

Chapter 2

Waste management and recycling in Australia

2.1 Waste is defined as materials or products that are unwanted or have been discarded, rejected or abandoned. Waste includes materials or products that are recycled, converted to energy, or disposed. Materials and products that are reused (for their original purpose and without reprocessing) are not waste because they remain in use.¹ Waste typically arises from three streams:

- domestic and municipal—includes all household waste and waste collected in public places;
- commercial and industrial waste from all business and industrial activities and public institutions; and
- construction and demolition—includes all waste from the building and construction industry.

2.2 Waste can be classified by composition such as glass, paper, organic, metal and plastic. This report discusses solid waste rather than liquid or gaseous waste. Given the limitations of the committee, and the recent decisions by China relating to the import of recycled material, the inquiry and the report also generally focused on the flow of materials; rather than organics. As such there is only a summary examination of food waste and methane avoidance or collection. This is not to diminish this as an issue.

2.3 This chapter outlines: the waste management and recycling sector in Australia; and considers waste generation and the fate of waste; deficiencies in waste data; and the regulation of waste.

Waste hierarchy

2.4 The key framework underpinning waste management policy and practice in Australia is the waste management hierarchy, which ranks the ways of dealing with waste in order of preferences.²

2.5 The waste management hierarchy ranks strategies in order of preference from avoiding the creation of waste as the most desired outcome, and disposal as the least desired outcome.³

1 *National Waste Report 2013 – Frequently asked questions*, <http://www.environment.gov.au/protection/national-waste-policy/national-waste-reports/national-waste-report-2013/faqs>.

2 Waste Management Association of Australia, *Submission 52*, p. 2.

3 Waste Management Association of Australia, *Submission 52*, p. 2.

Figure 2.1—Waste hierarchy

Source: Waste Management Association of Australia, *Submission 52*, p. 2.

2.6 Waste avoidance includes actions to reduce the amount of waste generated by households, industry and government. This strategy is intended to maximise efficiency and avoid unnecessary use of virgin materials through changes in consumer behaviour.⁴

2.7 Where avoiding or reducing waste is not possible, the re-use of products is preferred. This avoids the costs of energy and other resources required for recycling. It includes initiatives such as items being re-sold or donated to charities.⁵

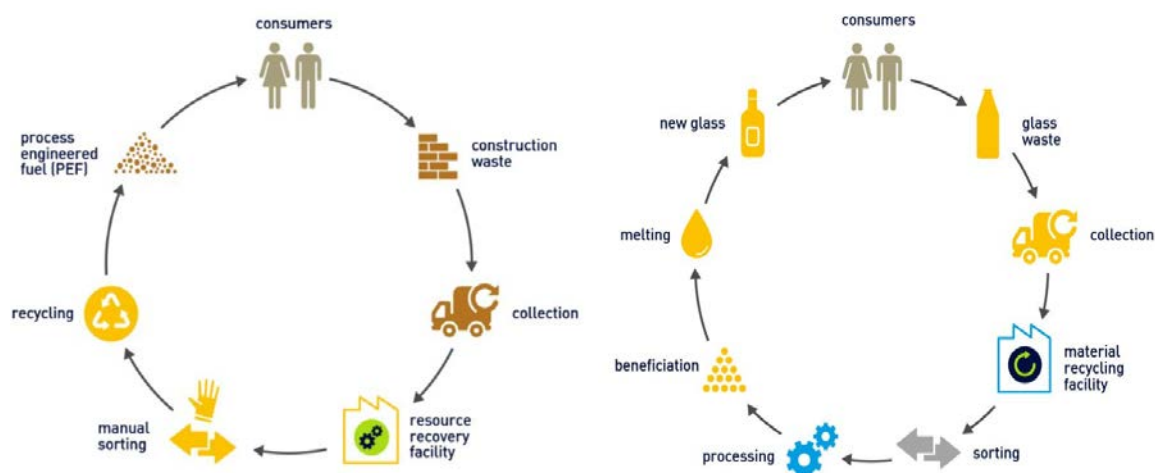
2.8 Recycling of materials to make the same or different products keeps materials in the productive economy and provides beneficial environmental outcomes through reducing the need for virgin materials and waste disposal such as landfill. Recycling includes re-processing where items are processed and used to produce new items of the same material (e.g. glass bottles being used to create new bottles) and processes where items are used to create new products (e.g. glass bottles being crushed and used as road-base). Not all recyclable materials are able to be reprocessed (e.g. construction and demolition material).⁶ Where recycling or reprocessing is not feasible, it is sometimes possible to recover the energy from the material and utilise that energy in other initiatives.

4 New South Wales Environment Protection Authority, *The Waste Hierarchy*, <https://www.epa.nsw.gov.au/your-environment/recycling-and-reuse/warr-strategy/the-waste-hierarchy>.

5 New South Wales Environment Protection Authority, *The Waste Hierarchy*, <https://www.epa.nsw.gov.au/your-environment/recycling-and-reuse/warr-strategy/the-waste-hierarchy>.

6 It should be noted that though all reprocessing is classified as recycling, not all recycling is reprocessing, however the terms are sometimes used interchangeably in the evidence received by the committee.

Figure 2.2—Construction waste recycling and glass reprocessing



Source: Suez Australia and New Zealand⁷

2.9 Material which is unable to be re-used, recycled, reprocessed or recovered for energy should instead be treated to minimise environmental and health and safety impacts. The waste hierarchy also recognises that some types of waste such as hazardous chemicals or asbestos cannot be safely recycled or re-used and instead, direct treatment or disposal is the most appropriate management option.⁸

The waste management and recycling sector

2.10 The four key areas of activity in the industry are:

- waste collection and transfer;
- sorting of waste;
- recycling (turning into new product) and reuse; and
- the final disposal of waste that cannot be recycled or reused into landfill.

