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**Waste: Comparative Data and
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Waste: Comparative Data and Management Frameworks

by

Stewart Smith

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CONTENTS

SUMMARY	i
1.0 Introduction	1
Part One – Waste Data	1
2.0 Limitations of Waste data	1
2.1 Total Generated Waste	2
2.2 Municipal Waste.....	6
2.3 Commercial and Industrial Waste	8
2.4 Construction and Demolition Waste	10
Part 2: The Institutional Waste Framework	12
3.0 New South Wales	12
3.1 Victoria	14
3.2 Queensland.....	16
3.3 Western Australia.....	16
3.4 South Australia.....	18
4.0 Conclusion	19

SUMMARY

Introduction

In 2006-07 some 43.7 million tonnes of waste was generated in Australia. The management of waste has been on the national and State environmental agenda for at least the last 20 years.

This paper is divided into two parts. The first part looks at the waste data of the mainland States: Queensland; NSW; Victoria; South Australia; and Western Australia. The comparative performances of these jurisdictions are briefly commented upon. Part two of the paper looks at the institutional arrangements and waste management policies of these States.

Limitations of Waste data

National information on waste and resource recovery is limited and there are differences from jurisdiction to jurisdiction in how data is collected and reported. This makes comparison of figures, such as disposal and recovery rates across States and Territories, problematic.

Comparative Waste Data

In 2002-03 the mainland States of Australia had a total generated waste of some 31.7 million tonnes. By 2006-07, total generated waste had increased by some 33% to a total of 42.3 million tonnes. In raw tonnage terms NSW contributed the most (15.3 million tonnes). Perhaps of more interest are the raw tonnage statistics reported on a per capita basis. Analysis of the data shows that:

- In 2002-03 South Australia had the highest per capita waste, but by 2006-07 Western Australia had the highest;
- South Australia was the only State to reduce its per capita total generated waste over the time period 2002-03 to 2006-07;
- The greatest percentage increase in total generated waste between 2002-03 and 2006-07 was by Queensland – up 83%. However, Queensland had the lowest per capita tonnage;
- The per capita total generated waste for NSW was up 22% over the time period (at 2.23 tonnes per person in 2006-07).

The diversion rate is the proportion of total generated waste that is recycled rather than disposed. It is often expressed as a percentage of the total waste generated. Currently South Australia has the highest diversion rate – 66%, with Victoria (62%) and NSW (52%) following.

There are three main components to the waste stream. These are:

- Municipal waste;
- Commercial and Industrial waste; and
- Construction and Demolition waste.

In 2006-07 South Australia had the highest municipal diversion rate (54%), compared to NSW at 38%. The lowest was Western Australia at 29%.

In 2006-07 Victoria had the highest Commercial and Industrial diversion rate

(69%). In contrast, NSW had the lowest Commercial and Industrial diversion rate (44%).

The Construction and Demolition waste diversion rate for NSW for 2006-07 was 67%. The highest diversion rate was South Australia (79%), whilst the lowest was Western Australia (17%).

The Institutional Waste Framework

New South Wales

The *Protection of the Environment Operations Act 1997* provides for setting environmental standards, goals, protocols and guidelines. The *Waste Avoidance and Resource Recovery Act 2001* requires the development of a NSW waste avoidance and resource recovery strategy. The Act also established a framework for extended producer responsibility schemes for industry.

In October 2007 the Department of Environment and Climate Change published the NSW Waste Avoidance and Resource Recovery Strategy 2007. The Strategy aims to maximise the conservation of natural resources by avoiding waste and minimising environmental harm from waste management and disposal of solid waste.

The *Protection of the Environment Operations Act 1997* requires licensed waste facilities in NSW to pay a contribution in respect of each tonne of waste received for disposal at the facility. The levy rate for 2010-11 for the Sydney metropolitan area is \$70.30 per tonne.

In March 2010 the NSW Government introduced the *Waste Processing and Recycling Corporation (Authorised Transaction) Bill 2010 (No 2)*. With the assent of the Act on the 23 March 2010, the legislation permits the Government to privatise the publicly owned Waste Processing and Recycling Corporation, which trades as WSN Environmental Solutions. It has been reported that the sale of WSN is on track to be completed by the end of 2010.

Victoria

The Victorian Environment Protection Authority (EPA) is responsible for the development and implementation of Victoria's statutory framework for waste. The *Environment Protection Act 1970* is the principal piece of legislation regulating the waste industry in Victoria. Amendments to the Act in 1985 introduced industrial waste management policies. In 2002 the *Environment Protection (Resource Efficiency) Act* permitted the Environment Protection Authority to develop waste management policies. This change meant that policies that deal with municipal waste could also be developed.

The Victorian Zero Waste Strategy was launched in 2005. The strategy established four Statewide targets for waste reduction, resource recovery and littering by 2014. The strategy contains 28 key actions made up of industry incentives, education, and advisory support. Strategies focus on the improvement of waste management systems and infrastructure, the establishment of product stewardship agreements, the development of both new and existing markets for recycled products, and raising the awareness and

capacity of communities and business.

A new statutory authority, Sustainability Victoria, was established to support and coordinate the implementation of *Towards Zero Waste*. Sustainability Victoria develops Statewide strategies for municipal, commercial and industrial wastes. It provides information and advice to business, government and the community on various issues including: recycling; energy efficient buildings; and green power.

Levies apply to municipal, commercial and industrial and prescribed industrial wastes deposited onto land at licensed facilities in Victoria. The current levy for metropolitan and provincial Melbourne is \$30 per tonne, rising to \$40 per tonne in 2011-12.

Queensland

Waste in Queensland is currently regulated by the *Environmental Protection Act 1994*, the Environmental Protection Regulation 2008 and the Environmental Protection (Waste Management) Policy 2000.

The policy establishes a preferred waste management hierarchy and principles for achieving good waste management. The Waste regulations give legislative support to various national guidelines, plans and Australian Standards, while the Environmental Protection Regulation provides the ability to licence and apply conditions of operation to certain activities, including waste transfer stations, regulated waste treatment facilities and waste disposal facilities. Waste legislation in Queensland is administered by the Department of Environment and Resource Management in Queensland.

The Queensland Waste Management Strategy 1996 aims to minimise or avoid impacts on the environment due to waste whilst allowing for economic growth. In October 2007 the discussion paper *Let's Not Waste Our Future* was released to seek public input into the development of a new waste strategy and waste reform for Queensland. However, the document has not progressed past the discussion paper stage.

Queensland does not have a landfill levy or legislated landfill bans. However, in May 2010 the Queensland Minister for the Environment was reported as saying that the Government was considering the introduction of a waste levy, amid concerns that the State would become a dumping ground for waste from other States.

Western Australia

The *Environmental Protection Act 1986* and its associated regulations established a licensing framework which covers a variety of waste facilities. The *Waste Avoidance and Resource Recovery Act 2007* and its associated regulations established the Waste Authority on 1 July 2008. The key responsibilities of the Authority are:

- the development of a long-term waste management strategy for Western Australia;
- to improve waste services;

- to avoid generating waste;
- to set targets for resource recovery.

The Waste Authority is fully funded through the Waste Avoidance and Resource Recovery Account. The second draft of the State Waste Strategy created under the *Waste Avoidance and Resource Recovery Act 2007* was released for public comment in March 2010.

The *Waste Avoidance and Resource Recovery Levy Act 2007* established the power to prescribe a landfill levy. The levies have risen substantially for 2010. For instance, landfill levies for putrescibles increased from \$8 per tonne in 2009 to \$28 per tonne for 2010. Similarly, for inert materials the levy increased from \$3 per tonne in 2009 to \$12 per tonne for 2010.

South Australia

The Environment Protection Authority is South Australia's primary environmental regulator, responsible for the protection of air and water quality, and the control of pollution, waste, noise and radiation. The Authority developed the *Environment Protection (Waste to Resources) Policy*, which is due to commence on 1 September 2010. The Policy will require waste from metropolitan Adelaide to be taken to resource recovery facilities prior to disposal at landfill, and bans a variety of wastes from landfill.

Zero Waste SA was established by the *Zero Waste SA Act 2004*. Zero Waste SA is the primary agency responsible for the target 'reduce waste to landfill by 25% by 2014' in *South Australia's Strategic Plan*. Zero Waste SA developed a *Waste Strategy 2005–2010*. A Consultation Draft for the next phase (2010–2015) was released in August 2010. The first Waste Strategy (2005–2010) focused on introducing kerbside recycling systems in Adelaide and engaging communities in recycling practices. The new Draft Strategy redirects the main waste focus from recycling to reducing and avoiding waste.

The *Zero Waste Act 2004* also established the Waste to Resources Fund. As of July 2010, a landfill levy in South Australia was payable at a rate of \$26 per tonne in metropolitan areas and \$13 per tonne in non-metropolitan areas.

It should also be noted that South Australia has a container deposit refund scheme. This was introduced in 1977, and allows South Australians to collect a ten cent refund deposit for each beverage container they return to a recycling depot. South Australia has also banned lightweight plastic bags.

