NSW GOVERNMENT

Department of Planning, Industry and Environment

NSW Waste and Sustainable Materials Strategy 2041

Stage 1: 2021–2027

dpie.nsw.gov.au

Acknowledgement of country

The Department of Planning, Industry and Environment acknowledges the traditional custodians of the land and pays respect to Elders past, present and future.

We recognise Australian Aboriginal and Torres Strait Islander peoples' unique cultural and spiritual relationships to place and their rich contribution to society.

Find out more:
www.dpie.nsw.gov.au

Title: NSW Waste and Sustainable Materials Strategy 2041

Subtitle: Stage 1: 2021–2027

First published: June 2021

Acknowledgements

Contents

Minister's message

The Honourable Matt Kean MP
Minister for Energy and Environment

New South Wales is committed to playing its part in making the transition to a circular economy over the next 20 years.

Without action now, and without sustained action over the next two decades, we will have more waste than we can safely manage, and our environment and community will be at risk.

Transitioning to a circular economy means we use our resources efficiently and make them as productive as possible. We will end up with less waste and emissions, less harm to our environment and more jobs. The move will boost innovation and help drive our economy forward.

We can create a circular economy by designing out materials that end up in landfill or as litter, reusing or repairing products before they are thrown out, and recycling material so it can be used multiple times in manufacturing or building.

At the same time, we need to make sure we have the services and infrastructure in place to deal with our waste safely so it does not become a problem for future generations.

The NSW Government cannot make this transition alone – we need to work with consumers, industries and other governments to make it a reality.

Throughout this strategy, we have outlined the actions we will take over the next six years – the first phase of our strategy – to deliver on our long-term objectives. We have also set out our plan to tackle plastics in the *NSW Plastics Action Plan*, which sits alongside this strategy.

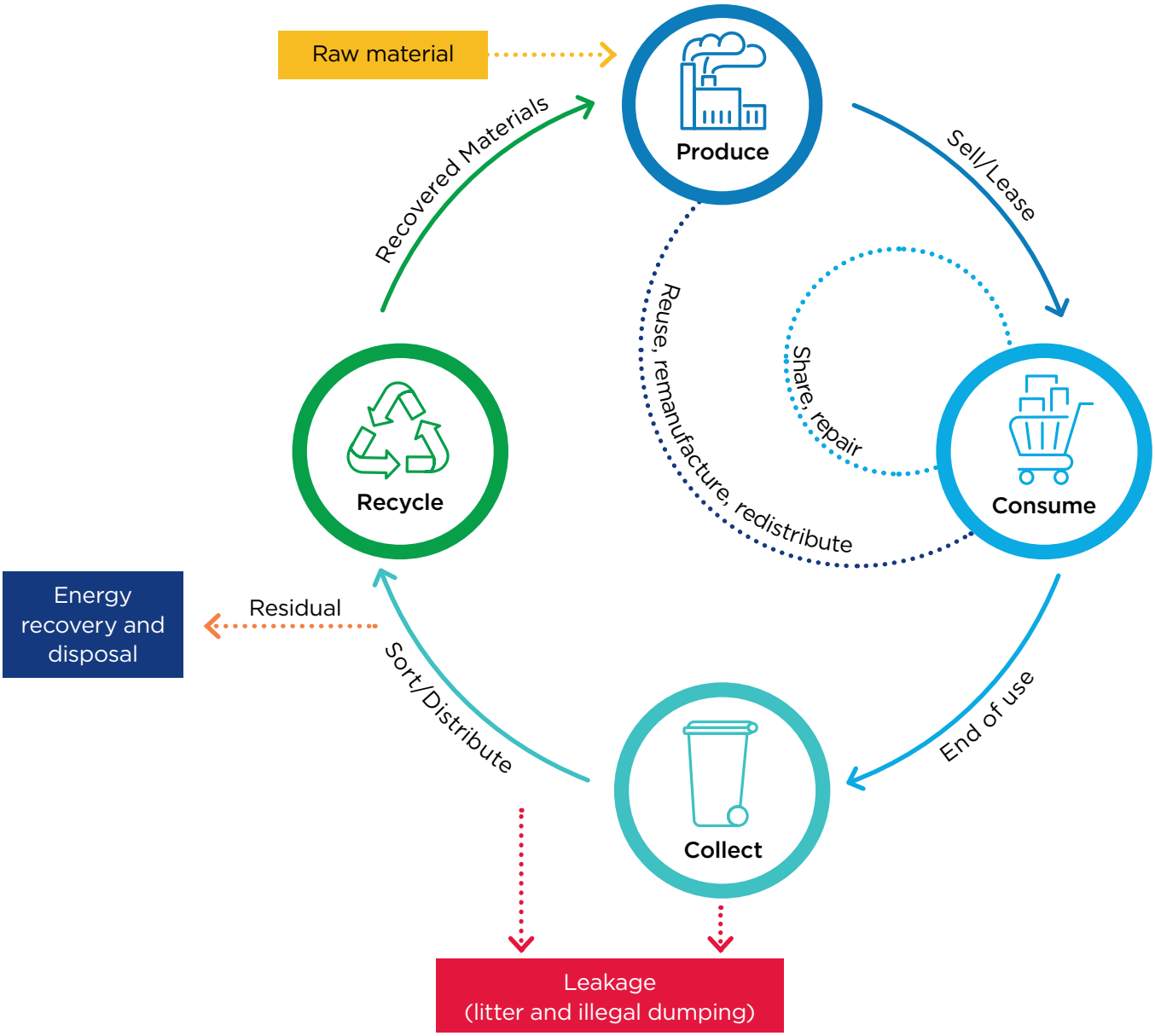
These actions are backed by $356 million in funding to help deliver priority programs and policy reforms.

Some of our key reforms include:

- phasing out problematic single-use plastic items
- financial incentives for manufacturers and producers to design out problematic plastics
- having government agencies preference recycled content and invest in research and pilots for recycling innovation
- introducing tighter environmental controls for energy from waste in NSW, with further consideration of planning and infrastructure needs underway
- mandating the source separation of food and garden organics for households and selected businesses
- incentivising biogas generation from waste materials.