2.11 The industry is comprised of private firms and government enterprises. Local government, for example, typically manages waste collection and transfer, and may provide landfill facilities. However, in many locations, local government has outsourced these activities to the private sector.

2.12 Recycling is dominated by the private sector. Some of the major companies undertaking recycling in Australia include Visy, ResourceCo, Cleanaway, and Suez.

7 <http://www.sita.com.au/commercial-solutions/resource-recovery-recycling/glass-recycling/> and <http://www.sita.com.au/commercial-solutions/resource-recovery-recycling/construction-demolition/>.

8 New South Wales Environment Protection Authority, *The Waste Hierarchy*, <https://www.epa.nsw.gov.au/your-environment/recycling-and-reuse/warr-strategy/the-waste-hierarchy>.

The materials recycled and reused are extensive and range from organics, paper and glass to metals, electrical waste and building materials.

2.13 The Waste Management Association of Australia submitted that the waste and resource recovery industry employs 50,000 (full time equivalent) people and contributes over \$50 billion per annum to the Australian economy.⁹ The size of the sector varies across the jurisdictions. The South Australian Government noted that the waste industry in South Australia has an annual turnover of about \$1 billion, contributing around \$500 million to Gross State Product and employs approximately 5,000 people.¹⁰

2.14 The Australian Council of Recycling stated that the recycling industry directly employs over 20,000 people and indirectly almost 35,000 people.¹¹ Employment rates vary with the type of materials being recycled; organics recycling and composting businesses directly employ over 3,500 people¹², while tyre recycling businesses employ around 250 people.¹³

2.15 The information provided above gives a very broad outline of the waste management and recycling industry in Australia. However, some submitters commented that it is not a cohesive single industry 'but rather a range of industries with multiple sectors'. This characteristic was seen as being important in policy development. Equilibrium, for example, commented that 'previous national reviews have at times simplified the opportunities for policy intervention and reform, or non-intervention'. Equilibrium explained:

...[it] should be noted, the waste industry is a market primarily interested in the collection and transport of waste. Those companies in this market that own and operate disposal facilities remain focused in the main on landfill and not resource recovery.

Within the waste industry there are sectors that focus on the collection and transport of waste from particular sources (household, commercial and industrial and construction and demolition), particular waste streams (putrescible, solid inert, liquid waste) and through particular methods (collection trucks and receptacles of different types).

The recycling industry is primarily interested in the capturing materials that have a further economic value or for which a fee can be charged in order to process the material and avoid landfill. Players in the recycling industry are not commonly collectors and transporters, they are mainly receivers of the material that specialise in handling and processing.

9 Waste Management Association of Australia, *Submission 52*, p. 1.

10 South Australian Government, *Submission 36*, p. 4.

11 <http://www.acor.org.au/about-acor.html>.

12 Australian Organics Recycling Association, *Submission 46, Attachment 1*, p. 6.

13 Australian Tyre Recyclers Association *Submission 23*, p. 2.

Like the waste industry, in the recycling industry there are sectors that focus on the collection and transport of waste from particular sources (household, commercial and industrial and construction and demolition) and particular waste streams (for example paper, plastics, organics, e-waste, mattresses, tyres and paint and chemicals).¹⁴

2.16 Equilibrium concluded that the 'distinctions are important because the different industries have fundamentally different drivers and require different policy responses'. Without accounting for these different operations and objectives, policy may lead to negative or unintended consequences for waste management and recycling industries.¹⁵

Quantity of waste generated and the fate of waste in Australia

2.17 Waste generation is closely linked to population size, household income and economic activity. It is therefore unsurprising that waste generated in Australia has increased significantly over the last decade: in 2006–07, 57 million tonnes of waste was generated; in 2014–15 this had increased to 64 million tonnes.¹⁶

2.18 The following discussion provides an overview of waste generation and the fate of waste for 2014–15 and is drawn from the Australian National Waste Report 2016.¹⁷ Discussion on the development of the National Waste Report and the adequacy of data on waste generation and recycling is provided at paras 2.36 to 2.61 below.

Waste generation

2.19 In 2014–15, about 64 million tonnes of waste (including fly ash¹⁸ and hazardous waste) were generated, which is equivalent to 2.7 tonnes of waste per capita. If fly ash is excluded, 53 million tonnes of waste were generated, which is the equivalent of 2.25 tonnes of waste per capita. The amount of waste generated falls to 46 million tonnes with the exclusion of hazardous waste.¹⁹

14 Equilibrium, *Submission 35*, pp. 1–2.

15 Equilibrium, *Submission 35*, p. 2.

16 *Australian National Waste Report 2016*, p. vii.

17 *Australian National Waste Report 2016*, June 2017, <http://www.environment.gov.au/system/files/resources/d075c9bc-45b3-4ac0-a8f2-6494c7d1fa0d/files/national-waste-report-2016.pdf>. The report covers waste generated in Australia, including solid non-hazardous materials and all hazardous wastes including liquids. The report excludes waste from primary production activities, waste that is reused, pre-consumer waste that is recycled as part of a production process, and clean fill/soil (whether or not it is sent to landfill).

18 Ash produced by burning coal or other materials that is driven out of the boiler with the flue gases and captured by pollution control equipment.

19 *Australian National Waste Report 2016*, p. vi.