Conclusion

Whilst the limitations of the data discussed in section one of this paper must be considered, it could be argued that the most successful State in terms of waste minimization and recovery is South Australia. If this conclusion holds, the obvious question is why? Is it solely due to the work of ZeroWaste SA? Or is the awareness of waste issues heightened in South Australia by their container deposit legislation and, more recently, the ban on lightweight plastic bags?

1.0 INTRODUCTION

In 2006-07 some 43.7 million tonnes of waste was generated in Australia. The management of waste has been on the national and state environmental agenda for at least the last 20 years.¹ More recently, through the Environment Protection and Heritage Council, Australia's Environment Ministers have released the [National Waste Policy](#).² The aims of the Policy include: avoid the generation of waste; reduce the amount of waste for disposal; treat waste as a resource; ensure that waste treatment and disposal is undertaken in a safe, scientific and environmentally sound manner; and contribute to the reduction in greenhouse gas emissions.

This paper is divided into two parts. The first part looks at the waste data of the mainland States: Queensland; NSW; Victoria; South Australia; and Western Australia. The comparative performances of these jurisdictions are briefly commented upon. Part two of the paper looks at the institutional arrangements and waste management policies of these states.

PART ONE – WASTE DATA

2.0 Limitations of Waste data

National information on waste and resource recovery is limited and there are differences from jurisdiction to jurisdiction in how data is collected and reported. This makes comparison of figures, such as disposal and recovery rates across States and Territories, problematic. Both the 2006 Productivity Commission report on waste³ and the 2008 Senate Inquiry into the Management of Australia's Waste Streams report⁴ raised concerns and made recommendations about the need to improve information about waste and resource recovery.

In 1990 an Australian waste database was endorsed by Australia's Environment Ministers to house data provided by each state on the amount and type of waste going to landfill. The database was not successful due to a lack of agreed definitions, ongoing resourcing challenges and the limited scope for sourcing data. In 2008, the Australian Government agreed to fund a feasibility study on establishing a national mechanism for collecting, storing, collating and accessing data. The result of this was the [National Waste Report 2010](#), which was published in March this year and is intended to be updated every three years.⁵

¹ For example, see: Metropolitan Waste Disposal Authority (NSW), *Sydney Region Solid Waste Management Plan*, 1974.

² Environment Protection and Heritage Council, [National Waste Policy: Less Waste, More Resources](#). November 2009.

³ Productivity Commission, [Waste Management. Productivity Commission Inquiry Report No 38](#). December 2006.

⁴ Australian 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.

⁵ Environment Protection and Heritage Council, [National Waste Report 2010](#).

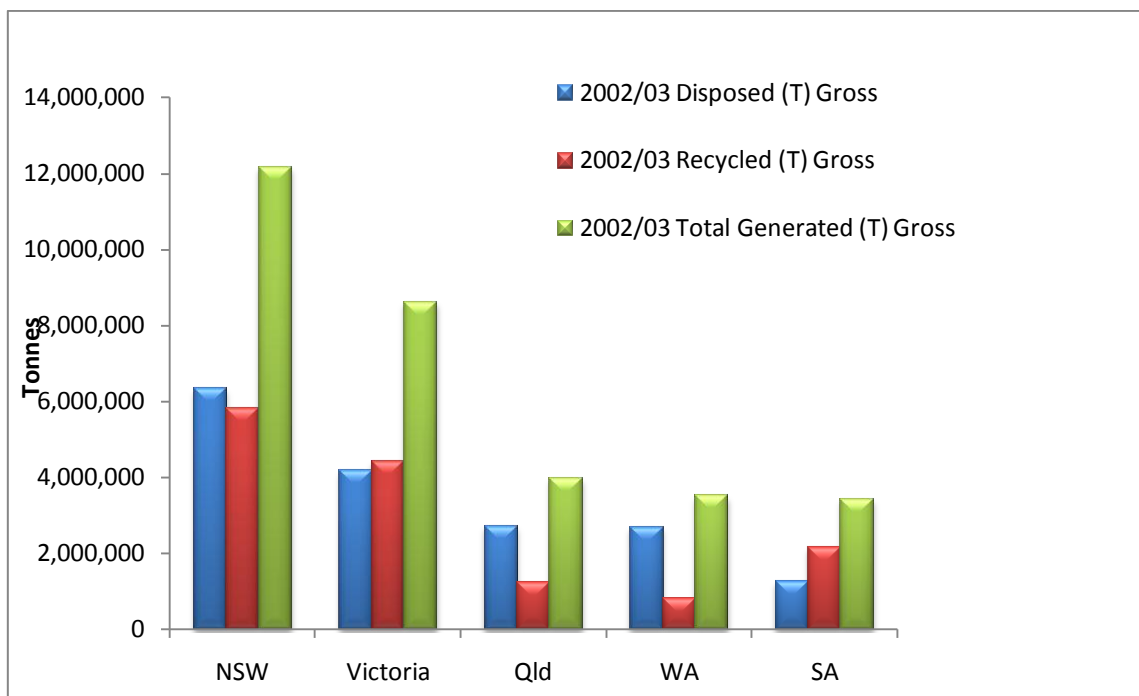
The most up to date data for waste streams across Australia is for 2006/07.⁶ This paper compares this most recent data with that of 2002-03, which is the earliest national data considered reliable.⁷ Population for the 'per capita' figures was taken from the Australian Bureau of Statistics.

2.1 Total Generated Waste

Waste data is reported in two main ways. Total generated waste is the amount of waste created. It may be subsequently disposed, usually into landfill, or it may be recycled. Waste is reported either as gross tonnage, or per capita.

In 2002-03 the mainland States of Australia had a total generated waste of some 31.7 million tonnes. As shown in Figure 1, NSW generated the largest amount of waste, followed by Victoria.

Figure 1: 2002-03 Waste: Total Generated, Disposed and Recycled (gross tonnage)

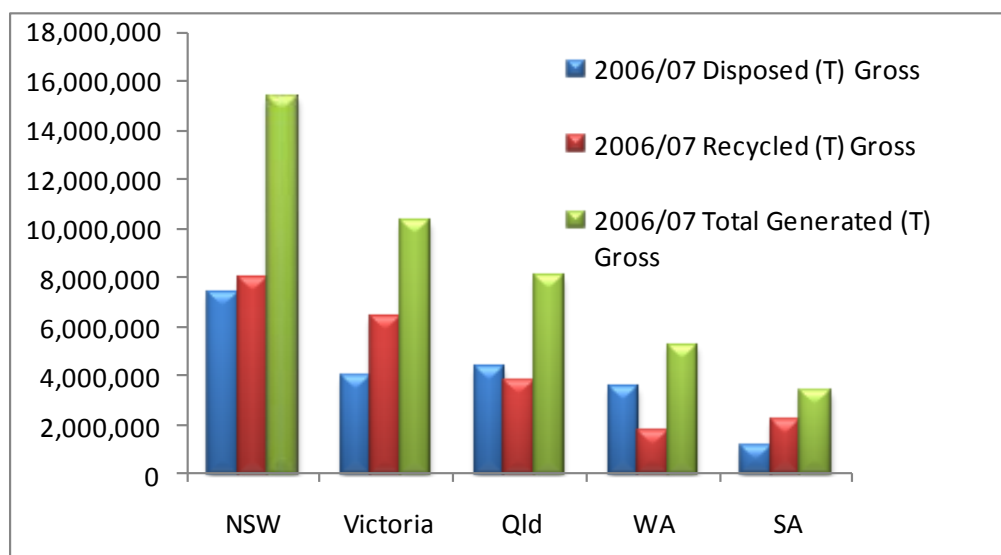


⁶ Environment Protection and Heritage Council, [National Waste Report 2010](#).

⁷ Data for 2002-03 is sourced from: Environment Australia, *Waste and Recycling in Australia, Short Paper*, 6 February 2006. Paper by Hyder Consulting.

Figure 2 shows the same information as Figure 1, but with the latest data from 2006-07. By 2006-07, total generated waste had increased by some 33% to a total of 42.3 million tonnes,⁸ again in raw tonnage terms with NSW contributing the most.

