbage is sent to waste processors and this may change the arrangements for disposal. Should you choose to dispose of your CFLs this way then it's best to wrap them in newspaper to prevent them from breaking.[117]

5.107 The committee notes that the EPHC is considering options associated with the end-of-life management of CFLs including the extent of the environmental threat posed by landfill disposal.[118] Given the fact that the number of CFLs entering the

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115 Ms Rebecca Brown, Manager, Waste and Recycling, Western Australian Local Government Association, *Committee Hansard*, 30 June 2008, p. 55.

116 Western Australian Local Government Association, *Submission 44*, p. 2.

117 Department of the Environment, Water, Heritage and the Arts, *Phase-out of inefficient incandescent light bulbs,* www.environment.gov.au/settlements/energyefficiency/lighting.html (accessed 15 August 2008).

118 Department of the Environment, Water, Heritage and the Arts, *Submission 78*, p. 5.

waste stream is set to increase substantially with the phasing out of incandescent light bulbs, the committee encourages the EPHC to consider a national EPR for CFLs as a matter of priority.

Recommendation 18

5.108 The committee recommends that the Environment Protection and Heritage Council consider an Extended Producer Responsibility initiative for compact fluorescent lamps as a matter of priority.

Senator Anne McEwen

Chair

Family First - Dissenting Report

Inquiry into the Management of Australia's Waste Streams

1.1 Family First introduced its Drink Container Recycling Bill 2008 as an important environmental measure to boost the recycling of drink containers across Australia.

1.2 Only South Australia operates a container deposit scheme where there is a 10 cent container deposit that is redeemed when the container is returned for recycling.

1.3 Family First wants its legislation for a national container deposit scheme passed because:

- A scheme with a 10 cent deposit would increase the national drink container recovery rate from 40 per cent to 80 per cent;
- The resulting increase in recycling would save up to an additional 1.8 million tonnes of greenhouse gases a year, which is the same as taking 350,000 cars off the road;
- More than 80 per cent of Australians support a container deposit system;
- State governments have been slow to act on this issue and Family First believes federal intervention is needed;
- More than a third of the 7,200 tonnes of rubbish collected on Clean Up Australia Day was recyclable drink cans and bottles made from aluminium, glass, plastic and steel;[1]
- South Australia recycles about 70 per cent of drink containers that have a deposit, while other states have a 40 per cent recycling rate;
- It would save 8 gigalitres of water every year, which would supply more than 24,000 homes with water;
- It would provide recycling services to more than 250,000 homes for the first time.

1.4 The Australian debate over container deposit schemes has seen a myriad of inquiries leading to little action. Family First's bill should not be delayed for the Environment Protection and Heritage Council (EPHC) to complete yet another review.

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1 Mr Ian Kiernan AO, Chairman of Clean Up Australia, *Less Rubbish on Clean Up Australia Day*, Australian Associated Press in *The Age*, 2 March 2008, news.theage.com.au/national/less-rubbish-on-clean-up-australia-day-20080302-1w74.html (accessed 3 September 2008).

What happens in Australia now?

1.5 Recycling used packaging in Australia is guided by the National Packaging Covenant (NPC), established in 1999, which has 669 signatories from industry, government and community groups.[2]

1.6 But the Boomerang Alliance notes that the NPC has not had much of an impact:

> The most optimistic view of the current rate of packaging recycling stands at just 43.05% per annum (which we contend remains overstated), well short of the minimum 65% target recycling rate set by Ministers when the NPC was renewed in 2005. Container recycling rates are even worse, with a best case of just 40.8%. It is now an established fact that after 8 years the NPC has delivered little, if any, improvement in recycling rates or reductions in litter. This performance falls well short of recognised community expectations and creates a compelling case for intervention.[3]

1.7 There is still a lot of work to do to improve the recycling of containers:

> Australian's are amongst the greatest consumers of packaging in the world, each consuming about 203 kgs of packaging annually; nett of resource recovery this represents a staggering 116 kgs of packaging waste per capita landfilled annually, including over 740,000 tonnes or 8.4 billion containers.[4]