Trends in waste generation between 2006–07 and 2014–15

2.20 Over the period 2006–07 to 2014–15, waste generation (including fly ash) increased by 11 per cent (from 57 megatonnes to 64 megatonnes). This is an average increase of 1.2 per cent per year. However, given the growth in population during this period, waste generation per capita declined by 3 per cent.²⁰

2.21 The trend in waste generation changes if fly ash is excluded: waste generation increased by 23 per cent over nine years (from about 43 megatonnes to 53 megatonnes). This is an average of 2.3 per cent per year. With population growth, this represents a waste generation per capita increase of 7 per cent over the period, or an average of 0.8 per cent per year.²¹

2.22 The National Waste Report 2016 also provides data on waste generation by state and territory. As would be expected, overall waste quantities correlate with population and gross state product: New South Wales, Victoria and Queensland produce the most waste. Per capita, when fly ash is included, Queensland generated the most waste per capita (3.3 tonnes). When fly ash is excluded, Western Australia and South Australia were the highest generators in 2014–15, producing over 2.5 tonnes per capita and Tasmania the lowest with 1.8 tonnes.²²

Generation by waste stream

2.23 The National Waste Report 2016 provides data on three main waste streams: municipal solid waste, other commercial and industrial waste, and construction and demolition waste. Fly ash is generally counted as commercial and industrial waste. Table 2.1 provides data on waste generation by stream.

Table 2.1: Waste generation by stream, 2014–15

Waste stream	Megatonnes generated	Kg per capita
Municipal solid waste	13.3	565
Other commercial and industrial (excluding fly ash)	20	849
Fly ash	11	459
Construction and demolition waste	20	831

Source: Australian National Waste Report 2016, p. 15.

20 *Australian National Waste Report 2016, p. 11.*

21 *Australian National Waste Report 2016, p. 11.*

22 *Australian National Waste Report 2016, pp. 11–12.*

2.24 Analysis of the trends in waste generation indicates that less municipal solid waste per capita is being generated, while more commercial and industrial waste and construction and demolition waste are being generated. The National Waste Report 2016 commented that the decline in municipal solid waste is linked to the decline in printed paper and glass packaging, and the expansion of recycling systems.²³

Generation by material type

2.25 The report also provides an analysis of waste materials. This indicates that the three major waste materials in Australia are masonry²⁴ (17 megatonnes), organics²⁵ (13 megatonnes), and fly ash (11 megatonnes). Other waste materials generated include hazardous waste (7 megatonnes), paper and cardboard (5.3 megatonnes), metal (5.2 megatonnes), plastic (2.5 megatonnes), and glass (1.1 megatonnes).²⁶

2.26 The report went on to note that the composition of waste is changing. Some significant waste streams—paper, cardboard, glass and fly ash—are diminishing. Metals, organics and plastics also appear to be declining, at least on a per capita basis. Masonry materials from demolitions are increasing.²⁷

The fate of waste in Australia

2.27 The National Waste Report 2016 provides data on the fate of waste: disposal²⁸; and through energy recovery and recycling.

2.28 Overall, 37.3 megatonnes (58 per cent) of waste generated in Australia in 2014–15 were recycled or recovered for embodied energy. Excluding fly ash and hazardous waste, 28.3 megatonnes (61 per cent) were recycled or recovered for embodied energy. A total of 27 megatonnes (21 megatonnes excluding fly ash) of waste were disposed of. Disposal was principally through landfill—22 megatonnes (excluding fly ash). The report noted that some of this waste is recorded as 'energy recovery' because some landfill gas is used for energy generation.²⁹

2.29 Analysis by jurisdiction indicated that South Australia has the highest resource recovery rate (almost 80 per cent) followed by the Australian Capital Territory (75 per cent), then Victoria (69 per cent) and New South Wales (65 per cent). Western Australia, Tasmania and Queensland (excluding fly ash) recovered

23 *Australian National Waste Report 2016*, pp. 17–18.

24 Masonry materials include concrete, bricks and rubble.

25 Organic waste is generally taken to comprise food, garden organics and timber.

26 *Australian National Waste Report 2016*, p. 19.

27 *Australian National Waste Report 2016*, p. 25.

28 Disposal is the deposit of solid waste in a landfill or incinerator, net of recovery of energy.

29 *Australian National Waste Report 2016*, p. 9.

about 50 per cent. The Northern Territory had the lowest recovery rate at an estimated 28 per cent.³⁰

Trends in the fate of waste

2.30 During the period 2006–07 to 2014–15, the quantity of material recycled in Australia increased significantly:

- from 27 megatonnes to 35 megatonnes (an increase of 30 per cent) or 1.4 per cent capita per year; and
- excluding fly ash, from 23 megatonnes to 30 megatonnes (an increase of 32 per cent) or 1.6 per cent per capita per year.³¹

2.31 Energy recovery also increased markedly from about 1.4 megatonnes to 2.3 megatonnes, or an average of 6 per cent per year. Energy recovery per capita increased by an average of 4.4 per cent per year. However, the 2016 report commented that there appears to have been a significant decline in gas recovery in the last year of the period.³²

2.32 During the period 2006–07 to 2014–15, disposal fell slightly from 29 to 27 megatonnes (8 per cent). Excluding fly ash, disposal increased by 9 per cent from 19 to 21 megatonnes, which represents an average decline per capita of about 0.6 per cent per year.³³

30 *Australian National Waste Report 2016*, p. 11.

31 *Australian National Waste Report 2016*, p. 11.

32 *Australian National Waste Report 2016*, p. 11.

33 *Australian National Waste Report 2016*, p. 13.

Fate of waste by waste stream

2.33 The 2016 report provides an analysis of the fate of waste by waste stream which is outlined in Table 2.2 below.

Table 2.2: Fate of waste by stream, 2014–15

Waste stream	Total generated	Recycling		Energy recovery		% recovered	Disposal	
	Mega tonnes	Mega tonnes	Kg per capita	Mega tonnes	Kg per capita		Mega tonnes	Kg per capita
Municipal solid waste	13.3	5.6	237	1.3	53	51%	6.5	275
Other commercial and industrial (excluding fly ash)	20	12	505	0.9	38	64%	7.2	306
Fly ash	11	5	208	0	0		6.8	252
Construction and demolition waste	20	12	522	0.2	7	64%	7.1	302

Source: Australian National Waste Report 2016, p. 15.