Figure 2: 2006-07 Waste: Total Generated, Disposed and Recycled (gross tonnage)

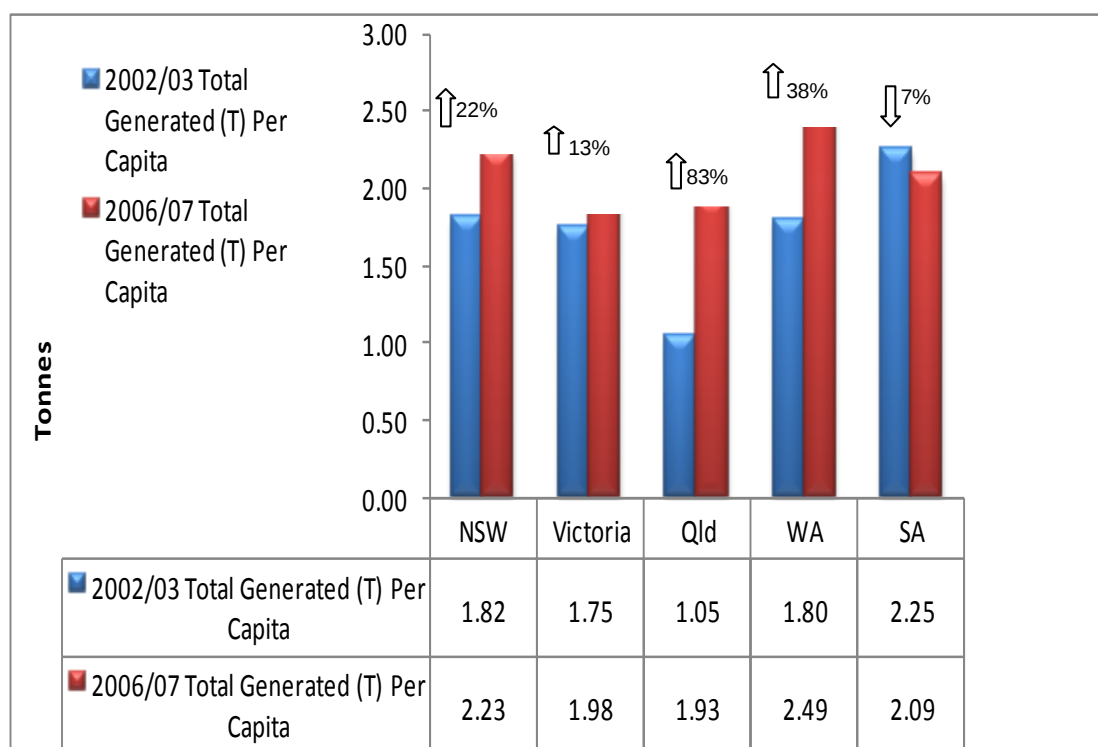


Perhaps of more interest are the raw tonnage statistics reported on a per capita basis. Figure 3 shows 2002-03 total generated waste compared to 2006-07 on a per capita basis. From this figure, several features can be gleaned:

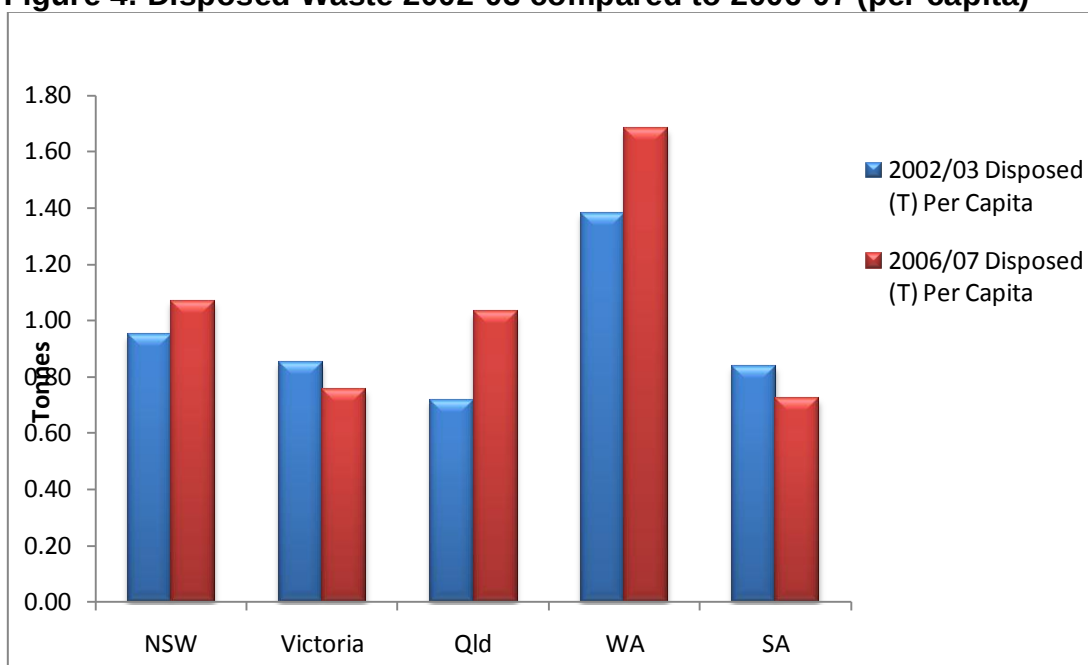
- In 2002-03 South Australia had the highest per capita waste, but by 2006-07 Western Australia had the highest;
- South Australia was the only state to reduce its per capita total generated waste over the time period;
- The greatest percentage increase in total generated waste between 2002-03 and 2006-07 was by Queensland – up 83%. However, Queensland had the lowest per capita tonnage (although for 2006-07 virtually identical to Victoria);
- The per capita total generated waste for NSW was up 22% over the time period.

⁸

If Tasmania, Northern Territory and the ACT were included, total national waste for this period was 43.7 million tones.

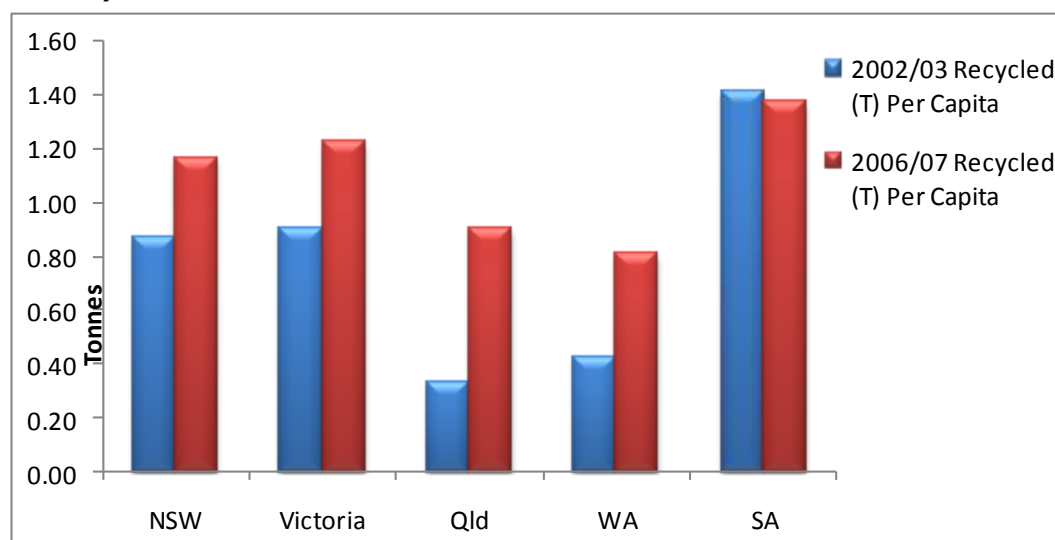
Figure 3: Total Generated Waste 2002/03 compared to 2006/07 (per capita)

Total generated waste includes both waste that is disposed (ie, landfilled) and recycled waste. Hence it is useful to analyse these two constituents to assess any trends. Figure 4 compares the per capita tonnage of landfilled waste across the mainland States between 2002-03 and 2006-07. Of the five States studied, only Victoria and South Australia reduced its per capita disposed waste.

Figure 4: Disposed Waste 2002-03 compared to 2006-07 (per capita)

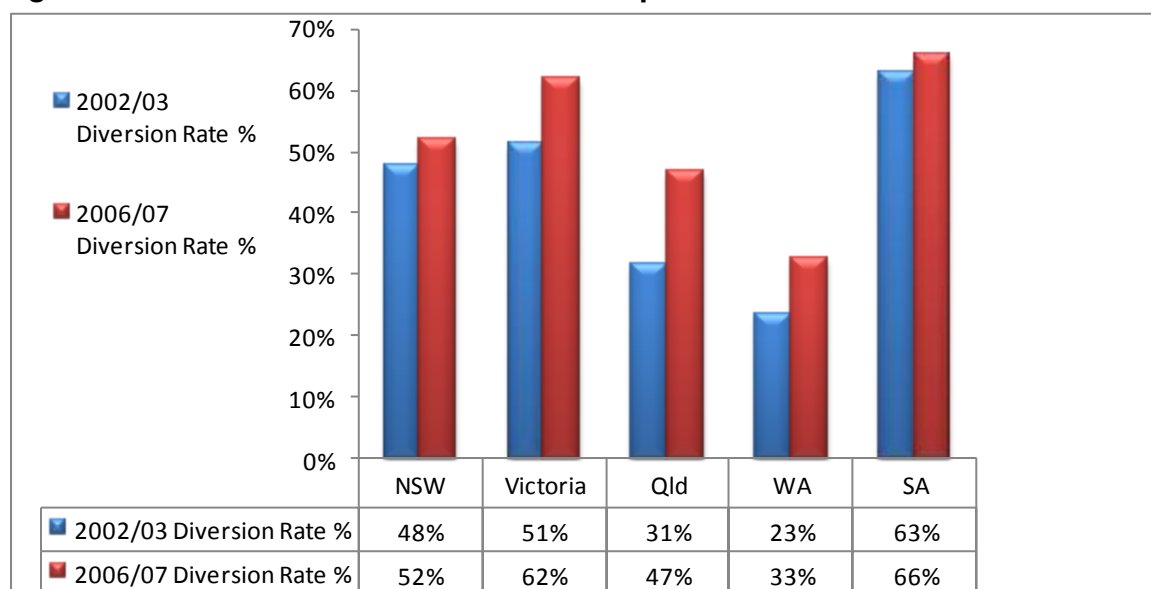
In contrast, Figure 5 shows the tonnage of waste recycled on a per capita basis. All States (except South Australia) increased the per capita recycling tonnage. The largest increase was Queensland, but off the lowest base of all the States. Whilst South Australia had a small drop in recycled waste over the time period (commensurate with the State reducing total generated waste), it still had the highest per capita recycling rate.