1.8 The Clean Up Australia rubbish report for 2007 documents:

> … that beverage containers account for around half of all top ten items collected by Clean Up Australia Day volunteers, with plastic and glass bottles, bottle tops and cans combining to 42.7% of the top ten. Six out of the top ten items found are recyclable.[5]

1.9 The report states the most polluted sites were public bushland, followed by beaches, parks, waterfront, rivers and creeks.[6] A national container deposit scheme would help clean up each of these areas. Kerbside recycling is limited and does not help with the increasing trend to buy takeaway food and dispose of the containers away from home.[7]

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2 National Packaging Covenant website, www.packagingcovenant.org.au/page.php?name=history and www.packagingcovenant.org.au/page.php?name=currentsignatories (accessed 20 August 2008)

3 Boomerang Alliance, *Submission 46*, p. 26.

4 Boomerang Alliance, *Submission 46*, p. 4.

5 Clean Up Australia, *Submission 55*, p. 3.

6 Clean Up Australia, *Submission 55*, p. 8.

7 Clean Up Australia, *Submission 55*, p. 3.

How drink container recycling works

1.10 Container deposit systems operate where a consumer is paid a cash amount to return a container to a recycling centre.

1.11 The Australian Conservation Foundation notes that 'with a deposit and refund system the consumer now has an incentive to regard the product as a resource to be re-used, not a waste item to be discarded.'[8]

1.12 The Boomerang Alliance points out that with a container deposit system:

> … the actual cost that a consumer bears is not only based on their consumption, but are also dependent on how well (or badly) an individual disposes of their packaging once the goods are consumed. Every time a consumer disposes of a container, they choose whether they are willing to pay for the cost of disposal or they can choose to take a simple action to avoid the cost.[9]

1.13 This change in approach to recycling helps overcome the problem where:

> … the cost of managing litter is borne largely by rate payers (managed through local government), rather than the manufacturer or consumer of the goods. Consumers are not always rate payers … Only 70% of all homes are owner-occupied, leaving up to 30% of tenants enjoying a free ride. Tourists also account for a significant share of consumption, with 39% of tourist spending in Australia in 2002/2003 going on shopping, takeaway and restaurant meals and food products. All of these consumption activities are associated with packaging, whose eventual contribution to the litter problem is borne by rate payers.[10]

1.14 Drink container recycling '…actually complements kerbside recycling by focusing on the huge 50% of containers that are consumed away from home, which kerbside systems are unable to recover.'[11]

1.15 There is a range of environmental benefits from a national container deposit system:

> Modelling by Boomerang Alliance of a National 10¢ Container Deposit System indicates that such a system will more than double recycling rates from their current levels and also indicates that the improved recovery rates of bottles and cans will produce substantial environmental benefits, including:
>
> - An increase in container recovery rates from a current 41% to nearly 82%

8 Australian Conservation Foundation, *Submission 71*, p. 3.

9 Boomerang Alliance, *Submission 46*, pp 23–24.

10 Boomerang Alliance, *Submission 46*, p. 23.

11 Boomerang Alliance, *Submission 46*, p. 29.

- A 6% reduction in municipal waste to landfill – 631,008 tonnes per annum
- A 12–15% reduction in the volume of litter
- 1.38 million tonnes of CO_2-e p.a. in Greenhouse Gas Reductions (equivalent of switching 197,000+ homes to 100% renewable energy)
- A saving of 8.1 gigalitres of drinking water p.a. (enough to supply 24,128 homes)
- Improved Air Quality by 610 million gC_2H_4-e (like taking 141,000 cars off the road)
- Provision of over 250,000 Australian homes with recycling services for the first time
- The creation of at least 1,000 new jobs.[12]

1.16 One recycling firm claims that implementation of container deposit legislation is the best method available to boost recycling rates:

> International and Australian experience shows that deposits are the only proven method of reaching high recycling rates (e.g. 70% +). … Container deposits' proven effectiveness is based on the fact that they provide both an economic incentive to recyclers and fund a convenient collection infrastructure, helping to address the growing volume of container packaging (estimated at >50%) consumed away from home.[13]