These are important first steps on our journey to 2041 – a journey we will take together.

Figure 1: Circular economy



Purpose of the strategy

The NSW *Waste Avoidance and Resource Recovery Act 2001* commits the NSW Government to refreshing and updating its waste strategy every five years – to review and continually improve the state's policies and targets for waste reduction and landfill diversion. This strategy updates our previous *Waste Avoidance and Resource Recovery Strategy 2014–2021*.

As well as waste reduction and recycling, this *NSW Waste and Sustainable Materials Strategy 2041: Stage 1 – 2021-2027* focuses on the environmental benefits and economic opportunities in how we manage our waste. This document sets out the actions we will take in the first stage of the strategy to carry us through to 2027.

During 2021, we will move on our highest priority actions and lay the foundations for actions that will begin progressively from July 2022, when the full strategy stage one funding package begins.

To complement this strategy, we have also released the:

- *NSW Plastics Action Plan*, which sets out how we will phase out problematic plastics, tackle litter from plastic items like cigarette butts, and support innovation and research
- *NSW Waste and Sustainable Materials Strategy: A guide to future infrastructure needs*, which sets out the investment pathway required for NSW to meet future demand for residual waste management and recycling.

Tracking and reviewing our progress

In 2019, New South Wales agreed to a set of targets as part of the National Waste Policy Action Plan. In this strategy, we commit to adopting these targets as the NSW targets. During the first stage of our strategy, we will measure our progress towards these targets to ensure we are on track.

The targets are to:

- reduce total waste generated by 10% per person by 2030
- have an 80% average recovery rate from all waste streams by 2030
- significantly increase the use of recycled content by governments and industry
- phase out problematic and unnecessary plastics by 2025
- halve the amount of organic waste sent to landfill by 2030.

Consistent with our commitments to the National Waste Policy Action Plan, we will also continue to improve our data collection and reporting.

In addition to these targets, we will:

- introduce a new overall litter reduction target of 60% by 2030 and a plastic litter reduction target of 30% by 2025, as set out in the *NSW Plastics Action Plan*
- set a goal to triple the plastics recycling rate by 2030, as set out in the *NSW Plastics Action Plan*
- reaffirm our commitment to the goal of net zero emissions from organic waste by 2030, as laid out in the *NSW Net Zero Plan Stage 1: 2020–2030*
- establish new indicators to help us track our progress on infrastructure investment and the cost of waste services
- develop a new measure of the emissions performance of our waste and materials management. This will help us to track our performance across the lifecycle of materials.

We will report on our progress annually and we will review the strategy prior to 2027.

5 YEAR TARGETS

- Phase out problematic and unnecessary plastics by 2025
- Plastic litter reduction target of 30% by 2025

10 YEAR TARGETS

- Reduce total waste generated by 10% per person by 2030
- 80% average recovery rate from all waste streams by 2030
- Introduce a new overall litter reduction target of 60% by 2030

SUB-TARGETS – PLASTICS

- Eliminate problematic and single use plastics by 2025
- Triple the plastics recycling rate by 2030

SUB-TARGETS – ORGANICS

- Halve the amount of organic waste sent to landfill by 2030
- Net zero emissions from organics to landfill by 2030

1

Part 1

Context and background

Global action is shifting us towards a circular economy

The global economy consumes 90 billion tonnes of primary materials each year. This is projected to double by 2060[1]. However only 9% of this material is recycled[2]. This is impacting the world around us, with an estimated 150 million tonnes of plastics now in the marine environment[3].

Countries have started to tackle the waste challenge by changing how they manage the lifecycle of materials. In contrast to the traditional linear economy, which has a "take, make, dispose" model of production, a circular economy aims to eliminate waste and reduce the continual use of new resources. Circular systems employ reuse, sharing, repair, refurbishment, remanufacturing and recycling to use resources efficiently and minimise the creation of waste, pollution and carbon emissions. The circular economy aims to keep products, equipment and infrastructure in use for longer.

Circular economy policies in Europe and the United Kingdom have led a significant shift towards more producer responsibility, resource recovery systems that are set up to preserve and improve the value of materials, and strong economic incentives to avoid the generation of waste[4]. The United Nations has endorsed a set of Sustainable Development Goals for 2030, with specific goals aimed at protecting the environment and encouraging responsible consumption and production[5].

Meanwhile, many other countries have taken bold steps to protect their environments from the negative impacts of waste, starting with bans on the types of material they import.

Since 2018, China and other nations throughout Asia have stopped importing recyclable waste. This has forced waste and resource recovery businesses throughout the world, including in NSW, to rethink their business models and deal with waste closer to where it is generated.

The circular economy

A circular economy is an economic system aimed at minimising waste and promoting the continual reuse of resources. The circular economy aims to keep products, equipment and infrastructure in use for longer, thus improving the productivity of these resources. Waste materials and energy should become input for other processes: either a component or recovered resource for another industrial process or as regenerative resources for nature (e.g. compost). This regenerative approach contrasts with the traditional linear economy, which has a 'take, make, dispose' model of production.

The circular economy is based on three key principles:

- design out waste and pollution
- keep products and materials in use
- regenerate natural systems.

Australia is taking responsibility for its own waste

In 2018, the Australian Government led the development of the National Waste Policy, followed by a supporting action plan in 2019. This policy is based on circular economy principles and contains targets and actions to which each level of government has committed. Off the back of the policy, the Australian Government has already passed new legislation to strengthen the nation's product stewardship laws and provided funding for a range of resource recovery projects.

An agreement by the Council of Australian Governments in 2020 to ban the export of unprocessed plastic, paper, glass and tyres also signalled that Australia would take greater responsibility for managing and processing the waste it generated. Joint investments in reprocessing infrastructure by the federal, state and territory governments and industry will help us to bridge the gap in capacity to take the waste we used to export and remanufacture it locally.

NSW has led the way

The NSW Government's *Waste Less, Recycle More* initiative has played a fundamental role in how citizens, businesses and councils avoid, reduce, reuse, recycle and safely dispose of waste.