Figure 5: Recycled Waste 2002-03 compared to 2006-07 (per capita - tonnes)



The diversion rate is the proportion of total generated waste that is recycled rather than disposed. It is often expressed as a percentage of the total waste generated. Figure 6 shows the diversion rate across the States for the time period studied. Currently South Australia has the highest diversion rate – 66%, with Victoria and NSW following. In 2002-03 Victoria had a similar recycling rate to NSW (51% to 48%), but by 2006-07 had extended its performance to 62% compared to NSW at 52%.

Figure 6: Waste Diversion % 2002-03 compared to 2006-07



There are three main components to the waste stream. These are:

- Municipal waste;
- Commercial and Industrial waste; and
- Construction and Demolition waste.

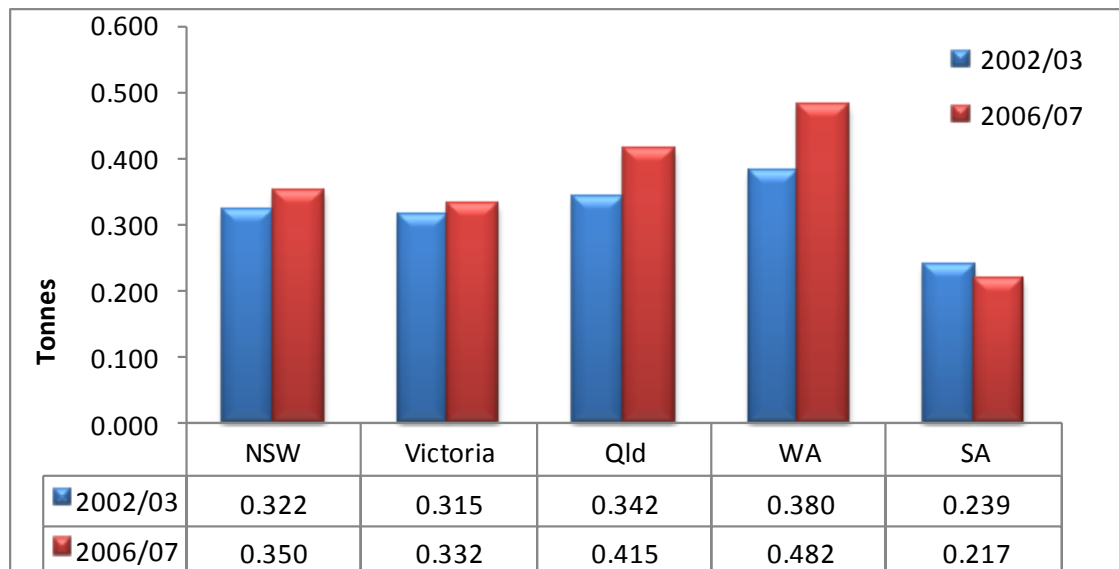
Each of these subsets of waste can be analysed for their disposal and recycling rates.

2.2 Municipal Waste

Municipal waste refers to that usually collected from households by local councils. Nationally, municipal waste comprises some 29% of the waste stream. In NSW, it comprises approximately 25% of the State waste stream.

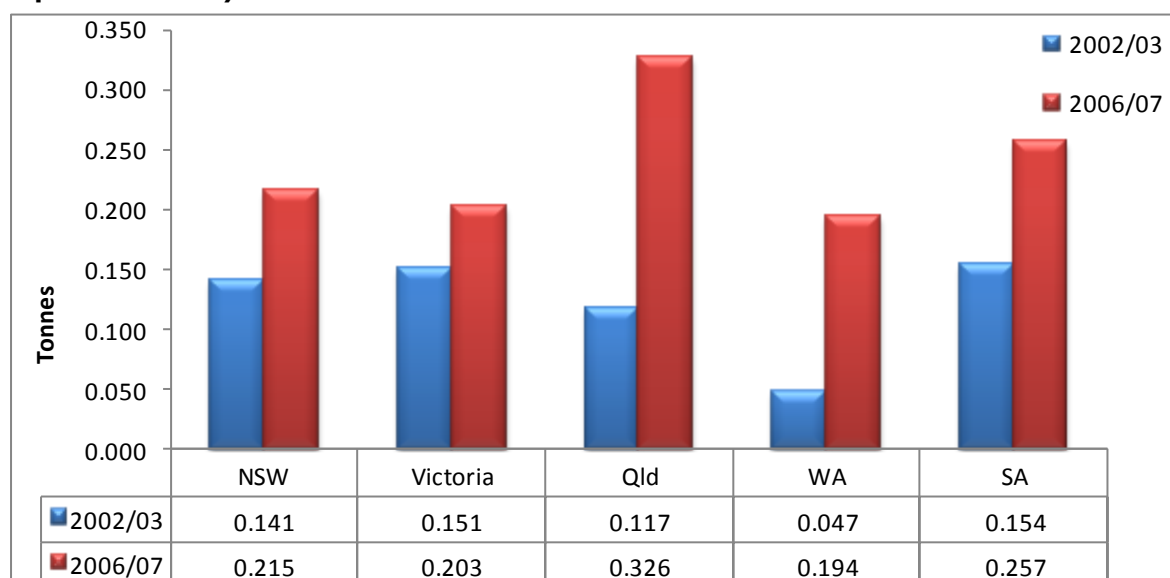
Figure 7 shows the tonnage of municipal waste landfilled per capita between 2002-03 and 2006-07. Again, South Australia had the lowest municipal waste landfilled, and was the only State that achieved a reduction in the per capita amount of waste landfilled between the two dates.

Figure 7: Municipal Waste Landfilled between 2002-03 and 2006-07 (per capita - tonnes)



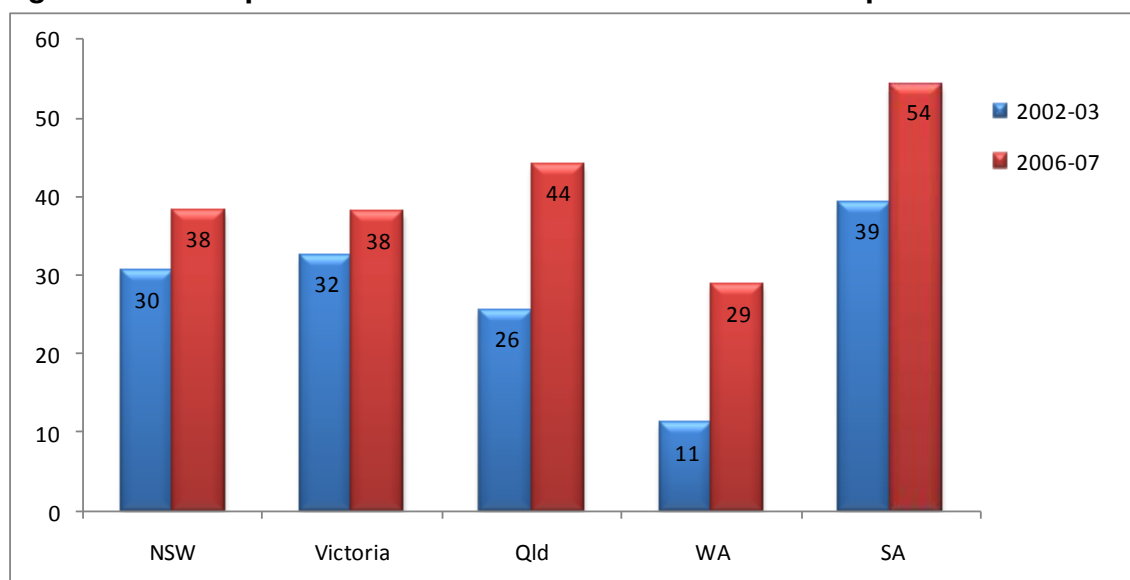
Conversely, Figure 8 shows the per capita tonnage of municipal waste that was recycled. All States increased their recycling tonnage, with NSW residents recycling some 215 kilograms of their household waste per person. By 2006-07, Queensland had the highest per capita recycling tonnage of all the States (326 kilograms per capita) followed by South Australia (257 kilograms per capita).