2.34 The report provided trends in the fate of waste by waste stream from 2006–07 to 2014–15:

- Municipal solid waste: Recycling and recovery increased and disposal fell for the period.
- Other commercial and industrial (excluding fly ash): While there was an increase in quantity, most of this increase was recycled.
- Construction and demolition waste: While there was an increase in quantity, most of this increase was recycled.³⁴

2.35 Analysis of the recycling of waste materials by type indicates that there is significant recycling (70 per cent) of masonry which is the largest category of waste material generated.³⁵ Plastic generation was reported to have dropped by 14 per cent over the period 2006–07 to 2014–15. However, only about 14 per cent was recovered in 2014–15.³⁶

34 *Australian National Waste Report 2016*, pp. 17–18.

35 *Australian National Waste Report 2016*, p. 19.

36 *Australian National Waste Report 2016*, p. 23.

Adequacy of data on waste management and recycling

2.36 State and territory governments are responsible for collecting data on the generation of solid waste and the fate of waste within their jurisdiction. The need for adequate data on waste management and recycling was seen as being fundamental to the development and implementation of effective waste policy. The Local Government Association of Tasmania commented:

It is vital that the nation is aware of all waste generated and its final destination (be that landfill or diversion processes). Accurate data allows for targeted programs to be developed, improved public education programs and planning of services, resources and infrastructure. It also enables worthwhile targets to be set that are based on reliable information sources.³⁷

2.37 However, gaining an accurate national picture of waste and recycling has proved problematic.

National Waste Reports

2.38 In its September 2008 report on the management of Australia's waste streams, the then Standing Committee on Environment, Communications and the Arts commented that 'understanding and quantifying the impact of waste streams and their economic, environmental costs is central to effective national waste policy development'. However, the standing committee found that there was 'a lack of national data on many waste issues that would otherwise underpin the sustainable management of Australia's waste streams'.³⁸

2.39 In November 2008, Australia's environment ministers, through the Environment Protection and Heritage Council (EPHC), released the *National Waste Policy: Less waste, more resources*. The policy was agreed to by all Australian environment ministers in November 2009 and was endorsed by the Council of Australian Governments (COAG).

2.40 The policy sets direction in six key areas including 'Providing the evidence—Access by decision makers to meaningful, accurate and current national waste and resource recovery data and information to measure progress and educate and inform the behaviour and the choices of the community'. The policy contains sixteen strategies with the final strategy being to publish a three yearly waste and resource recovery report, underpinned by a system that provides access to integrated national core data on waste and resource recovery.

2.41 The first national waste report was published in 2010 using data for 2006–07. As 'waste and recycling data are generated in variable ways by a range of agencies',

37 Local Government Association of Tasmania, *Submission 19*, p. 2

38 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, pp 64–65.

the report commented that there were 'wide disparities in the detail, geographic coverage, scale, time frames and scope of the data'. Limitations to the data were identified and readers were advised 'to exercise a degree of caution when using the information in the report'. While noting that the data collection did not provide comprehensive national data on waste and recycling, the report was viewed as 'a first step toward establishing baseline data and developing a strong and comprehensive knowledge base on waste management and resource recovery in Australia'.³⁹

2.42 Following evaluation of the 2010 report, a methodology was agreed to assist in comparing data across different state and territory data sets, noting that differences in definitions, classifications and approaches to waste data exist between states. This methodology was used in the compilation of the National Waste Report 2013 which used 2010–11 data.⁴⁰

2.43 The most recent report—Australian National Waste Report 2016—was published in June 2017.⁴¹ The 2016 report covers two data years (2013–14 and 2014–15). The report notes that some of the data from the states and territories was supplemented, and sometimes replaced, by national industry data or other nation estimates.⁴² In addition, it was stated that:

Because waste data is often difficult and expensive to collect, the requirements, scope and mechanisms for collecting and reporting waste data vary across jurisdictions, industries and fates. The level of uncertainty in some of the presented data is likely to be high. For example...the composition of waste to landfill is estimated on the basis of periodic audits at a few landfills. In recognition of these limitations, data is generally presented to only two or three significant figures.⁴³

2.44 Data quality differences between the states and territories were also reported. Three areas of data quality differences were identified:

- Data on waste to landfill: Jurisdictions with controlled fees or landfill levies tend to have more comprehensive data on waste to landfill. Queensland also provides good data while that from Western Australia is restricted to the Perth area.

39 Environment Protection and Heritage Council, *National Waste Report 2010*, March 2010, p. 2, <http://www.environment.gov.au/system/files/resources/af649966-5c11-4993-8390-ab300b081f65/files/national-waste-report-2010.pdf>.

40 *National Waste Report 2013*, p. 1 <http://www.environment.gov.au/protection/national-waste-policy/national-waste-reports/national-waste-report-2013> See also Blue Environment, 'Improving national waste data and reporting', 30 March 2018, p. 2, <http://www.environment.gov.au/system/files/resources/de91c360-1995-475c-bc9f-f0c4c85b7692/files/improving-national-waste-data-and-reporting.pdf>.

41 *National Waste Report 2016*, <http://www.environment.gov.au/system/files/resources/d075c9bc-45b3-4ac0-a8f2-6494c7d1fa0d/files/national-waste-report-2016.pdf>.

42 *Australian National Waste Report 2016*, p. 1.

43 *Australian National Waste Report 2016*, p. 3.