Through the *Waste Less, Recycle More* initiative, the NSW Government has:

- invested more than $800 million in waste and resource recovery programs since 2013
- contributed to a 43% reduction in litter
- established 91 community recycling centres
- added 2.5 million tonnes of new recycling capacity
- provided free help to more than 30,000 small businesses to reduce waste
- invested $52 million in proactive enforcement and compliance programs through the NSW Environment Protection Authority (EPA).

Shredded paper at a recycling station at Wetherill Park industrial estate

To target the most serious, organised and high-profile waste crimes, the NSW Government established the Waste Crime Task Force, which has been operating since 2017. The strong regulatory presence combined with robust regulatory controls ensure that the waste and resource recovery initiatives funded by *Waste Less, Recycle More* achieve their objectives.

Through the Return and Earn container deposit scheme, which recovers high-quality beverage containers for remanufacturing, over 5 billion containers have been collected since 2017 at over 600 sites. These containers may have otherwise ended up in as litter[6].

Other waste and resource recovery initiatives funded by the NSW Government include:

- $35 million (co-funded with the Australian Government) to support new recycling and remanufacturing projects that will help NSW prepare for the waste export ban
- $10 million for grants under the Circular Solar program to improve recycling of solar panels and battery systems
- $105 million since 2013 to keep food and garden organic waste out of landfill
- $207 million since 2013 for local government to boost recycling and regional collaboration for waste management
- $130 million since 2013 to combat illegal dumping and litter through education, capacity building, prevention and enforcement.

NSW has also led the way in using a levy on waste disposed to reduce the amount of waste being landfilled and to promote recycling and resource recovery. The proceeds of the levy have funded the *Waste Less, Recycle More* program.

NSW's early adoption of regulations for management of stockpiles at resource recovery facilities, sorting requirements at construction and demolition facilities, and specifications around waste products that can be applied to land, have set the state apart in best-practice waste management.

Now is the time to plan for our future waste needs

In 2019 we released our Circular Economy Policy Statement, which set out the guiding principles we would adopt as we transition towards a circular economy. In 2020, we released our *Net Zero Plan Stage 1: 2020–2030*, which set out our strategy for reducing and offsetting carbon emissions, including from waste, to achieve net zero emissions by 2050.

We must now build on these strong foundations and comprehensively plan for NSW's future waste needs.

The challenges ahead

NSW is running out of space to deal with residual waste

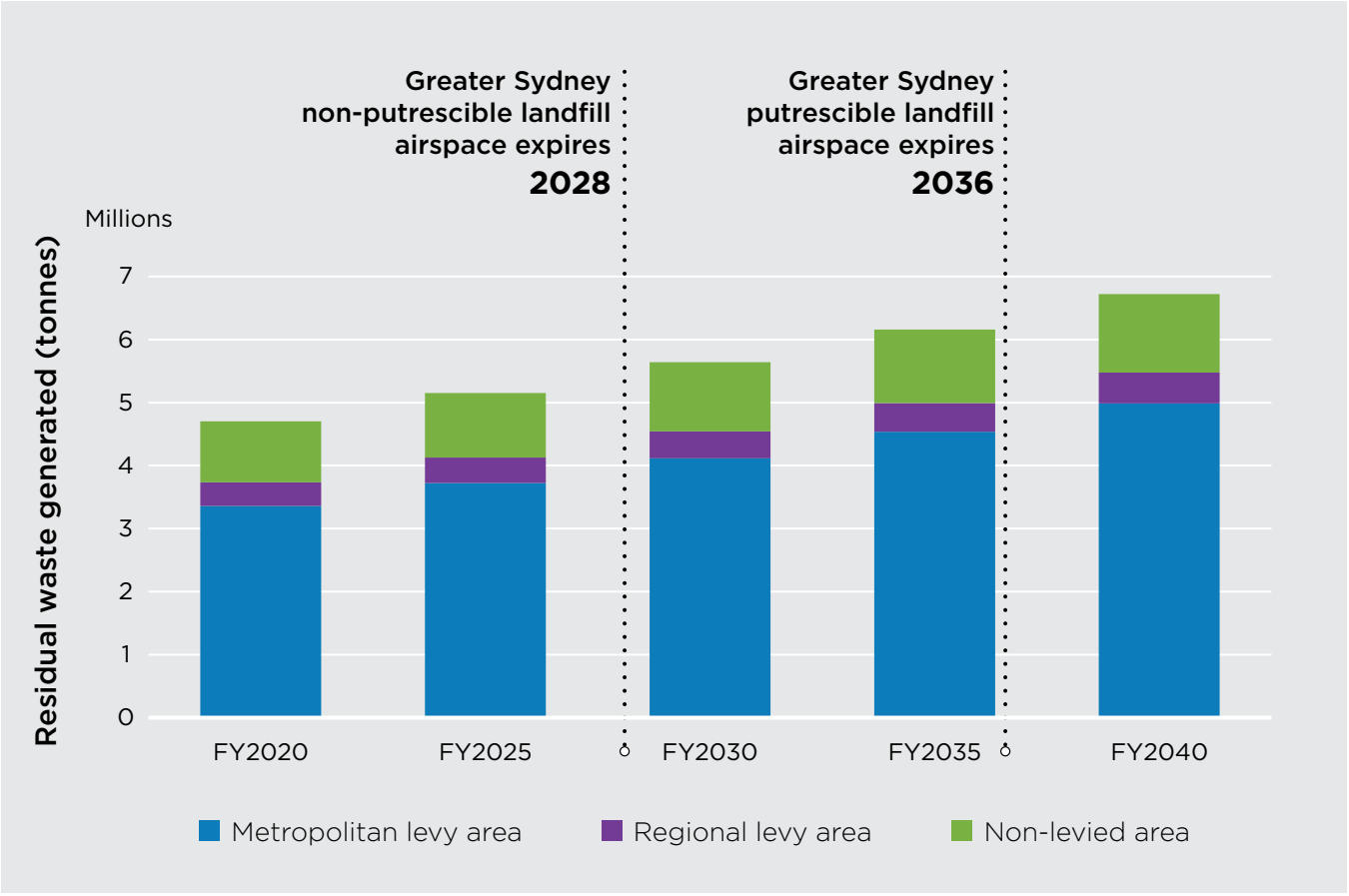
NSW, with its large economy and population, creates around one-third of Australia's total waste[7]. Over the next 20 years, NSW waste volumes are forecast to grow from 21 million tonnes in FY2021 to nearly 37 million tonnes in FY2041[8]. Even though we currently recycle about two-thirds of our waste, our ambition is to continue to increase that proportion. We also need safe and adequate disposal options for the material we cannot recycle.