Figure 8: Municipal Waste Recycled between 2002-03 and 2006-07 (per capita - tonnes)



However, as shown in Figure 9, South Australia clearly has the highest municipal waste diversion rate of all the States – 54%. This is a clear 10% higher than the next State, Queensland, and 16% higher than NSW and Victoria.

Figure 9: Municipal Waste Diversion Rate % 2002-03 compared to 2006-07

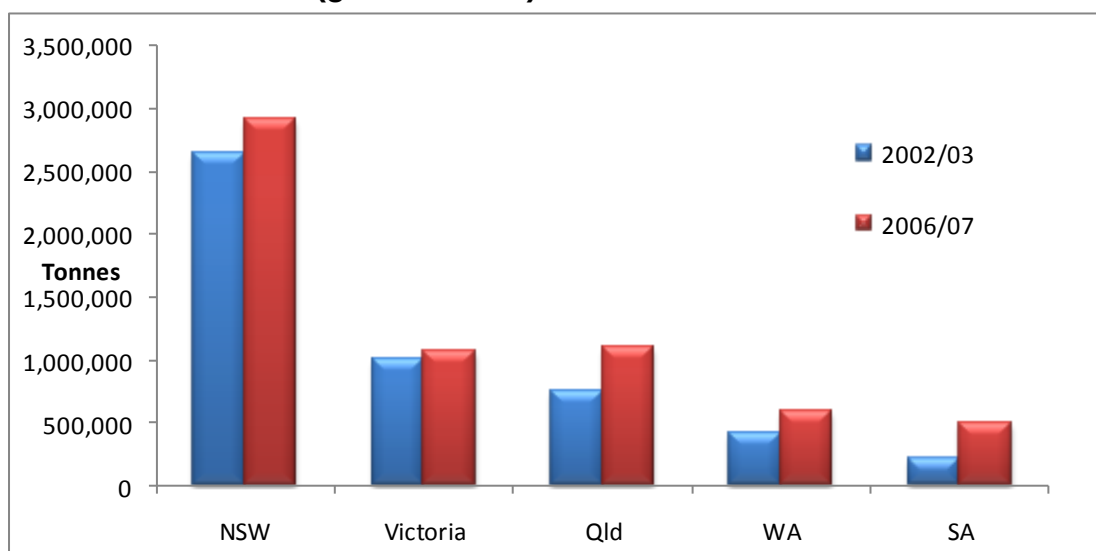


2.3 Commercial and Industrial Waste

Commercial and Industrial waste comprises some 33% of the national waste stream. For NSW it is slightly higher at 34%.

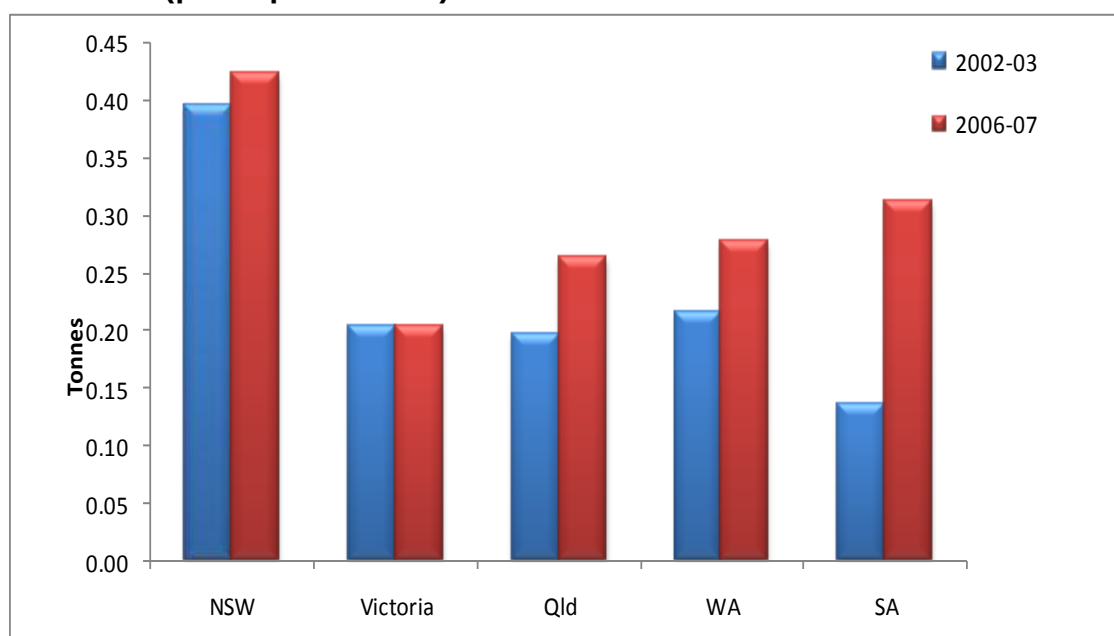
The total generated Commercial and Industrial waste in gross tonnes is shown in Figure 10. On a gross tonnage basis, NSW generates almost three times as much Commercial and Industrial waste as the other large eastern States.

Figure 10: Total Generated Commercial and Industrial Waste between 2002-03 and 2006-07 (gross tonnes)



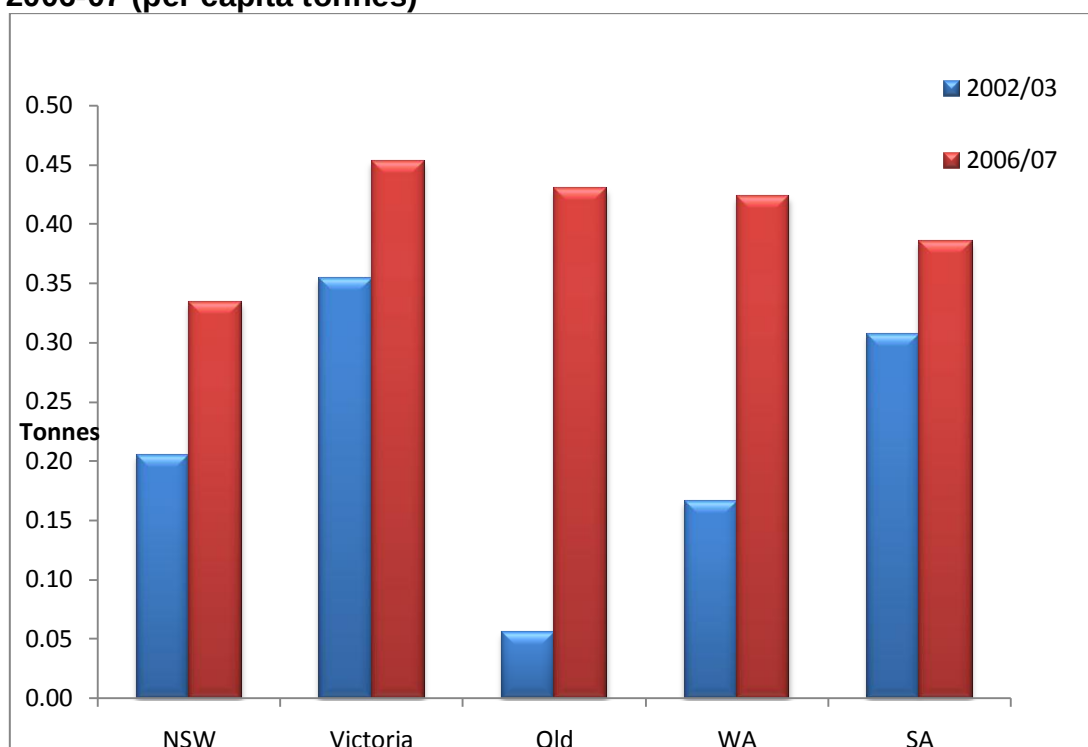
The amount of Commercial and Industrial waste landfilled per capita is shown in Figure 11. Again NSW has a significantly higher per capita tonnage of commercial and industrial waste landfilled compared to the other States.

Figure 11: Commercial and Industrial waste landfilled 2002-03 compared to 2006-07 (per capita tonnes)



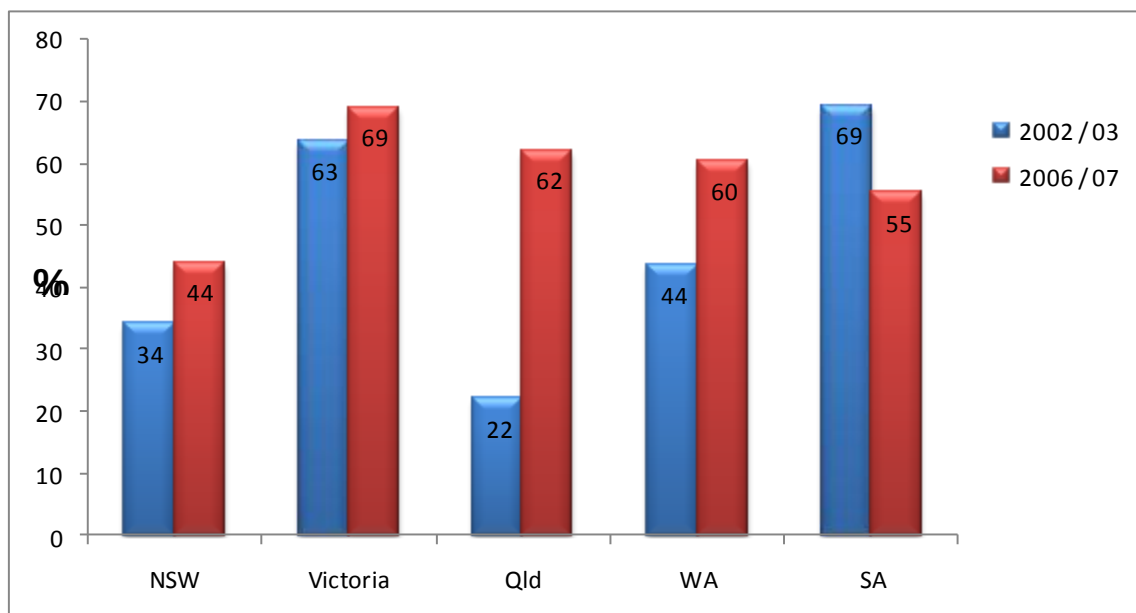
The amount of Commercial and Industrial waste recycled per capita is shown in Figure 12. NSW had the lowest per capita recycling tonnage of Commercial and Industrial waste of all the States for 2006-07.