1.17 There is strong and consistent public support for container deposit legislation:

> It is clear from Newspoll surveys commissioned by Boomerang Alliance that the public is calling for action. A survey conducted in Dec. '04 showed that 91% of respondents thought governments should intervene, making those responsible for packaging waste deal with the mess. Subsequent research undertaken by Newspoll for the Boomerang Alliance in Western Australia in May '06 indicated that 94.45% of the adult population want CD with just 2.58% against. In Feb '07 the survey indicated 94.48% in favour and just 3.87% against.[14]

1.18 And further:

> A Newspoll survey taken in 2007 revealed an overwhelming 82% of Australians surveyed are in favour of CDL.[15]

12 Boomerang Alliance, *Submission 46*, p. 4.

13 Revive Recycling, *Submission 68*, p. 3.

14 Boomerang Alliance, *Submission 46*, p. 37.

15 Clean Up Australia, *Submission 55*, p. 2.

1.19 Container deposit systems are popular with the public, require no government funding and provide funding for the necessary recycling infrastructure.[16]

Success in South Australia

1.20 South Australia's 30 years of experience with a container deposit system demonstrates the success of this approach to recycling waste.

1.21 Clean Up Australia points out that:

> … South Australia is the only state where beverage containers are not among the five most commonly collected types of rubbish on Clean Up Australia Day. In comparison, beverage containers appear in the top five of rubbish types collected in every other state.[17]

1.22 Further, Clean Up Australia argues:

> CDL in South Australia has been proven to work, implementing the system on a national level would be addressing the very real waste problem that Australia has. Current waste recovery systems are not enough to effectively manage the volume of waste we as a nation are producing. … Clean Up Australia strongly believes CDL is an effective system which should be implemented nationally.[18]

1.23 The South Australian Government supports a national drink container recycling system and gave evidence that the State:

> … has operated a successful container deposit scheme (CDS) since 1977 that ensures the recovery of about 70% of containers that are subject to deposit requirements. This compares with an estimated national recovery rate of about 40% according to the Packaging Stewardship Forum. In 2006/07 South Australia's CDS facilitated the recovery of over 450 million containers for recycling. This is over 200 million more containers than would have been recovered in the absence of container deposit legislation, assuming that container recovery in SA would have been comparable to the national average.[19]

1.24 Family First believes that South Australia is a strong and compelling example of the success of container deposit legislation to the rest of Australia.

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16 Revive Recycling, *Submission 68*, p. 3.

17 Clean Up Australia, *Submission 55*, p. 2.

18 Clean Up Australia, *Submission 55*, p. 14.

19 South Australian Government, *Submission 83*, p. 14.

Cutting greenhouse gases

1.25 Improving recycling rates by container deposit legislation would help address two of the most difficult environmental problems of our time, which are how to cut greenhouse gases and save water.

1.26 Improving recycling rates is vital because recycled materials use a lot less energy and because it cuts down on landfill, which is a key emitter of harmful methane gas.

1.27 Australians for Refunds on Cans and Bottles argued that:

> The most compelling reason why Australia should introduce a national container deposit is because of the very large reductions in C02 emissions that could be achieved. This assertion is based on the 2007 report of the Stakeholders Advisory Group which investigated a best practice container deposit system for Western Australia. It concluded that a container deposit system in WA 'would reduce C02 emissions there by tens of thousands of tonnes per year'. It also said 'it would save millions of litres of water'. Given the challenges posed by global warming and climate change we do not believe Australia can afford to ignore either of these benefits.[20]

1.28 Improving container recycling rates is a relatively cheap way to cut emissions compared to other alternatives:

> … research … demonstrated while the waste sector contributed just 2.3% of Australia's Greenhouse Gas Emissions; it could readily deliver a 6-7% reduction through strategies to both mitigate direct solid waste emissions and the capture of embodied energy in end of life materials. Perhaps more importantly this reduction can be achieved relatively quickly …[21]