The challenge is to manage this material so that we can avoid the worst of its impacts. This means we need strategies to reduce the volume of waste we generate; reuse, repair and recycle what we can't avoid; and make sure that we have enough capacity to safely dispose of the material we cannot recycle.

At our current rates of generation and recycling, the putrescible landfills (which accept household waste) servicing Greater Sydney are likely to reach capacity within the next 15 years. The non-putrescible landfills (which accept inert commercial and construction wastes) will reach capacity within this decade. In some regional areas, like Coffs Harbour and Port Macquarie, landfill capacity is also likely to expire this decade.

There are also looming capacity constraints for hazardous waste treatment and landfill. The only landfill that can accept contaminated wastes

Figure 2: Projected residual waste (household and commercial) by levy area, under 'business as usual'



in NSW will reach capacity in 2031 and there are emerging capacity constraints for liquid waste treatment.

Rural and regional communities have specific challenges regarding access to safe disposal options. As trucks need to travel long distances to collect small amounts of waste, some waste services can be cost-prohibitive for regional councils[9]. Some Aboriginal and remote communities do not have regular collection services at all.

Recycling is under pressure

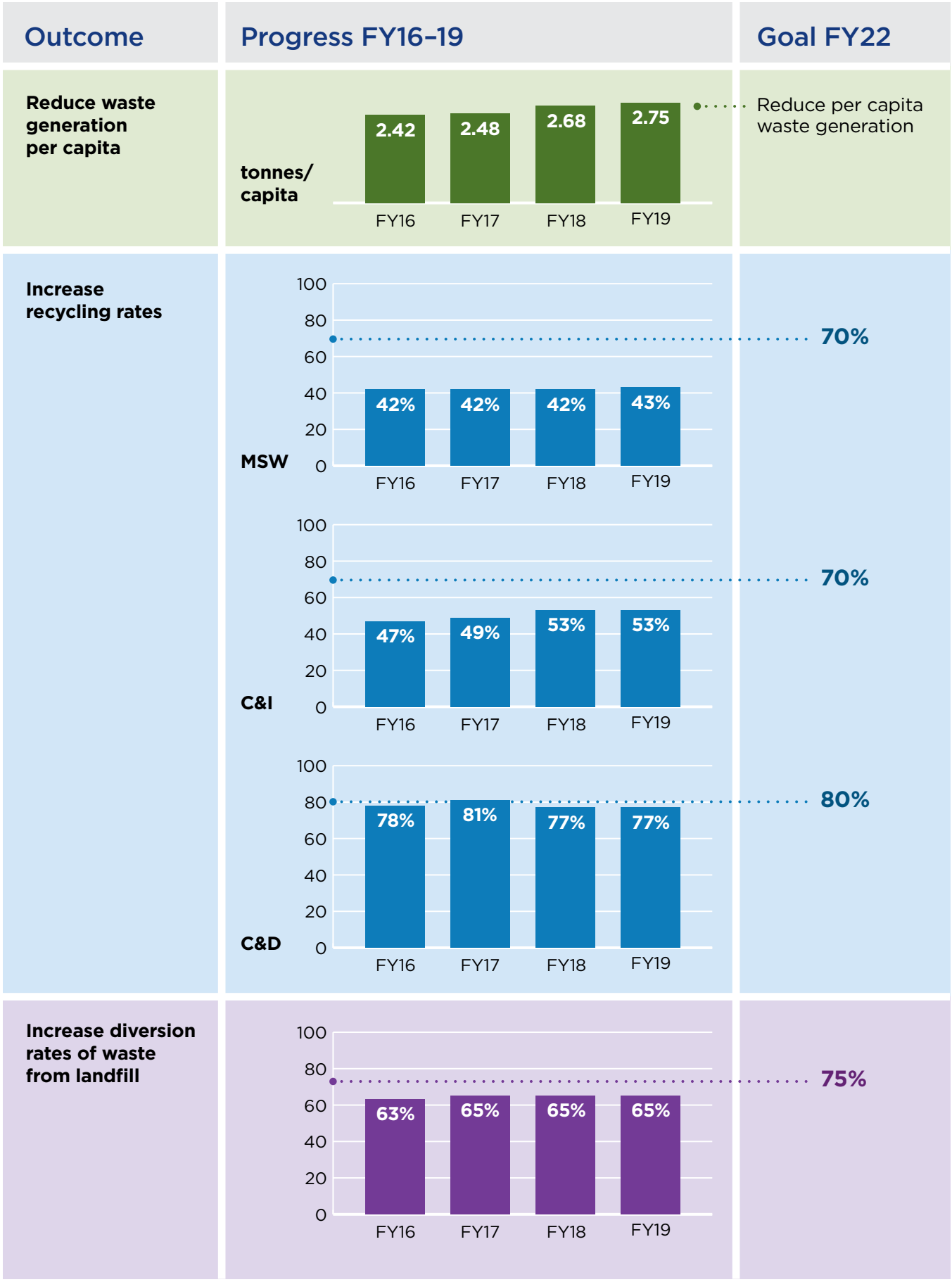
Since 2018, recycling has faced arguably its biggest challenges. Demand for recycled materials, particularly from the household and commercial waste streams, have steadily contracted with the closure of export markets. This has led to a glut of recycled materials and a decline in their value, particularly for poorly sorted or hard-to-recycle paper and plastic.

In NSW, this has seen the resource recovery industry start to transition to more resilient business models, focused on value-adding and the production of high-quality, well-sorted recycled materials. As the prices for recycled material have declined but the cost of sorting and processing has increased, costs for councils, ratepayers and businesses are also under pressure.

In 2014, NSW set a target of diverting from landfill 75% of all waste by FY2021. However, as of FY2019 (the most current published statistics), we are falling short of the target, reaching only 65%.