Figure 12: Commercial and Industrial waste recycled 2002-03 compared to 2006-07 (per capita tonnes)



Similarly, Figure 13 shows the Commercial and Industrial diversion rate in 2002-03 and 2006-07. It demonstrates that in 2006-07 NSW had the lowest Commercial and Industrial percentage diversion rate. Clearly between 2002-03 and 2006-07 Queensland had the greatest increase in its diversion rate, whilst South Australia had a fall in its Commercial and Industrial diversion rate.

Figure 13: Commercial and Industrial waste diversion rate % 2002-03 compared to 2006-07



2.4 Construction and Demolition Waste

Whilst Construction and Demolition waste comprises 37% of the national waste stream, for NSW it comprises 41%. Figure 14 demonstrates the very high landfill per capita tonnage of Construction and Demolition waste in Western Australia compared to the other States.

Figure 14: Construction and Demolition Waste Landfilled per capita 2002-03 compared to 2006-07.

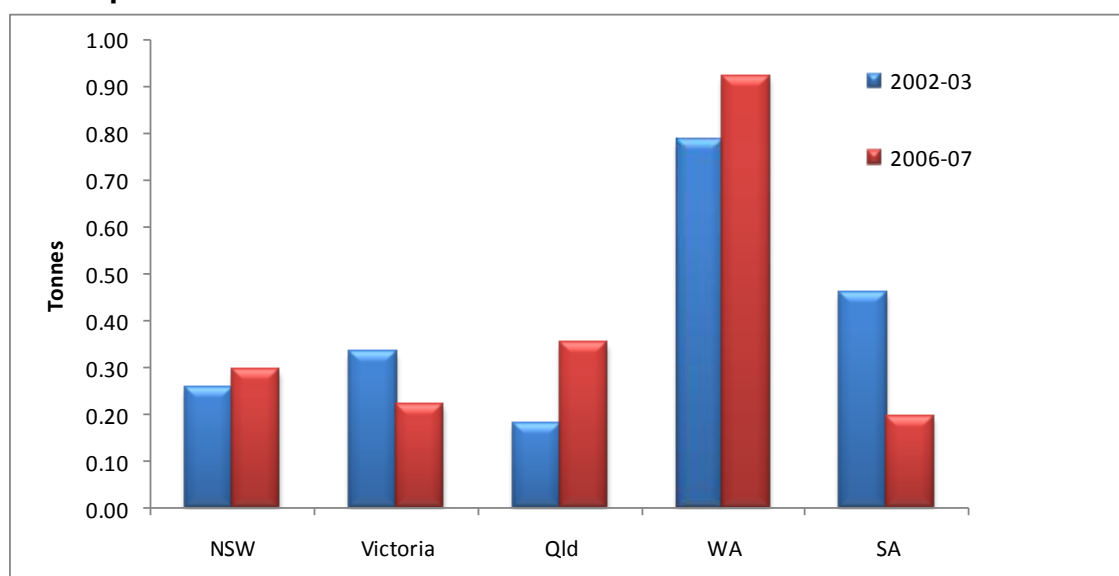


Figure 15 shows the tonnes per capita of Construction and Demolition waste that is recycled. Figures 14, 15 and 16 demonstrate that of all the States, Western Australia landfills most of its Construction and Demolition waste. In contrast, South Australia has the highest per capita rate of recycling of Construction and Demolition waste for both time periods. In percentage terms NSW had the third highest Construction and Demolition recycling rate, at 67%, marginally behind Victoria.

Figure 15: Construction and Demolition Waste Recycled per capita 2002-03 compared to 2006-07.

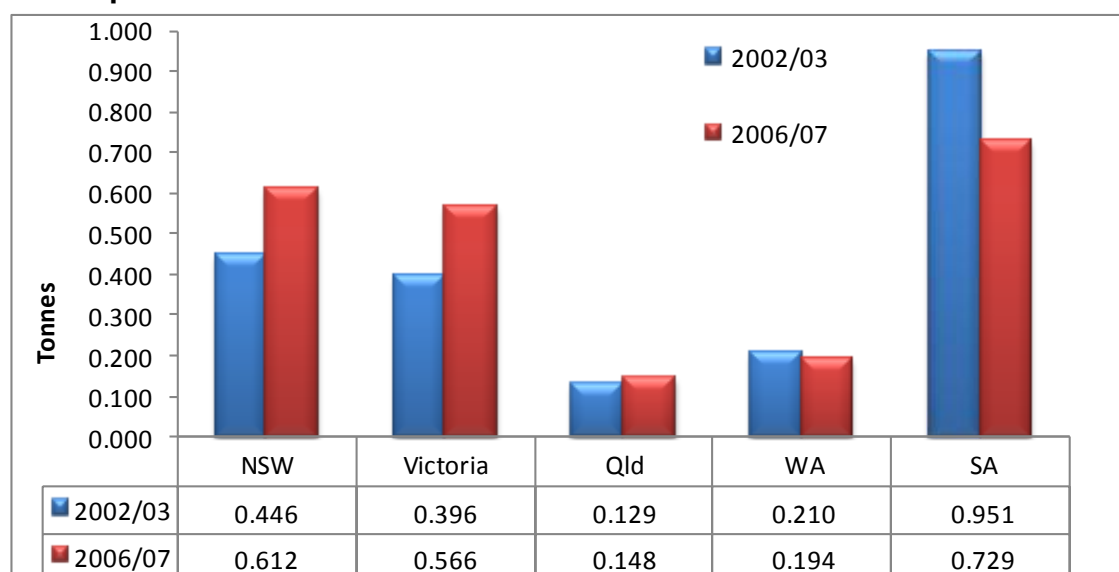
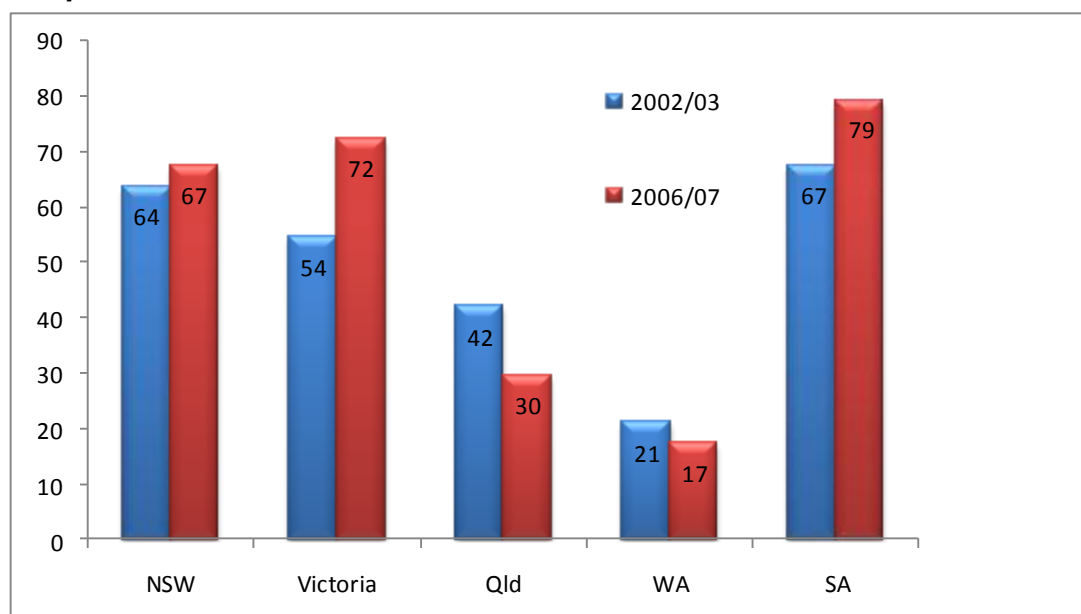


Figure 16: Construction and Demolition Diversion Rate % 2002-03 compared to 2006-07.