1.29 Adviser on climate change and sustainability for the Ecos Corporation, estimates that '… the adoption of a national container deposit system in Australia could achieve additional greenhouse savings of around 1.8 million tonnes of carbon dioxide. As I said, that is additional to the current recycling.'[22]

1.30 Cutting the amount of waste that goes to landfill is important to cutting greenhouse gas emissions:

> …waste in landfills continues to emit greenhouse gas emissions for up to 50 years, most commonly in the form of methane, approximately 24 times stronger in its greenhouse impact than carbon dioxide. Studies have indicated that unless landfill management techniques change, up to 2 billion tonnes of greenhouse gas emissions will be released from landfills over the

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20 Australians for Refunds on Cans and Bottles, *Submission 6*.

21 Boomerang Alliance, *Submission 46*, p. 7.

22 Mr Robert Kelman, Ecos Corporation, *Committee Hansard,* 3 July 2008, p. 63.

> next 50 years, making our emissions reductions targets much more difficult to meet.[23]

1.31 Ecos Corporation provided a report to the committee which estimated the:

> … increase in recycling attributable to the implementation of a 10¢ deposit on containers in Australia presents a carbon abatement potential of 1,734,000 tonnes of CO2e. This level of carbon abatement is nearly 12 per cent of the national greenhouse gas emissions from solid waste and is equivalent to avoiding the burning of 655,000 tonnes of black coal, which is the same reduction in greenhouse pollution as taking approximately 350,000 cars off the road.[24]

1.32 Clean Up Australia Chairman, Mr Ian Kiernan detailed the savings available from recycling containers:

> More than 630,000 tonnes of rubbish to landfill per annum will be saved through the recycling of bottles and containers. This represents a six per cent reduction in municipal waste to landfill. … Landfilling of containers represents a lost opportunity to reduce greenhouse gas emissions through a saving in embodied energy. We know that, for the same amount of energy it takes to make an aluminium can out of new material, you can make seven aluminium containers out of recycled material. It is just plain good sense. Australia would save 5.6 gigalitres of drinking water per annum without producing new bottles through this scheme. That is enough to supply 16,784 homes with water.[25]

1.33 The committee heard that a cost benefit analysis of drink container recycling should take into account carbon savings, including the societal benefit from cuts in greenhouse gases, to judge the real benefit of increasing recycling levels, which is higher than just the market value of carbon.[26]

Family First's Drink Container Recycling Bill 2008

1.34 Family First's Drink Container Recycling Bill 2008 provides for a system of drink container stewardship plans, where producers, distributors or industry groups must submit an approved plan to achieve a 75 per cent recycling rate within two years of the commencement of the plan and 80 per cent within five years.

1.35 Distributors are included because they may be responsible for imported products not produced in Australia.

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23 Australian Conservation Foundation, *Submission 71*, p. 5.

24 Ecos Corporation, *Submission 42*, Attachment A, p. 3.

25 Mr Ian Kiernan, Chairman, Clean Up Australia, *Committee Hansard*, 3 July 2008, p. 62.

26 Mr Matthew Warnken, Managing Director, Crucible Carbon, *Committee Hansard*, 3 July 2008, pp 66–67.

1.36 The plans will be subject to public comment and the performance of the final approved plans tracked against performance requirements.

1.37 Producers will have to report annually on the performance of their plan and must complete a review of the approved plan within five years of its commencement.

1.38 Importantly, the bill uses a pollution prevention hierarchy to encourage producers to improve the environmental performance of their containers. Producers will have to detail in their plans how they will:

- reduce the environmental impact of producing beverage containers by eliminating toxic components and increasing energy and resource efficiency;
- redesign beverage containers to improve reusability or recyclability;
- reuse beverage containers;
- recycle beverage containers;
- recover material from beverage containers.