- Data on recycling: Data from the ACT, New South Wales, Queensland, South Australia, Victoria and Western Australia is collected through surveys of the recycling sector and produced thorough data. However, New South Wales was unable to provide accurate recycling data for 2014–15 due to quality difficulties with the survey.
- Hazardous waste: Comprehensive data is provided by New South Wales, Queensland, South Australia, Victoria and Western Australia through their hazardous waste tracking systems. However, the Queensland data was found to have significant quality problems.⁴⁴

2.45 Notwithstanding the differences in data quality between jurisdictions, the 2016 report stated that that data presented in the report is the most accurate to date.⁴⁵

2.46 The consultants undertaking the management of waste data and reporting for the Department of the Environment and Energy—Blue Environment—were also commissioned to research and propose improvements to the National Waste Report. Blue Environment published a report in March 2018 documenting the agreed improvements to national waste reporting.⁴⁶ The 65 agreed improvements included:

- inclusion of data on local government waste management, product waste, tip shops, litter and dumping, container deposit schemes, mining waste, stockpiles, approved long-term storages, waste infrastructure and international waste flows;
- increasing the depth of the detail and discussion, particularly of the key data areas of waste generation, recycling, energy recovery and disposal; and
- restructuring the national waste report to focus on these key data areas and remove the distinct sections on each state and territory (whilst maintaining and reporting state and territory data).⁴⁷

Australian Bureau of Statistics

2.47 A number of publications on waste management were produced by the Australian Bureau of Statistics (ABS). For example, *Waste management services Australia 2009–10* provided estimates of the financial performance of waste management services businesses and organisations. It also provided information on waste facilities operated, waste activities undertaken, quantities of waste received and processed and factors hampering resource recovery.

44 *Australian National Waste Report 2016*, p. 3.

45 *Australian National Waste Report 2016*, p. 3.

46 Blue Environment, 'Improving national waste data and reporting', 30 March 2018, <http://www.environment.gov.au/system/files/resources/de91c360-1995-475c-bc9f-f0c4c85b7692/files/improving-national-waste-data-and-reporting.pdf>.

47 Blue Environment, 'Improving national waste data and reporting', p. iv.

2.48 The Western Australian Government commented that this series provided a valuable assessment and there would be value in the ABS producing such reports on a more regular basis.⁴⁸

2.49 In 2014, the ABS produced the Waste Account, Australia 2010–11.⁴⁹ The Waste Account presented 'integrated monetary and physical waste information using an internationally recognised conceptual framework to assist in informing waste policy and discussion in Australia'. ABS commented that due to budget constraints, ABS ceased its Waste Account.⁵⁰

2.50 ABS noted the benefits of the Waste Account, commenting that it 'informs on changes to waste management and resource recovery flows over time and in response to government initiatives and to regulatory, pricing and taxation changes. Importantly, it identifies these changes in relation to various community members (e.g. households, industries) impacted by these changes'. In addition, the Waste Account reports on the economic performance of the waste industry itself, for example, changes to revenue streams and cost profiles. This was seen as being especially useful in response to changing regulatory and business practices.⁵¹

Need for improved waste and recycling data

2.51 It was acknowledged that data collection has improved over time and that work is continuing to improve the data sets.⁵² However, submitters noted that problems still remain with the data being collected. MRA Consulting Group, for example, commented that 'data is notoriously poor around waste generation and diversion'.⁵³ Further, that the latest National Waste Report uses 2012–13 or 2014–15 data depending on the jurisdiction.⁵⁴

2.52 Mr Andrew Doig, Chief Executive Officer, Australian Sustainable Business Group (ASBG), told the committee that 'getting the right data collection is something that Australia lags behind in. For example, the United States has been doing that since the 1970s'.⁵⁵ Local government associations provided examples of continued difficulties with data. The Local Government Association of Tasmania submitted that waste data is currently not collected in a standardised manner across different waste

48 Western Australian Government, *Submission 5*, p. 9.

49 <http://www.abs.gov.au/ausstats/abs@.nsf/Lookup/4602.0.55.006Main+Features22010-11>.

50 Australian Bureau of Statistics, *Submission 45*, p. 1.

51 Australian Bureau of Statistics, *Submission 45*, p. 2.

52 See for example, Mr Nicholas Harford, Equilibrium, *Committee Hansard*, 20 November 2017, p. 13.

53 MRA Consulting Group, *Submission 25*, p. 1.

54 Mr Michael Ritchie, MRA Consulting Group, *Committee Hansard*, 14 March 2018, p. 64.

55 Mr Andrew Doig, ASBG, *Committee Hansard*, 14 March 2018, p. 63.

facilities.⁵⁶ Similarly, the Western Australian Local Government Association submitted that the collection of data on landfill, resource recovery and recycling in Western Australia is via four data sources which are not reconciled with each other 'causing confusion on what the recovery rates actually are'.⁵⁷

2.53 The ASBG commented that available data from the jurisdictions is poorly aligned due to significant differences in the definitions of waste, recycling types and other variations. It was also stated that data quality is questionable as some jurisdictions 'tend to measure recycling rates and diversions in *ad hoc* frequencies and manners of execution'.⁵⁸

2.54 The importance of establishing consistent definitions was raised with the committee. Mr Spedding, Chief Executive Officer, National Waste and Recycling Industry Council (NWRIC) stated:

If we could get our definitions right, we could come up with a national program and we would then have the ability to look at not so much waste on a localised or state basis but on a national agenda.⁵⁹

2.55 The importance of data to the industry was outlined by Mr Spedding, NWRIC, who commented that industry required accurate data for planning and forecasting when considering investment in facilities. Mr Spedding stated:

You need the data to be able to demonstrate that the volumes are there, because when you go to the bank and you put your financials on the table, what basis and security have you got that these volumes will continue. Having a very haphazard system doesn't assist the industry at all... Good data is a fundamental for good planning, and we don't have it.⁶⁰

2.56 Both MRA Consulting and Equilibrium also maintained that accurate data was important to inform investment decisions. MRA Consulting stated that companies are being asked to make investment decisions, some involving millions of dollars, on data that is five years old.⁶¹ Equilibrium noted that in the past, investment has been undertaken on the basis of poor data and this has resulted in the failure of some of those investments.⁶²

56 Local Government Association of Tasmania, *Submission 19*, p. 2.

57 Western Australian Local Government Association, *Submission 58*, p.2.

58 Australian Sustainable Business Group, *Submission 41*, p. 4. See also, Equilibrium, *Submission 35*, p. 2.

59 Mr Max Spedding, National Waste and Recycling Industry Council, *Committee Hansard*, 20 November 2017, p. 6.

60 Mr Max Spedding, National Waste and Recycling Industry Council, *Committee Hansard*, 20 November 2017, p. 6. See also Mr Nicholas Harford, Equilibrium, *Committee Hansard*, 20 November 2017, p. 13.