Construction and demolition recycling has performed the best at a rate close to 80%, followed by commercial and industrial recycling at 53%. Municipal solid waste (mostly household waste) has plateaued at just over 40% for the last four years. This strategy provides an opportunity to refocus our efforts and consider developments since 2014.

Figure 3: Performance against NSW Waste Avoidance and Resource Recovery targets



1

Waste and materials usage significantly contribute to carbon emissions

In 2020, the NSW Government released the *Net Zero Plan Stage 1: 2020–2030*, which sets out how we will reduce our emissions by 35% by 2030, reaching net zero emissions by 2050. As part of the plan, the NSW Government committed to setting a target of net zero emissions from organic waste to landfill by 2030.

In FY2019, an estimated 2.5 million tonnes of organic waste (such as food organics, garden organics, timber and textiles) was sent to landfill[10]. Emissions from organic waste decomposing in landfill make up more than 2% of total net annual emissions in NSW[11]. Increased diversion of organics from landfill and processing technologies like composting and anaerobic digestion are an important first step towards reducing emissions from waste.

However, emissions from landfill are only a small fraction of the emissions associated with how we use our resources. It is estimated that nearly half of global emissions are attributable to the use and management of materials and products[12]. Recent modelling suggests that Australia could reduce carbon emissions by 165 million tonnes per year by 2040 through transitioning to a circular economy[13].

By adopting a circular economy approach, we can increase our carbon efficiency by designing out waste, using less energy-intensive materials in production, increasing the lifespan of buildings and products and reusing or recycling materials to avoid emissions associated with raw material extraction and production.

Recycling bins – Community Recycling Centre

Figure 4: Carbon dividend of recycling materials[14]

Plastic

- One tonne of PET recycling leads to a net avoidance of:
  - **Emissions** – 1.2 kg t CO_2 equivalent
  - **Smog** – 2.6 kg NMVOC
  - **Water use** – 68.5 kL
- Currently, approximately 99% of plastics are made from fossil feedstocks
- Plastic production involves significant energy consumption
- If current production rates continue, carbon emissions of plastics are forecast to comprise 15% of global emissions by 2050

Paper

- One tonne of white paper recycling leads to a net avoidance of:
  - **Emissions** – 1.3 kg t CO_2 equivalent
  - **Smog** – 4.0 kg NMVOC
  - **Water use** – 10.7 kL
- Paper production is predicted to continue growing at 1% p.a.
- Globally, wood products (including paper) are estimated to account for 10% of deforestation
- Virgin paper uses 26 trees per tonne of paper

Aluminium

- One tonne of aluminium can recycling leads to a net avoidance of:
  - **Emissions** – 16.6 kg t CO_2 equivalent
  - **Smog** – 76.1 kg NMVOC
  - **Water use** – 29.4 kL
- Primary aluminium production is one of the most energy intensive materials
- While environmental impacts vary across materials, the use of iron, copper, concrete and aluminium is projected to have the highest impacts on the environment

Waste can damage our environment

The accelerating pace of natural resource extraction and production and manufacturing is taking its toll on our environment. Our consumption habits are driving greenhouse gas emissions higher, reducing natural habitats, biodiversity and the productivity of our soils, and increasing the amount of air, water and terrestrial pollution.

Australia's annual consumption of virgin material is around 43 tonnes per capita, which is higher than the United States and United Kingdom[15].

The more material we consume, the greater the impact on the environment.

NSW generates almost 2.8 tonnes of solid waste per person each year[16]. Waste that is poorly managed and disposed of can lead to environmental and human health problems for current and future generations. For example, landfill sites require ongoing management to prevent waste from affecting soils and waterways.

Waste that is littered or dumped illegally can reduce the amenity of public spaces and pose risks to wildlife, marine ecosystems, agricultural

production and human health. Dumped materials may include harmful and hazardous substances such as toxic chemicals or asbestos.

Plastics are particularly problematic. They are lightweight and versatile, but they can be complex and expensive to recycle. In the natural environment, they can kill wildlife if ingested, accumulate other chemical pollutants and negatively impact on soils. In NSW, we consume 1.1 million tonnes of plastic but send around 650,000 tonnes of it to landfill each year, and that amount is growing. The more virgin plastic we use, the more fossil fuels we consume, increasing our carbon footprint.

In FY 2020, an estimated 575 million items of plastic litter generated in NSW made its way into our waterways and terrestrial and marine environments[17]. This plastic breaks down over time into small particles, which are being found in the world's highest mountains and in our deepest oceans.

We can harness the economic opportunities of the circular economy

While keeping materials and products out of landfill makes good environmental sense, reuse, repair and recycling also benefits the NSW economy. Moving to a circular economy will stimulate growth in the resource recovery sector as well as creating new industries and jobs through innovation and investment in circular goods and services.

The circular economy represents a growth opportunity, with the global value of the sector forecast to be $4.5 trillion by 2030 and $25 trillion by 2050[18].

Closer to home, analysis has shown that increasing Australia's recovery rate by 5% could add $1 billion to Australia's gross domestic product (GDP) and lift wages by 0.1%. Likewise, a 5% improvement in material efficiency could increase GDP by $24 billion and increase wages by 2.7%[19]. Other analysis has shown that adoption of a circular economy in a few critical sectors could deliver an additional $210 billion in GDP and 17,000 jobs by FY2048[20].

The importance of the circular economy to NSW's future is recognised in the *NSW 2040 Economic Blueprint*. One of the 'megatrends' for the next 20 years is the need to change the way we produce and consume to reduce our impact on the environment. The blueprint identifies developing a strategy for the circular economy as critical to delivering on sustainability objectives and harnessing strong employment growth in the environmental goods and services sector[21].

Part 2

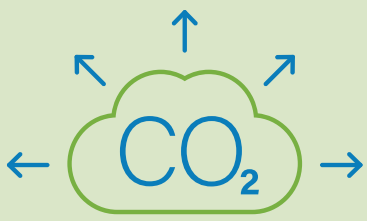
Our plan

This strategy sets out three focus areas.

1. **Meeting our future infrastructure and service needs**
   As waste volumes continue to grow, infrastructure and services will need to keep pace. We need to ensure we have the capacity to meet our critical future needs, such as residual waste capacity, as well as stimulating investment in a pipeline of innovation.