1.39 The structure of the bill which allows the industry a lot of flexibility to determine how best to achieve recycling rates led one of Australia's major packaging and recycling companies, Visy, to endorse the approach of the bill:

> Although Visy does not support the introduction of a national drink container deposit scheme, if such a scheme were to be introduced then Visy strongly believes that the Drink Container Recycling Bill 2008, provides the most appropriate framework for the operation of a national scheme.
>
> Specifically the Bill provides industry with an appropriate level of discretion in order to determine the most efficient and effective way in which to achieve the stipulated recovery rates, whilst also providing for appropriate consultation and input from other stakeholders.
>
> The level of discretion provided to industry in the Bill would also ensure the most cost effective scheme was implemented without undue and unnecessary bureaucratic structures being imposed. This would not only be to the benefit of the producers, but also minimise the additional cost for consumers.[27]

1.40 Evidence given to the committee shows that Family First's bill would be an effective way of establishing a national container deposit scheme in Australia.

Extended producer responsibility

1.41 An effective container deposit scheme would help establish some of the habits and infrastructure to allow other products to be collected for recycling using a deposit scheme:

27 VISY Industries Australia Pty Ltd, *Submission 52*, p. 10.

> … under EPR [Extended Producer Responsibility], a company must be concerned not only with making the product and how it functions, but also with what will become of the product at the end of its useful life. In the case of consumer goods, this principle shifts responsibility for recycling and waste disposal from local government to private industry and onto their customers, thereby internalizing the costs of waste management into product prices. Under such a scheme, citizens pay for waste management as consumers when purchasing products, rather than as homeowners through local taxes.[28]

1.42 The Total Environment Centre pointed out that:

> All products will have a limited life-span, for example: 18 months to 2 years for mobile phones; 2 to 3 years for media players; and an average of 4 years for computers … EPR [extended producer responsibility] schemes can recover the majority of e-waste and other problem products from landfill. [29]

1.43 There is a wide variety of products included in EPR schemes around the world:

> …• Waste Products • Consumables • Refrigerators • Paints • Waste Oils • Vehicles • Computers • Aerosols • Hazardous • Tyres • Electronic • Printer Cartridges & Material Equipment Toner • Packaging • Carpet • Washers/Driers • Newspapers • Bio-Waste • Batteries • Mobile Phones • Bottles & Cans.[30]

1.44 An effective national container deposit scheme would provide direction for development of waste management into the future.

Conclusion

1.45 The committee has managed to write a report that makes few real recommendations.

1.46 While the report recommends a number of measures such as that states and territories implement waste reduction targets, strategies should be put in place to reduce landfill, and the Commonwealth, establish price signals to the market to recognise the greenhouse benefits of recycling, the committee has deferred a decision on the only concrete, detailed proposal before it, Family First's Drink Container Recycling Bill 2008, which is a plan that would help achieve all those things. Instead, the decision is to be left to yet another inquiry, run by the Environment Protection and Heritage Council (EPHC).

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28 Boomerang Alliance, *Submission 46*, p. 8

29 Total Environment Centre, *Submission 67*, pp 2, 4–5.

30 Boomerang Alliance, *Submission 46*, p. 8.

1.47 Twelve of the eighteen recommendations of the committee buck pass important issues to the EPHC, which devalues the currency of the Senate Committee system.

1.48 The EPHC is made up of the same environment ministers of all the states and territories that have dragged their feet on container deposits and failed to act. It is because the state governments have been slow to act on this issue that Family First believes federal intervention is needed.

1.49 Obviously what Australia is doing now to recycle drink containers is not working. We need a national system that puts a value on used drink containers so they are recycled.

1.50 The cost of litter on our community is largely hidden. The cost of visual pollution, rubbish and loss of enjoyment from using public areas is not easily measured.

1.51 Putting a cash value on rubbish can help to change that. In South Australia the State Government has recently increased the price paid for dropping each drink container off at a recycling depot to 10 cents a bottle.

1.52 A national container deposit scheme is a big win for the community because we have a cleaner looking environment and local community groups and kids can earn some extra cash while keeping Australia beautiful.

1.53 A national container deposit scheme is a big win for the environment because we end up with 25 per cent less litter in our streets and waterways and half a million less tonnes of waste every year as we will see container recycling lifted from 40 per cent to 80 per cent.

1.54 A national drink container scheme is practical environmental policy where the effect of the policy can be seen relatively quickly, in cleaner streets, parks and waterways.