PART 2: THE INSTITUTIONAL WASTE FRAMEWORK

This section of the paper reviews the institutional framework of waste management across the major States.

3.0 New South Wales

The *Protection of the Environment Operations Act 1997* provides for setting environmental standards, goals, protocols and guidelines. Licensed waste facilities pay a waste and environment levy, which increases annually, on all waste they receive. The *Waste Avoidance and Resource Recovery Act 2001* requires the development of a NSW waste avoidance and resource recovery strategy. The Act also established a framework for extended producer responsibility schemes for industry.

In October 2007 the Department of Environment and Climate Change published the [NSW Waste Avoidance and Resource Recovery Strategy 2007](#). This updated the Waste Strategy 2003. The Strategy aims to maximise the conservation of natural resources by avoiding waste and minimising environmental harm from waste management and disposal of solid waste. The strategy includes targets for waste reduction and diversion and focuses on preventing and avoiding waste, increasing recovery and use of secondary materials, reducing toxicity in products and materials and reducing litter and illegal dumping. Some of the principles of the Strategy includes:

- Polluter pays – those who generate pollution and waste should bear the cost of containment, avoidance or abatement;
- Full life cycle costing – users of goods and services should pay prices based on the full life cycle of costs of providing goods and services;

- Market incentives – environmental goals should be pursued in the most cost effective way, by establishing incentive structures, including market mechanisms, that enable those best placed to maximise benefits or minimise costs to develop their own solutions and responses to environmental problems;
- Shared responsibility – industry should share (with the community) the responsibility for reducing and dealing with waste, and service delivery needs to be integrated on a State-wide basis;
- Sustainable production and consumption – environmentally sound waste management must go beyond the mere safe disposal or recovery of wastes that are generated, and should seek to address the root cause of the problem by attempting to change unsustainable patterns of production and consumption;
- Public involvement in decision making;
- Economic development – environmental protection should constitute an integral part of the development process and cannot be considered in isolation from it;
- Continuous improvement;
- Contribute to other environmental sustainability issues - policy and actions on waste should support and identify their contribution to other key environmental issues, such as greenhouse gas abatement and reduction in energy and water use.

The NSW Government Sustainability Policy (2008) sets new targets for resource use, disposal and procurement across energy, water and waste. The Waste Reduction and Purchasing Policy requires all NSW government agencies and corporations to develop and implement a plan for reducing waste and increasing the purchase of products with recycled content. Agencies are required to report on their performance every two years (three years for small agencies).

As noted, the *Protection of the Environment Operations Act 1997* requires licensed waste facilities in NSW to pay a contribution in respect of each tonne of waste received for disposal at the facility. The levy rates for 2010-11 are:

- Sydney metropolitan area: \$70.30 per tonne;
- Extended regulated area (Illawarra and Hunter regions): \$65.30 per tonne;
- Regional regulated area (coastal councils from Port Stephens to Queensland border and Blue Mountains and Wollondilly council areas): \$20.40 per tonne;
- Levy on trackable liquid waste is \$63.00 per tonne;
- The coal washery reject levy is \$15.30 per tonne.

In March 2010 the NSW Government introduced the *Waste Processing and Recycling Corporation (Authorised Transaction) Bill 2010 (No 2)*. With the assent of the Act on the 23 March 2010, the legislation permits the Government to privatise the publicly owned Waste Processing and Recycling Corporation, which trades as WSN Environmental Solutions. Parliamentary Secretary Mr David Harris MP told Parliament:

The Government has decided to proceed with this transaction for a number of important reasons. Firstly, the sale of WSN addresses the inherent conflict between Government being both owner and regulator of this business. Secondly, WSN operates in an increasingly competitive market along with private sector operators, who are best placed to make the significant technology development and capital investment necessary in this growing industry.⁹

It has been reported that the sale of WSN is on track to be completed by the end of 2010.¹⁰

3.1 Victoria

The Victorian Environment Protection Authority (EPA) is responsible for the development and implementation of Victoria's statutory framework for waste. The framework provides for solid wastes, such as municipal, commercial and industrial and prescribed wastes. The framework helps to drive resource efficiency, sustainable waste management and the prevention of pollution in Victoria.¹¹

The *Environment Protection Act 1970* is the principal piece of legislation regulating the waste industry in Victoria. Amendments to the Act in 1985 introduced industrial waste management policies. In 2002 the *Environment Protection (Resource Efficiency) Act* permitted the Environment Protection Authority to develop waste management policies. This change meant that policies that deal with municipal waste could also be developed.

The Environment Protection Authority works with other government bodies such as the Department of Sustainability and Environment (DSE), Sustainability Victoria, regional and metropolitan waste management groups and local government on waste policy development, regulation and program delivery.

Towards Zero Waste

Launched in 2005, the Victorian Government's Towards Zero Waste Strategy sets four Statewide targets for waste reduction, resource recovery and littering by 2014. The strategy focuses on three major waste producing sectors: Municipal, Commercial and Industrial, and the Construction and Demolition industries. *Towards Zero Waste* does not impose any mandatory or regulatory requirements on Victorian businesses. The strategy's actions aim to provide businesses with options for reduced waste generation (eg, cleaner production initiatives) and for cost-competitive waste disposal for increased resource recovery.¹²

The strategy contains 28 key actions made up of industry incentives, education,

⁹ NSWPD, 18 March 2010, p. 21702.

¹⁰ ['State waste services draws bidding crowd: sale.'](#) *The Australian*, July 24 2010.

¹¹ See EPA (Vic) Waste. <http://www.epa.vic.gov.au/waste/>. Accessed 5 August 2010.

¹² Victorian Government, [Towards Zero Waste Strategy Summary](#). 2005.

and advisory support. Strategies focus on the improvement of waste management systems and infrastructure, the establishment of product stewardship agreements, the development of both new and existing markets for recycled products, and raising the awareness and capacity of communities and business.

A new statutory authority, [Sustainability Victoria](#), was established to support and coordinate the implementation of *Towards Zero Waste*. Sustainability Victoria develops statewide strategies for municipal, commercial and industrial wastes. It provides information and advice to business, government and the community on various issues including: recycling; energy efficient buildings; and green power.

[The Metropolitan Waste Management Group](#) was created in October 2006 by legislative amendment which amalgamated the four previous Regional Waste Management Groups in Melbourne. The group was formed to plan and facilitate waste management activities for its 30 member councils. The group has developed the Metropolitan Waste and Resource Recovery Strategic Plan, which was released on 1 March 2009.

On publishing the Plan, the Victorian Environment and Climate Change Minister Gavin Jennings stated:

The plan examines Melbourne's waste and resource recovery needs for the next two decades and beyond, and has identified municipal waste, particularly food and garden waste, as priorities if we are to meet our *Towards Zero Waste Strategy* targets.

Sending valuable resources, such as organic waste, to landfill is a lost opportunity for the environment and the economy. In landfill, organic wastes decompose and produce methane – a greenhouse gas 21 times more potent than carbon dioxide. The plan aims to recover that waste and use it for productive purposes.

Our population is growing and so is the amount of waste we produce. Melbournians have been great recyclers but we are going to need to more than double the amount of waste we recover, recycle and reprocess to meet our *Towards Zero Waste Strategy* targets of recovering 65 per cent of municipal waste by 2014.¹³

Regional waste management groups (RWMGs) are responsible for planning municipal solid waste management in rural and provincial Victoria and were established in 1996. There are 12 rural and provincial regions, each encompassing one or more municipalities. The groups work in partnership with member municipal councils developing regional plans to implement statewide policies, strategies and programs at a local level.¹⁴

¹³ [Media Release](#), "Meeting our future waste management challenges." 1 March 2009.

¹⁴ See the EPA (Vic) website: <http://www.epa.vic.gov.au/waste/> (accessed 5 August 2010)

Levies apply to municipal, commercial and industrial and prescribed industrial wastes deposited onto land at licensed facilities in Victoria. Landfill levies are used solely for the purposes of environment protection and fostering environmentally sustainable use of resources and best practice in waste management. The levies fund the activities of regional waste management groups, Sustainability Victoria and the Environment Protection Authority. The current levy for metropolitan and provincial Melbourne is \$30 per tonne, rising to \$40 per tonne in 2011-12.¹⁵

3.2 Queensland

Waste in Queensland is currently regulated by the *Environmental Protection Act 1994*, the *Environmental Protection Regulation 2008* and the [Environmental Protection \(Waste Management\) Policy 2000](#).

The policy establishes a preferred waste management hierarchy and principles for achieving good waste management. The Waste regulations give legislative support to various national guidelines, plans and Australian Standards, while the *Environmental Protection Regulation* provides the ability to licence and apply conditions of operation to certain activities, including waste transfer stations, regulated waste treatment facilities and waste disposal facilities.

Waste legislation in Queensland is administered by the Department of Environment and Resource Management in Queensland.

The Queensland Waste Management Strategy 1996 aims to minimise or avoid impacts on the environment due to waste whilst allowing for economic growth.