2. **Reducing carbon emissions through better waste and materials management**
   Transitioning to a circular economy means increasing our resource efficiency and reducing our carbon footprint. If we can make our materials more productive by improving their durability through design, reusing or repairing them, recycling and remanufacturing them or extracting their embodied energy, we can reduce our reliance on emissions-intensive virgin materials.

3. **Building on our work to protect the environment and human health from waste pollution**
   If poorly managed, waste can cause enormous damage to our natural environment and threaten the health and well-being of our community. Pollution from waste can be caused by littering, illegal dumping and mishandling of hazardous wastes, and it costs NSW millions of dollars each year. Maintaining strong regulations will help to stop this waste pollution, while engaging with businesses and consumers will help to drive positive behaviour change.



Management and use of materials and products contribute to

45%

of global carbon emissions

Focus area:
Meeting our future infrastructure and service needs

NSW already has a network of waste and resource recovery infrastructure, but we will need to expand and modernise it to meet the challenge of developing a circular economy. We need a strong pipeline of infrastructure investment to maintain and improve capacity to collect, sort, process and dispose of waste.

Getting the right infrastructure in the right place will be critical to recover, reuse and extend the life of most materials. While this investment will largely be driven by industry, the NSW Government has a role to play to support those looking to invest in the right place at the right time.

To support this infrastructure pipeline, the NSW Government will:

- strategically plan for critical waste infrastructure, working closely with local governments and industry, with a focus on co-locating businesses in precincts that support circular economy and clean technology activities
- help local governments to jointly procure waste services at scale to underpin investment in new infrastructure
- review and update planning instruments to make it easier to develop waste and circular economy infrastructure.

Recovery and recycling infrastructure must keep pace with demand

We analysed material flows to identify recovery infrastructure needs for regions in NSW. The analysis showed there is enough capacity for some types of infrastructure, however, we need additional investment in new or upgraded facilities between 2021 and 2030 to prevent shortfalls.

Figure 5: High-level recovery infrastructure needs to service NSW in 2030

Structure Type	Greater Sydney	Rest of NSW
 Materials recovery facilities (MRFs)[22]	No new facilities required if pipeline facilities come online, only MRF upgrades to improve quality of sorted materials	New MRF in non-levied area and capacity enhancements in the regional levy area
 Plastics	Secondary processing facilities needed for pelletising and flaking of mixed plastics – could be aligned to MRF expansions in both Greater Sydney and regional areas	
 Paper/Cardboard	Beneficiation and source separation facilities to address paper quality – can be achieved through MRF upgrades or standalone facilities in both Greater Sydney and regional areas	
 Glass	No immediate priorities if pipeline glass facilities come online	Targeted small-scale glass crushing and quality control
 Organics[23]	New facilities to process combined food and garden organics (FOGO) and some food-only processing (such as anaerobic digestion) New organics transfer stations to move material outside urban areas for processing and small-scale onsite solutions in high population areas and industry centres	New FOGO processing facilities and minor food-only processing (anaerobic digestion) in the Shoalhaven and Hunter regions, and the NLA Additional small-scale onsite solutions across all regions
 E-waste	New facilities for separating and sorting, removing contaminants and washing, flaking or pelletising plastics in e-waste New capacity for downstream processing of material fractions New facilities for repair and reuse	
 Tyres	Significant new processing capacity required	

Legend

- Sufficient existing infrastructure or only minor improvements required by 2030.
- Some new infrastructure required to support policy or market changes by 2030.
- Significant new infrastructure required to meet demand by 2030.

Critical residual waste infrastructure is urgently needed

Even if NSW significantly improves its waste avoidance and recycling performance, we will still need new capacity to manage residual waste. Our highest priority is to extend the life of our current landfills by reducing the volumes of waste we must manage, either through avoidance or recycling.

Eliminating our residual waste completely in the next 20 years is a significant challenge. It would need unprecedented national- and international-level action and a fundamental shift in the way the global economy operates. While the world is starting to transition towards a circular economy, it will take time.

As we support this transition, we must also plan for how we can continue to provide a way to safely manage our residual waste into the future so that we protect our environment and the health of the community.

Analysis undertaken for the NSW Government shows that under the 'business as usual' scenario, a mix of potential solutions is needed.

Figure 6: Potential mix of residual waste infrastructure needs by region

Region	Potential mix of residual waste infrastructure needs*	
	2030	2040 (if 2030 needs are met)
 **Greater Sydney**	Additional non-putrescible landfill capacity to accept >3 million tonnes per annum (tpa) Additional putrescible landfill capacity to accept >500,000 tpa At least one large-scale regional energy recovery facility and medium-scale 'dirty MRF' required to reduce the need for additional landfill capacity in this decade	Additional non-putrescible landfill capacity to accept >1.2 million tpa Additional putrescible landfill capacity to accept >1.1 million tpa At least three large-scale regional energy recovery facilities and one medium-scale 'dirty MRF' required to reduce the need for additional landfill capacity in this decade
 **Hunter**	Nil	Additional landfill capacity to accept >300,000 tpa or a medium-scale energy recovery facility
 **Northern Rivers**	Additional landfill capacity to accept up to 100,000 tpa) or an equivalent medium-scale energy recovery facility	Nil
 **Coffs Harbour**	Additional landfill capacity to accept up to 25,000 tpa	Nil

* Note: infrastructure may be located outside the region

The role of energy from waste

Recovering energy from waste can be a legitimate and necessary residual waste management option where it can deliver positive outcomes for the community and the environment and assist in lowering our carbon footprint and reducing the need for landfill. Energy recovery can reduce emissions by replacing more carbon-intensive fuels and by stopping harmful methane emissions from materials in landfill.

We want to support energy recovery where it makes sense to do so and where it is used to manage residual waste, not as an alternative to recycling.

Thermal energy from waste facilities are the most common technology. These generate some electricity as well as heat and steam. Other types of energy recovery include anaerobic digestion and gas capture.

The *NSW Energy from Waste Policy Statement* sets out the policy framework and technical criteria that energy from waste facilities must meet. The policy has been updated to reflect the latest advice on air emissions standards from the Office of the NSW Chief Scientist and Engineer and ensures NSW has the strictest air emission standards in the world where energy from waste is allowed.