61 Mr Michael Ritchie, MRA Consulting Group, *Committee Hansard*, 14 March 2018, p. 64.

62 Mr Nicholas Harford, Equilibrium, *Committee Hansard*, 20 November 2017, p. 14.

2.57 Re.Group also commented on delays in the publication of data and stated that it is 'a considerable frustration' that there are significant delays in the publication of data, and that 'industry would appreciate additional efforts to ensure more timely access to this information'.⁶³

2.58 Submitters noted that Strategy 16 provides that the three yearly report be underpinned by a system that provides access to integrated national core data on waste and resource recovery. The Australian Sustainable Business Group commented:

The main point is that even collecting the information on waste generation and landfill diversion is not properly comparable across each jurisdiction. This is despite data management being a key policy position under the National Waste Policy. Consequently, the Commonwealth should continue on with the National Waste Policy's drive to further assist and influence jurisdictions to adopt nationally consistent waste data and quality control to ensure comparability with quality data. Aspirational national recycling diversion rates will first require standardised measurements before they can be considered and ultimately agreed to.⁶⁴

2.59 The Local Government Association of Tasmania similarly commented that the National Waste Policy needs to continue to address Strategy 16 as a priority.⁶⁵

2.60 The committee also received suggestions as to how the collection of waste data could be improved. For example, some submitters called for the reinstatement of the ABS Waste Account.⁶⁶

2.61 Mr Ritchie, MRA Consulting, stated that the collection of waste data should be undertaken by an independent body—the ABS—rather the Department of the Environment and Energy. Mr Ritchie explained:

...it's bigger than the department of the environment. This is an industry issue. We need to raise waste out of being—firstly, it needs to be recognised as something of a quasi-essential service, but, secondly, it should be sitting in industry policy. The appropriate place for the data to sit is ABS...It shouldn't be a four- or five-year protocol development. And it shouldn't be, in my view, put to a consultant to try and jerry-build a dataset out of voluntary surveys that states or councils provide. It's got to be a mandated system, because we're talking about big infrastructure. We are talking about essential services.⁶⁷

63 Re.Group, *Submission 32*, p. 2.

64 Australian Sustainable Business Group, *Submission 41*, p. 4.

65 Local Government Association of Tasmania, *Submission 19*, pp. 2–3.

66 National Waste and Recycling Industry Council (NWRIC), *Submission 10*, p. 1.

67 Mr Michael Ritchie, MRA Consulting Group, *Committee Hansard*, 14 March 2018, p. 66.

Export of recyclable material

2.62 Australia exports recyclable material to over 100 countries⁶⁸ including Vietnam, India, Malaysia, Indonesia, China and Bangladesh. In total in 2016–17, Australia exported 4.23 mega tonnes of recycled materials.⁶⁹

2.63 The three main types of recycled material exported were metals, paper and cardboard, and plastics. Table 2.3 provides an overview of the export of these three categories of recycled materials for 2016–17.

Table 2.3: Export of metals, paper and cardboard and plastics, 2016–17 (tonnes)

Metals						
Vietnam (share of total)	India (share of total)	Malaysia (share of total)	Indonesia (share of total)	China (share of total)	Bangladesh (share of total)	Total for all exports
373,279 (17%)	277,220 (13%)	206,224 (10%)	199,278 (9%)	196,312 (9%)	113,056 (7%)	2,151,487
Paper and cardboard						
China (share of total)	Indonesia	Thailand	India	Malaysia	Hong Kong	Total of all exports
895,337 (61.6%)	253,536 (17.5%)	133,941 (9.2%)	58,956 (4.1%)	38,947 (2.7%)	25,133 (1.7%)	1,452,694
Plastics						
Hong Kong (share of total)	China	Malaysia	Indonesia	Vietnam	Thailand	Total of all exports
81,496 (45%)	43,207 (24%)	14,727 (8%)	12,348 (7%)	11,874 (7%)	11,911 (7%)	182,230

Source: ABS, *International Trade*; *Parliamentary Library*.

Restrictions of the export of waste to China

2.64 From January 2018, China implemented restrictions of imports of 24 types of solid waste, including various plastics and unsorted mixed papers, and the setting of more stringent standards for contamination levels.

68 Senator the Hon Simon Birmingham, Minister for Education and Training, *Senate Hansard*, 21 March 2018, p.1786.

69 Blue Environment, 'Data on exports of recyclables from Australia to China', 19 March 2018 <https://blueenvironment.com.au/wp-content/uploads/2018/03/Data-on-exports-of-recyclables-from-Australia-to-China.pdf> (accessed 8 May 2018).

2.65 Blue Environment has provided preliminary data on Australian exports of wastes affected by National Sword. As noted above, 1.27 megatonnes of waste were exported to China in 2016–17. National Sword restrictions affected 1.25 megatonnes (99 per cent) of the Australia's recyclables exported to China.

2.66 The three major categories of affected recyclables were:

- metals – 203 thousands of tonnes;
- paper and cardboard – 920 thousands of tonnes; and
- plastics – 125 thousands of tonnes.⁷⁰

2.67 The impact of the restrictions are discussed in greater detail in Chapter 5.

Regulation of waste and recycling in Australia

2.68 All levels of government are involved in managing waste and recycling to protect the environment, secure public health and safety outcomes, and to avoid the loss of public amenity. In summary, responsibilities can be categorised as follows:

- Local governments are most directly involved in the management of waste and recycling through arrangements for its collection, processing and disposal.⁷¹
- State and territory governments have primary responsibility for regulating domestic waste management. Matters that the states and territories regulate include conditions for operating a landfill facility and the imposition of landfill levies.
- The Australian Government has a role in providing national leadership and coordination, and ensuring that Australia's international obligations regarding waste are met.