Senator Steve Fielding
Leader of Family First

Appendix 1

Submissions

1	Mr Ken Sparks
2	Ms Julie Ingleby
3	Dynamic Commercialisation Pty Ltd
4	National Association of Retail Grocers of Australia
4a	National Association of Retail Grocers of Australia (Supplementary submission)
4b	National Association of Retail Grocers of Australia (Supplementary submission)
5	Port Stephens Council, NSW
6	Australians for Refunds on Cans and Bottles
7	Mr Martin Boyer
8	Timbercorp
9	AKT International
10	Mr Richard Hodgens
11	Girl Guides Western Australia
12	Qubator Pty Ltd
13	Friends of Warneet Environmental Group
14	Clean Up Australia Day, Tyers, Victoria
15	Waste Management Board Western Australia
16	New South Wales Department of Environment and Climate Change
17	Mr Robin Baillie
18	Campbelltown City Council, NSW
19	Southern Waste Strategy Authority
20	Country Women's Association of Victoria- Warburton Branch

21 Dr Ruth Lane & A/Prof Ralph Horne, RMIT University

22 Mrs Rachel M Cook

23 Mr Harry Johnson

24 The Croydon Green Team

25 Asset Industries Australia

26 Mr Graeme Eadie

27 Local Government Association of Queensland Inc.

28 Zero Waste Australia

29 Hamilton Field Naturalist's Club

30 Vinyl Council of Australia

31 WSN Environmental Solutions

32 Waste Contractors and Recyclers Association of NSW

33 The Packaging Council of Australia

34 Arid Lands Environment Centre, Inc.

35 Forever Glass Group of Companies

36 GRD Limited

37 Mr Peter Simpson

38 Ms Rachel M Dempster

39 Ms Belinda Kendall-White

40 InSinkErator

41 Upstream Advice

42 Ecos Corporation Pty Ltd

43 Winemakers Federation of Australia

44 Western Australian Local Government Association

45 Conservation Council of Western Australia

46 Boomerang Alliance

47 Cement Industry Federation

48 Queensland Conservation Council

49 Scouts Australia NSW

50 Mr Rod Baker

51 Chamber of Commerce Northern Territory

52 VISY Industries Australia Pty Ltd

53 SITA Environmental Solutions

54 LMS Generation

55 Clean Up Australia

56 Australian Food and Grocery Council

57 AMCOR Australasia

58 Waste Management Association of Australia- NSW Branch

59 Brisbane City Council

60 KESAB Environmental Solutions

61 Bioenergy Australia

62 Nature Conservation Council of NSW

63 Environment Tasmania Inc

64 Confidential

65 Pollution Action Network

66 Mr Samuel Thompson

67 Total Environment Centre

68 Revive Recycling Pty Ltd

69 SA Conservation Council

70 Recyclers of South Australia Inc

71 Australian Conservation Foundation

72 Local Government and Shires Associations of NSW

73 Mr David Bills

74 Australian Bureau of Statistics

75 Yarra Ranges Shire Council

76 Western Australian Department of Environment and Conservation

78 Department of the Environment, Water, Heritage and the Arts

79 Ms Wendy Savage

80 Queensland Government Environmental Protection Agency

81 Australian Council of Recyclers Inc

82 Australian Local Government Association

83 South Australian Government

84 Australian Beverages Council Ltd

85 Northern Territory Department of Natural Resources, Environment, Heritage and the Arts

86 Keep Australia Beautiful Council NSW

87 Coca-Cola Amatil

88 Waste Management Association of Australia

89 Perchards Ltd

90 Carbon Partners/Szencorp

91 Fuji Xerox Australia Pty Limited

Appendix 2

Public hearings

Monday, 30 June 2008 – Adelaide

Scouts Australia (South Australia Branch)