The NSW Government is considering further strategic planning needs for energy from waste infrastructure to ensure such projects protect the environment and human health into the future, and maximise efficiencies for waste innovation, management, and energy recovery.

Regional precincts that are located on arterial transport routes have enormous potential to become circular economy precincts, where energy recovery sits at the centre of a network of complementary industries that can create jobs and drive innovation. The first of these is located in the Parkes Special Activation Precinct, which sits alongside the Inland Rail route, the 1,700 km freight network that will connect Victoria, NSW and Queensland. The NSW Government has already commenced a market-sounding exercise and will continue working with proponents to identify opportunities for energy from waste development in the precinct.

The NSW Government will also identify opportunities for co-locating suitable energy recovery facilities in our proposed Clean Manufacturing Precincts. The Clean Manufacturing Precincts are a part of the government's Net Zero Plan and will catalyse the growth of low-emissions industries around world's best practice energy technology. In these precincts, energy recovery facilities can help make the most efficient use of waste materials and provide valuable steam and heat. We can also use these facilities to help attract other circular economy businesses.

Coordinating waste and resource recovery infrastructure planning

Given the environmental and commercial complexity of these types of facilities, particularly high impact projects like putrescible landfills or energy recovery facilities, the planning lead time is often close to 10 years.

Starting from 2021, the NSW Government will conduct a series of feasibility assessments and engage with the community, local government and proponents about the suite of infrastructure investment needed to help us manage our waste into the future.

We will take on a coordination role so that we can attract the right investment at the right time. Our early priority will be to ensure there is a pipeline of residual waste management infrastructure, but we will also target complementary recycling and reprocessing infrastructure to help meet our capacity gaps. This will involve coordinating functions across government, such as investment attraction, planning, environmental licensing and grant funding.

The Clean Manufacturing Precincts are a part of the government's

Net Zero Plan

New plastics recycling facility

- Cleanaway, Pact and Asahi Beverages have joined forces to close the loop on plastic recycling
- With financial support from the NSW and federal governments, a new recycling plant is being built in Albury which will recycle the equivalent of 1 million PET plastic bottles every year
- Cleanaway will provide the plastic waste to be recycled
- Pact will provide technical and packaging expertise
- Asahi Beverages and Pact will buy recycled plastic from facility to use in new plastic packaging

Facilitating joint procurement of household waste services

To complement our new strategic planning role for waste and resource recovery infrastructure, we will begin consultation on the design of a new service to facilitate local government joint procurement of waste services such as the collection and processing of waste from household bins.

We want to make it easier for local councils to come together to procure waste services that deliver good value for ratepayers and help to achieve better waste and recycling outcomes.

Some councils already choose to procure jointly, but the process can often be cumbersome, costly and time consuming. Councils that tender for waste services individually are often at a disadvantage because of their relatively small purchasing power.

By consolidating local government waste volumes and approaching the market with scale, we can attract investment in new infrastructure and services. This can help remove barriers to entry for new investors, increase competition in the waste services sector and put downward pressure on costs for councils and households.

This approach will allow state and local governments to work collaboratively on steering strategic planning for waste infrastructure and services to meet state and local needs. It can also promote innovation in waste service delivery by providing opportunities to trial and scale up new ideas and provide a forum to test standardisation of services where appropriate.

The NSW Government will fund the new joint procurement facilitation service. It will be voluntary for councils to participate and the service will provide access to expert commercial, legal and policy advice.

In its initial phase, the service will target major waste contracts for the Greater Sydney region to align them with critical infrastructure needs. In subsequent phases, the service will be broadened to regional councils.

Upgrading the Moruya MRF

- SUEZ's Moruya MRF in regional NSW processes domestic recyclables from Eurobodalla Council
- In 2018, SUEZ received a *Waste Less, Recycle More* grant to install new equipment to increase the recovery of paper, and reduce contamination in the paper and plastic outputs
- The new equipment means that SUEZ has reduced the contamination in its paper output from 6% to under 1.5%, diverted over 2,000 tonnes of paper in 2020, and were able to supply approximately 300 tonnes of higher quality mixed plastic as a result of having less paper in the container stream.

We will work in partnership with local government to design a facilitation service that meets the needs of councils and helps deliver better waste services and infrastructure for communities. Consultation on the service design will look at options for governance, the role of the service in the tender process, streamlining regulation and tender approvals processes, optimisation of service areas and alignment with infrastructure planning and investment attraction.

Focus area: Reducing carbon emissions through better waste and materials management

If we can increase the efficiency of our resources, we generate less carbon emissions. We can do this by using less carbon-intensive materials in our buildings and products, reducing the amount of virgin material we need by reusing and repairing products, recycling materials and recirculating the gas and energy generated by waste through our economy.

The NSW Government will implement a set of initiatives to drive carbon emissions reduction that will be supported by new grant programs and complementary regulation.

North East Waste FOGO

- Six councils in the North East Waste region of NSW now have food organics and garden organics (FOGO) services
- Diverting 50,000 tonnes of organics from landfill every year, the FOGO services also annually reduce carbon emissions by 75,000 tonnes of CO_2-e, reduce disposal costs by $5.5 million and save valuable landfill space
- Supported by *Waste Less, Recycle More* grants for collections and new processing facilities
- The organics are processed into compost and returned to local soils, which sequesters carbon, improves soil health, increases water retention and boosts crop yields.

Mandating food and garden organics collection for all NSW households and select businesses

We can reduce the amount of organic material going to landfill by collecting it separately and processing it at special organic waste facilities. Many councils already provide a separate bin to collect garden organics from households and some (less than a third) also collect food organics[24] .

Other organic material, like textiles and timber, finds its way into household bins. Audits of residential kerbside residual waste bins in the waste levy area in NSW show that:

- the proportion of food and garden organics waste overall was 41% in 2019
- councils that provided a separate food and garden organics collection service had a far lower proportion of food and garden organics in their residual waste bin (25%) compared to councils with only garden organics (41%) or no organics collection (54%)[25].