2.69 This section provides a brief overview of the roles and responsibilities of each level of government.

Local governments

2.70 As the Australian Local Government Association explained, local governments have 'a long history and expertise in municipal waste management'. The services provided by local governments vary between different councils and

70 Blue Environment, 'Data on exports of recyclables from Australia to China', 19 March 2018 <https://blueenvironment.com.au/wp-content/uploads/2018/03/Data-on-exports-of-recyclables-from-Australia-to-China.pdf> (accessed 8 May 2018).

71 There are areas of Australia without local governments. Most notably, the Australian Capital Territory does not have local governments—the ACT Government is responsible for governing the Territory as well as the matters that local governments would address in other jurisdictions. Certain remote areas of Australia also do not have local governments.

depend on the regulatory framework of their state or territory. In general, however, local governments can:

- provide a range of services directly, including waste collection, waste disposal, kerbside recycling, management of landfills, and gas capture and co-generation of power;⁷²
- provide waste management services as part of a cooperative body with other local governments;⁷³
- contract waste management contractors to undertake waste services;
- undertake other programs to reduce the amount of waste going to landfill, such as the collection of green waste to produce compost; and
- support other initiatives, such as product stewardship, the introduction of container deposit schemes, and community education programs.⁷⁴

2.71 State governments also require local governments to provide data on waste and recycling,⁷⁵ and to address small scale, non-hazardous illegal dumping.⁷⁶

2.72 Various submissions provide insight into the day-to-day waste and recycling services that local governments provide. For example:

- The Adelaide Hills Region Waste Management Authority (AHRWMA) advised that its three member councils provide kerbside waste and recycling services, as well as a green waste service in township areas. A landfill facility with an onsite resource recovery and transfer station is owned by one of the member councils (the Rural City of Murray Bridge) and operated by the AHRWMA.⁷⁷
- The Brisbane City Council contracts its waste and recycling services to industry contractors. The Council owns one landfill, the management of which it contracts to industry, and also utilises a privately-owned landfill.⁷⁸

State and territory governments

2.73 State and territory governments regulate waste and recycling in their jurisdictions by imposing licence conditions for waste and recycling facilities and the

72 For example, Queensland local governments 'operate approximately 450 waste facilities including landfill sites, transfer stations and resource recovery and recycling facilities'. Local Government Association of Queensland, *Submission 7*, p. 3.

73 An example of this approach is the Adelaide Hills Region Waste Management Authority.

74 Australian Local Government Association, *Submission 44*, p. 2.

75 See Government of Western Australia, *Submission 5*, p. 2.

76 See South Australian Government, *Submission 36*, p. 10.

77 Adelaide Hills Region Waste Management Authority, *Submission 33*, p. 2.

78 Brisbane City Council, *Submission 4*, pp. 1–2.

transportation of waste;⁷⁹ imposing landfill levies; providing incentives for recycling;⁸⁰ and undertaking environmental protection measures, such as enforcement activity in relation to large scale illegal dumping and dumping of hazardous waste.

2.74 State legislative frameworks governing waste and recycling are complex and involve multiple pieces of legislation and policy instruments. To illustrate, the legislation and policy frameworks referred to in the Government of South Australia's submission are listed at Box 2.1.

Box 2.1: State legislation and policy frameworks relevant to the regulation of waste and recycling in South Australia

- *Environment Protection Act 1993* and associated regulations
- *Local Government Act 1999*
- *Local Nuisance and Litter Control Act 2016*
- *Green Industries SA Act 2004*
- South Australia's Waste Strategy 2015–2020
- Environment Protection (Waste to Resources) Policy 2010
- *Environment Protection (Movement of Controlled Waste) Policy 2014*
- *EPA Guidelines for Environmental Management of Landfill Facilities (Municipal Solid Waste and Commercial and Industrial General Waste) 2007*
- *30-Year Plan for Greater Adelaide 2017*
- *Waste and Resource Recovery Infrastructure Plan*

Source: South Australian Government, Submission 36, p. 31.

2.75 The submissions to this inquiry provided by state and territory governments outline the legislative and policy arrangements in their jurisdictions in detail.⁸¹

Australian Government

2.76 As noted above, state and territory governments have primary responsibility for regulating domestic waste management. As recycling is closely integrated with waste, the Australian Government also considers that the state, territory and local

79 For example, all waste and recycling facilities in South Australia must be licensed under the *Environment Protection Act 1993* (SA) 'with only some limited exceptions (e.g. the recycling or reuse of under 100 tonnes of waste)'. Across the state, around 400 waste-related or recycling facilities and over 600 waste transporters are licensed. South Australian Government, *Submission 36*, p. 7.

80 Such as the NSW Government's Waste Less Recycle More Initiative. See Office of Environment and Heritage (NSW), 'Waste Less Recycle More Initiative – Grant Programs', www.environment.nsw.gov.au/grants/WLRMI.htm (accessed 10 May 2018).

81 See Government of Western Australia, *Submission 5*; Tasmanian Government, *Submission 11*; Australian Capital Territory Government, *Submission 20*; South Australian Government, *Submission 36*;

governments are 'in the best position' to make decisions on recycling regulation and to respond to market developments.⁸²

2.77 The Australian Government's formal regulatory role largely relates to Australia's international obligations where the external affairs power provides a constitutional basis for legislation.⁸³ The Australian Government has also taken a national leadership and coordination role in certain regulatory matters.