Mr Dan Ryan, Chief Executive Officer

South Australian Environment Protection Authority

Mr Peter Dolan, Director, Science and Sustainability

Zero Waste South Australia

Mr Vaughan Levitzke, Chief Executive

Keep South Australia Beautiful Environmental Solutions

Mr John Phillips OAM, Executive Director

Recyclers of South Australia Inc

Mr Neville Rawlings, President

Mr Philip Martin, Vice-President

Mr Robert Naismith, Executive Officer

Mr Trevor Hockley, Consultant

Australian Local Government Association

Mr John Pritchard, Executive Director, Policy and Research

Western Australian Local Government Association

Ms Rebecca Brown, Manager, Waste and Recycling

LMS Generation Pty Ltd

Mr John Falzon, Managing Director

Mr Brett Maple, General Manager, Corporate Business

Wednesday, 2 July 2008 – Melbourne

Boomerang Alliance

Mr David West, National Campaign Director

VISY Industries Australia Pty Ltd

Mr Tony Gray, Director of Sustainability

Mr Nicholas Harford, General Manager, Environment

Revive Recycling Pty Ltd

Mr Markus Fraval, Chief Executive Officer

Yarra Ranges Shire Council

Councillor Samantha Dunn, Councillor, Yarra Ranges Shire Council

Mr Michael Corrie, Contractor, Yarra Ranges Shire Council

Amcor Australasia

Mr John Newton, Group Manager, Sustainability and Environment

Mr Andrew Vanstone, Group General Manager, Sustainability

Australians for Refunds on Cans and Bottles

Mr Peter Cook, Convenor

Mrs Marion Cook, Member

Commonwealth Scientific and Industrial Research Organisation (CSIRO)

Professor Stewart Burn, Stream Leader

Dr Swee Mak, Deputy Chief, Industry

Thursday, 3 July 2008 – Sydney

Department of Environment and Climate Change, New South Wales

Mr Timothy Rogers, Executive Director, Departmental Performance Management and Communication

Mr Mark Gorta, Manager, Waste Management

Ms Rosalind Hall, Director, Frameworks and Product Stewardship

Waste Management Association of Australia

Ms Lillias Bovell, National President

Waste Management Association of Australia – New South Wales

Mr Mike Ritchie, New South Wales President

Australian Council of Recyclers Inc

Mr John Lawson, President

Ms Anne Prince, Chief Executive Officer

SITA Environmental Solutions

Mr Mike Ritchie, National General Manager, Marketing and Communications

Local Government Association of Queensland Inc

Mr Gregory Hoffman, Director, Policy and Representation

Mrs Christine Blanchard, Environment and Health Policy Adviser

Total Environment Centre

Mr Jeffrey Angel, Director

Ms Jane Castle, Resource Conservation Campaigner

Clean Up Australia

Mr Ian Kiernan, Chairman

Ms Terrie-Ann Johnson, Chief Executive

Ecos Corporation Ltd

Mr Robert Kelman, Senior Consultant

Mr Matthew Warnken, Managing Director, Crucible Carbon

Coca-Cola Amatil

Mr Alec Wagstaff, Director, Corporate Affairs

Waste Contractors and Recyclers Association of NSW

Mr Tony Khoury, Executive Director

Local Government and Shires Associations of New South Wales

Councillor Genia McCaffery, President, Local Government Association

Mr Robert Verhey, Strategy Manager Environment

Friday, 4 July 2008 – Canberra

Cement Industry Federation

Mr Andrew Farlow, Sustainability Development Policy Manager

Mr Craig Heidrich, Managing Director, Australian Slag Association for the Cement Industry Federation

Australian Conservation Foundation

Mr Graham Tupper, National Liaison Officer

Miss Alexandra Graham, GreenHome New South Wales Coordinator

Australian Food and Grocery Council

Mr Tony Mahar, Director, Sustainable Development

Ms Jennifer Pickles, General Manager, Packaging Stewardship Forum

Zero Waste Australia

Mr Gerard Gillespie, President

Keep Australia Beautiful Council New South Wales

Mr Peter McLean, Chief Executive Officer

Australian Bureau of Statistics

Mr Denis Farrell, Division Head, Population and Environment Statistics Division

Ms Gemma Van Halderen, Branch Head, Environment and Agriculture Statistics Branch

Mr Graeme Brown, Director, Centre of Environment and Energy Statistics

Department of the Environment, Water, Heritage and the Arts

Ms Mary Harwood, First Assistant Secretary, Environment Quality Division

Dr Paul Bainton, Director, Product Stewardship Team

Ms Kelly Pearce, Assistant Secretary, Environment Standards Branch

Appendix 3

Tabled documents, additional information and answers to questions taken on notice

Tabled documents

Fact Sheet: An Analysis of Litter in Australia, tabled by Boomerang Alliance, 2 July 2008.