In October 2007 the discussion paper *Let's Not Waste Our Future* was released to seek public input into the development of a new waste strategy and waste reform for Queensland. However, the document has not progressed past the discussion paper stage. Issues discussed in the paper included the application of a price signal to waste disposal, such as a waste disposal levy, separate waste and resource efficiency legislation, waste avoidance and recycling targets and the development of a new strategy. Queensland does not have a landfill levy or legislated landfill bans.

In May this year the Queensland Minister for the Environment was reported as saying that the Government was considering the introduction of a waste levy, amid concerns that the State would become a dumping ground for waste from other States.¹⁶

3.3 Western Australia

The *Environmental Protection Act 1986* and its associated regulations established a licensing framework which covers a variety of waste facilities. The

¹⁵ See Victorian Environment Protection Authority, [Landfill Levies](#).

¹⁶ "Queensland landfill levy must be 'genuine environment measure'." In [CE Daily](#), 11 May 2010.

Waste Avoidance and Resource Recovery Act 2007 and its associated regulations established the Waste Authority on 1 July 2008. The key responsibilities of the Authority are:

- the development of a long-term waste management strategy for Western Australia;
- to improve waste services;
- to avoid generating waste;
- to set targets for resource recovery.

The Waste Authority is fully funded through the Waste Avoidance and Resource Recovery Account (see below). The Department of Environment and Conservation provides executive, administrative and contract management support to the Authority.¹⁷ The second draft of the State Waste Strategy created under the *Waste Avoidance and Resource Recovery Act 2007* was released for public comment in March 2010.¹⁸

The *Waste Avoidance and Resource Recovery Levy Act 2007* established the power to prescribe a levy that is to be payable in respect of waste received at disposal premises. The levy revenue is used to fund waste management initiatives through the Waste Avoidance and Resource Recovery Account. The levies have risen substantially for 2010. For instance, landfill levies for putrescibles increased from \$8 per tonne in 2009 to \$28 per tonne for 2010. Similarly, for inert materials the levy increased from \$3 per tonne in 2009 to \$12 per tonne for 2010.¹⁹

In 2007, the Minister for the Environment announced the introduction of the Zero Waste Plan Development Scheme (ZWPDS) as a new method to allocate funding for waste management to local governments. The ZWPDS shifted from a financial reward based program, through the Waste Avoidance and Resource Recovery Account, to a strategic approach that encouraged and assisted local governments to collaborate within their regions and jurisdictions in respect of waste management. The ZWPDS promoted improved performance in waste avoidance and minimisation, resource recovery and resulting landfill waste reduction. The scheme was rolled out in two phases, which are described briefly below.

- Phase 1 involved an on-line survey of local governments to report baseline waste data within individual local government areas;
- Phase 2 involved the development of Strategic Waste Management Plans (SWMP). A key objective was to establish regional partnerships across local government authorities and this was encouraged through

¹⁷ See: Western Australia, [Waste Authority](http://www.zerowastewa.com.au/whoswho/authority/). See: <http://www.zerowastewa.com.au/whoswho/authority/>, accessed 6 August 2010.

¹⁸ Western Australia, Towards Zero Waste, [Waste Strategy](#). Accessed 5 August 2010.

¹⁹ Government of Western Australia, Dept of Environment and Conservation, *Landfill Levy Increase Effective 1 January 2010*. See: http://www.zerowastewa.com.au/documents/Landfill_Levy_increase_letter_1jan2010.pdf, accessed 6 August 2010.

funding allocations. A total of 122 local governments elected to work in 24 collaborative groupings around the State. Twelve other local governments developed individual Management Plans.

It is intended that the Strategic Waste Management Plans will enable local government to commence or improve existing strategies for the achievement of best practice municipal waste management. It is recognised that each plan will be unique, reflecting the different demographic, geographical and social constitution of the local government region. The plan will also reflect the current level of waste management services provided by each of the local governments involved in the formulation of the plan.

A [review](#) of the Zero Waste Plan Development Schemes was released in June 2010.²⁰ It found that the majority of funded projects focused on improved management and technology modifications for resource recovery, landfills and waste transfer stations.

3.4 South Australia

The Environment Protection Authority is South Australia's primary environmental regulator, responsible for the protection of air and water quality, and the control of pollution, waste, noise and radiation. The Environment Protection Authority is an independent statutory authority within the Environment and Conservation Portfolio, with its own Chief Executive and a governing Board.

The Environment Protection Authority developed the *Environment Protection (Waste to Resources) Policy*, which is due to commence on 1 September 2010.²¹ The Policy will require waste from metropolitan Adelaide to be taken to resource recovery facilities prior to disposal at landfill, and ban a variety of wastes from landfill. It will also provide improved enforcement options for dealing with the unlawful disposal of waste (including illegal dumping and inappropriate stockpiling of wastes), the safe management, handling and disposal of various waste types, and will require a transparent and consistent approach to the assessment of waste and resource recovery facilities.

Zero Waste SA was established by the *Zero Waste SA Act 2004* as a body corporate and instrumentality of the Crown. Zero Waste SA is the primary agency responsible for the target 'reduce waste to landfill by 25% by 2014' in *South Australia's Strategic Plan*. The functions of Zero Waste SA are prescribed in section 6 of the *Zero Waste SA Act* and include:

- developing and implementing government policies on waste management;
- monitoring and assessing the adequacy of South Australia's Waste Strategy and its implementation;

²⁰ GHD, [Waste Authority, Review of Zero Waste Plan Development Scheme and Regional Funding Program Pilot](#). June 2010.

²¹ Government of South Australia, [Environment Protection \(Waste to Resources\) Policy 2010](#). Accessed 6 August 2010.

- helping local councils with arrangements for regional waste management;
- contributing to the development of waste management infrastructure, technologies and systems;
- commissioning, supporting and collaborating on research into waste management practices and issues;
- raising public and industry awareness about waste management;
- developing and supporting programs for preventing litter and illegal dumping;
- developing markets for recovered resources and recycled materials.²²

Zero Waste SA developed a *Waste Strategy 2005–2010*. A Consultation Draft for the next phase (2010 – 2015) was released in August 2010. The first Waste Strategy (2005-2010) focused on introducing kerbside recycling systems in Adelaide and engaging communities in recycling practices. The new Draft Strategy redirects the main waste focus from recycling to reducing and avoiding waste.²³

The *Zero Waste Act 2004* also established the Waste to Resources Fund, which Zero Waste SA applies to achieve its objectives. The fund is primarily made up of 50% of the levy paid by waste depot licence holders under section 113 of the *Environment Protection Act 1993*. The levy is collected by the Environment Protection Authority and the appropriate proportion is transferred to the Waste to Resources Fund. As of July 2010, the landfill levy in South Australia was \$26 per tonne in metropolitan areas and \$13 per tonne in non-metropolitan areas.²⁴

It should also be noted that South Australia has a container deposit refund scheme. This was introduced in 1977, and allows South Australians to collect a ten cent refund deposit for each beverage container they return to a recycling depot. South Australia has also banned light weight plastic bags (ie, those usually used as supermarkets and similar outlets).

4.0 CONCLUSION

From the information / data gained in part one of the paper, there are several trends evident. Western Australia had the highest per capita total generated waste tonnage. This equated to 2.49 tonnes per person. NSW had the second highest per capita total waste generated, at 2.23 tonnes. From 2002-03 to 2006-07, South Australia was the only State to reduce its total generated waste. In contrast, NSW total generated waste increased 22 percent, and Queensland 83 percent.

²² ZeroWaste SA, [Annual Report 2007-08](#).

²³ Zero Waste SA, [South Australia's Waste Strategy 2010 – 2015. Consultation Draft](#). August 2010.

²⁴ South Australia, [Environment Protection Regulations 2009](#). Accessed 6 August 2010.

For both 2002-03 and 2006-07 South Australia had the highest waste diversion rate – the amount of generated waste sent for recycling rather than landfilling. For the latter date, the South Australian diversion rate was 66 percent, double that of Western Australia (33%) and considerably higher than NSW (52%).

For Municipal waste, again South Australia had the highest diversion rate of 54 percent, a full ten percentage points higher than the second best, Queensland (44%), and again considerably higher than NSW and Victoria – both on 38 percent.

NSW had the highest Commercial and Industrial waste landfilled (per capita) of all the States, for both 2002-03 and 2006-07. The diversion rate of Commercial and Industrial waste in NSW in 2006-07 was 44 percent – the lowest of the all the States studied. The next lowest was South Australia at 55 percent. In contrast, the highest performing State was Victoria, which had a Commercial and Industrial diversion rate of 69 percent.

The performance in NSW in regard to Construction and Demolition waste was better, with the 2006-07 diversion rate at 67 percent, still behind the leader South Australia at 79 percent.

Whilst the limitations of the data discussed in section one of this paper must be considered, it could be argued that the most successful state in terms of waste minimization and recovery is South Australia. If this conclusion holds, the obvious question is why? Is it solely due to the work of ZeroWaste SA? Or is the awareness of waste issues heightened in South Australia by their container deposit legislation and, more recently, the ban on lightweight plastic bags?