International obligations

2.78 The Department of the Environment and Energy (the department) explained that the international agreements relating to solid waste management focus on wastes that are 'especially hazardous or of significant risk to the environment'. These agreements include:

- the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal (the Basel Convention); and
- the Stockholm Convention on Persistent Organic Pollutants (the Stockholm Convention).⁸⁴

2.79 Commonwealth legislation is in place to regulate the export and import of hazardous waste; the management of industrial, agricultural and veterinary chemicals; dumping and incineration at sea of waste; ozone depleting substances; and product stewardship for used oil.⁸⁵ In addition, the department works with state and territory governments to ensure that legislation and reporting are in place so that Australia can fulfil its implementation, reporting and compliance obligations under the international agreements.⁸⁶

National leadership and coordination

2.80 Despite its limited constitutional responsibilities regarding waste and recycling, successive Australian governments have taken a role in these matters. The department indicated that the Commonwealth generally contributes when there are:

- national issues where Australian Government action is 'the most effective and efficient intervention, especially where there are risks posed by hazardous substances to human health and the environment';

82 Department of the Environment and Energy, *Submission 55*, p. 1.

83 Department of the Environment and Energy, *Submission 55*, p. 1; Environment Protection and Heritage Council, *National Waste Policy: Less waste, more resources*, November 2009, p. 2.

84 Department of the Environment and Energy, *Submission 55*, p. 2. Additional relevant international agreements are listed in the department's submission.

85 Environment Protection and Heritage Council, *National Waste Policy: Less waste, more resources*, November 2009, p. 2.

86 Department of the Environment and Energy, *Submission 55*, p. 2.

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- issues 'affecting multiple jurisdictions that would benefit from a coordinated approach or national harmonisation of policies, guidelines or standards that cannot be achieved without Australian Government support';
 - 'domestic market failures or absences of a market that require national policy or partnership programs'; and/or
 - information on a national scale is required.⁸⁷

2.81 However, it should also be noted that a number of submitters were critical of the lack of leadership provided by the Australian Government. These issues will be explored in Chapter 7.

2.82 The National Waste Policy was agreed to by Commonwealth, state and territory environment ministers in November 2009. As noted earlier, the Policy sets national policy direction up to 2020 with 16 priority strategies identified. Overall, the Policy aims to:

- avoid the generation of waste, and reduce the amount of waste (including hazardous waste) for disposal;
- manage waste as a resource;
- ensure that waste treatment, disposal, recovery and re-use is undertaken in a safe, scientific and environmentally sound manner; and
- contribute to the reduction in greenhouse gas emissions, energy conservation and production, water efficiency, and the productivity of the land.⁸⁸

2.83 One of the outcomes of the National Waste Policy is the Commonwealth taking on an additional regulatory role as part of a national approach to product stewardship.⁸⁹ This has been achieved through the *Product Stewardship Act 2011*, which establishes a national framework for co-regulatory and mandatory product

87 Department of the Environment and Energy, *Submission 55*, p. 1.

88 Environment Protection and Heritage Council, *National Waste Policy: Less waste, more resources*, November 2009, pp. 6–7.

89 Product stewardship is a policy approach which acknowledges 'that those involved in producing, selling, using and disposing of products have a shared responsibility to ensure that those products or materials are managed in a way that reduces their impact, throughout their lifecycle, on the environment and on human health and safety'. Department of the Environment and Energy, 'Product stewardship', www.environment.gov.au/protection/national-waste-policy/product-stewardship (accessed 10 May 2018).

stewardship obligations, and for the accreditation of voluntary product stewardship arrangements.⁹⁰ The department is currently reviewing the Product Stewardship Act.⁹¹

2.84 National coordination of waste issues is also provided for by the National Environment Protection Council (NEPC). The NEPC is established under the *National Environment Protection Council Act 1994* (NEPC Act) and mirrors legislation in the states and territories. The NEPC Act provides a framework for the NEPC to make National Environmental Protection Measures (NEPMs) about the environmental impacts associated with hazardous wastes, or the re-use and recycling of used materials. These provide national standards to support a coordinated approach, with NEPMs implemented by individual jurisdictions.⁹²

2.85 Relevant NEPMs include:

- the National Environment Protection (Movement of controlled waste between States and Territories) Measure 1998—this NEPM establishes a nationally consistent system for tracking the movement of hazardous wastes; and
- the National Environment Protection (Used Packaging) Measure 2011, which seeks to encourage re-use and recycling of used packaging materials by supporting and complementing the voluntary strategies in the Australian Packaging Covenant.⁹³

2.86 Finally, the Australian Government has worked with the states and territories to develop a National Food Waste Strategy. This Strategy, which was released in November 2017, aims to achieve a 50 per cent reduction in food waste by 2030.⁹⁴

90 At present, there is one co-regulatory scheme (the National Television and Computer Recycling Scheme). Voluntary industry arrangements in relation to mobile phones and mercury-containing lamps have received accreditation. The National Tyre Product Stewardship Scheme initiated in 2014 is not accredited under the voluntary product stewardship accreditation scheme. Department of the Environment and Energy, *Submission 55*, p. 3; *Review of the Product Stewardship Act 2011, including the National Television and Computer Recycling Scheme*, Consultation Paper, March 2018, www.environment.gov.au/system/files/consultations/79a39335-ee07-4f94-ab7f-cd8323641af0/files/ps-act-review-consultation-paper.pdf (accessed 10 May 2018), p. 3.

91 Information about the review is available here: www.environment.gov.au/protection/national-waste-policy/product-stewardship/consultation-review-ps-act-incl-ntcrs.

92 Department of the Environment and Energy, *Submission 55*, p. 1.

93 Department of the Environment and Energy, *Submission 55*, p. 4; National Environment Protection Council, 'National Environment Protection (Used Packaging Materials) Measure', www.nepc.gov.au/nepms/used-packaging (accessed 10 May 2018).

94 The National Food Waste Strategy can be viewed here: www.environment.gov.au/protection/national-waste-policy/publications/national-food-waste-strategy.