Additional Information, tabled by Boomerang Alliance, 2 July 2008.

Automated Collection & Recycling Centres around the World, tabled by Revive Recylcing, 2 July 2008.

Council resolution, tabled by Yarra Ranges Shire Council, 2 July 2008.

Container Recycling Newspoll October 2006, tabled by Australians for Refunds on Cans and Bottles, 2 July 2008.

Email titled '1005 Container recycling report', tabled by Australians for Refunds on Cans and Bottles, 2 July 2008.

Comments of Community Groups and Organisations that said yes, "We support the introduction of a Container Deposit System in Victoria", tabled by Australians for Refunds on Cans and Bottles, 2 July 2008.

Advertisement for a drink container deposit system in Victoria, tabled by Australians for Refunds on Cans and Bottles, 2 July 2008.

Community Litter Report. A Community Based Investigation into Roadside Litter, tabled by Australians for Refunds on Cans and Bottles, 2 July 2008.

Letter from Diageo Australia to the Senate Environment, Communications & the Arts Committee titled 'Inquiry into the Management of Australia's Waste Streams', dated 3 July 2008, tabled by Ecos Corporation Pty Ltd, 3 July 2008.

Opinion on Container Deposit Legislation – July 2008, tabled by Waste Contractors & Recyclers Association of NSW, 3 July 2008.

E-Waste, tabled by Local Government and Shires Associations of NSW, 3 July 2008.

Presentation of Cement Industry Federation, tabled by the Cement Industry Federation, 4 July 2008.

Australian Conservation Foundation - The GreenHome Guide. NSW Edition, tabled by the Australian Conservation Foundation, 4 July 2008.

AFGC Supplementary Information for the Senate Inquiry into the Management of Australia's Waste Streams and the Drink Container Recycling Bill 2008, tabled by the Australian Food and Grocery Council, 4 July 2008.

Email from Christine Jones with attached article, *Quiet carbon revolution on Australian farms* by Lucy Skuthorp, tabled by Zero Waste Australia, 4 July 2008.

National Litter Index Annual Report 2006/2007, tabled by Keep Australia Beautiful Council NSW, 4 July 2008.

Additional information

Recycling as a weapon against climate change - Low cost, low risk abatement, by VISY, ACT Recycling, WSN Environmental Solutions and Global Renewables Limited, received on 2 July 2008 from Mr Tony Gray, VISY.

Recycling Net Benefits Final Report February 2008, received on 4 July 2008 from Ms Anne Prince, Chief Executive Officer, Australian Council of Recyclers Inc.

Briefing for Queensland Minister of Environment, received on 7 July 2008 from Mr Mike Ritchie, National General Manager, Marketing, SITA Environmental Solutions.

Energy Implications of Glass-Container Recycling, received on 15 August 2008 from Mr Gerard van Rijswijk, Senior Policy Adviser, National Association of Retail Grocers of Australia.

Answers to questions taken on notice

South Australian Environment Protection Authority (from public hearing, Adelaide, 30 June 2008).

Scouts Australia (South Australian Branch) (from public hearing, Adelaide, 30 June 2008).

Australians for Refunds on Cans and Bottles (from public hearing, Melbourne, 2 July 2008).

Yarra Ranges Shire Council (from public hearing, Melbourne, 2 July 2008).

CSIRO (from public hearing, Melbourne, 2 July 2008).

Local Government Association of Queensland (from public hearing, Sydney, 3 July 2008).

NSW Department of Environment & Climate Change (from public hearing, Sydney, 3 July 2008).

Cement Industry Federation (from public hearing, Canberra, 4 July 2008).