To help achieve our targets of halving food waste to landfill and achieving net zero emissions from organics in landfill by 2030, we will require the separate collection of:

- food and garden organics from all NSW households by 2030
- food waste from targeted businesses and other entities that generate the highest volumes of food waste, including large supermarkets and hospitality businesses, by 2025.

We will consult with councils, businesses and service providers on the best way to transition to these new arrangements, including the need for phasing in or grandfathering existing contracts, managing the different needs of high-density housing, and working with service providers to ramp up processing capacity.

To help with the transition, the NSW Government will invest $65 million over five years from FY2023. This funding will support the rollout of new collection services, the development of more processing capacity and a statewide education campaign that will help households adjust to the changes and improve their recycling habits.

The donation of surplus food to food rescue organisations also minimises food waste and the resulting emissions that would otherwise be generated from this waste if it was landfilled. In addition, the distribution of the rescued food to needy people and communities provides significant social benefits. It is estimated that only 8% of available food from supermarkets is donated. A pilot with OzHarvest working with Woolworths found training staff to identify more food for redistribution resulted in a 37% increase in donations.

To encourage more surplus food donation, the NSW Government will require large supermarkets to report on their surplus food donation to food rescue organisations. We will provide $4 million in funding for food donation infrastructure, refrigerated vans, fridges, freezers and other equipment to store and keep food fresh for redistribution.

Supporting circular design to reduce carbon-intensive materials and increase recycling

If we can design our buildings, infrastructure, products and even entire precincts so that they rely on fewer raw materials, are more durable and can be easily repaired and use more recycled content and recovered energy, then we can reduce our carbon footprint.

By looking at the lifecycle costs and benefits of the materials we use, we can better assess their impacts, not only on price and performance but on emissions and the broader environment.

We can also reduce our carbon emissions by planning for our future needs. Materials used in construction are often locked away for decades, but when it comes time to replace buildings and infrastructure, that material needs to be recycled or disposed of. A circular built environment could save 3.6 million tonnes of CO_2 per year across Australia and deliver $29 billion in direct economic benefits to NSW per year by 2040[26].

Digital record keeping of the material in our buildings and infrastructure – commonly referred to as 'digital twins' or 'materials passports' – would allow us to identify when and how much

material will reach its end of life and gives us an opportunity to plan for its management. It can also help us identify gaps in recycling capacity for those materials and support investment in innovation and infrastructure to meet that future demand.

To help catalyse a shift to circular design that reduces our carbon emissions, the NSW Government will establish a new $37 million *Carbon Recycling and Abatement Fund*. The fund will support innovative circular economy approaches that manage waste and materials more efficiently and reduce emissions.

Through this new fund we will support projects to:

- trial the innovative use of low-carbon recycled materials, such as cement made with coal ash
- trial new approaches to reducing waste and improving recycling of waste generated through construction and demolition activities – such as modular design, digital materials passports, and novel uses of 'products as a service'
- help businesses co-locate in areas like the Clean Manufacturing Precincts and Special Activation Precincts where they can beneficially re-use each other's by-products, reducing their waste and carbon footprints
- support the recovery of biogas from waste materials (see below for more details).

As part of our NSW Plastics Action Plan, we will also establish a new $10 million *Circular Materials Fund* that will provide a financial incentive for producers to design out or replace carbon emissions-intensive virgin plastic with lower carbon-intensity recycled materials. This will help improve materials efficiency, increase use of recycled content and deliver a measurable carbon dividend for NSW.

We will continue support for our popular Bin Trim program, providing advisory services, rebates and grants for small and medium enterprises to manage their waste more efficiently, reduce the amount of waste they send to landfill and reduce their carbon footprint.

There is an opportunity to use waste locally that is currently being sent interstate and overseas for recycling.

Around 60% of plastics recovered in FY2019 was exported out of NSW for recycling[30]. This means that NSW missed out on the jobs and economic benefits associated with the recovery of this material. Transporting the material long distances also generated pollution and greenhouse gas emissions.

Creating local demand for recycled material also helps divert material from landfill.

There are opportunities to increase government procurement of local recycled material such as:

- plastic, glass and rubber in asphalt
- coal ash and glass in concrete and road base
- compost as a soil amendment
- plastic and rubber in indoor and outdoor furniture and soft surfaces.

The NSW Government will work with the property and infrastructure sectors to develop tools and guidance to promote circular design and practices, including new circular design guidelines for buildings and infrastructure. These guidelines will provide practical advice around how to achieve circular design in the built environment and will be incorporated into relevant government planning instruments.

Leading the way to stimulate circular investment and innovation

The NSW Government can use its purchasing power to stimulate circular economy innovation and demand for recycled content recycling markets. We can reduce the environmental impacts of the materials we use by designing for durability and reuse, and by incorporating recycled content. We can also help create jobs in NSW. For every 10,000 tonnes of material, recycling generates three times as many jobs as landfill disposal[27].

Building on our net zero commitments to reduce government carbon emissions, we will require NSW Government departments to preference products that contain recycled content, including building materials and office fit outs and supplies, on an 'if not, why not' basis. This will not only drive better waste and recycling outcomes, but it will potentially reduce our carbon footprint by using fewer virgin materials. Agencies will need to preference recycled content where there is no significant additional cost or negative impacts on performance and the environment.

Legacy methane emissions from organics in landfill can continue for

25 years

or more

Where there are gaps in cost and quality or the absence of standards, we will work with industry to meet the increased demand for quality recycled material. Through the new $13 million *Circular Innovation Fund*, we will support research into new technologies and uses for recycled material and provide opportunities to pilot them in government projects.

The standards that government develops through this process will also be available for local governments to adopt, providing them with more confidence to use recycled content in their own procurement.

To support purchasing decisions and the market response, we will publish a directory of recycled material suppliers, along with a register of upcoming government infrastructure and construction projects that will procure recycled material. This will help industry plan for the pipeline of demand.

To demonstrate the NSW Government's commitment to supporting recycling markets, we will report annually on the use of recycled content in government procurement and its associated impact on emissions and waste reduction.

Additionally, we will demonstrate our leadership in adopting circular economy practices by:

- identifying opportunities to embed circular design principles in new NSW Government buildings, infrastructure and precincts
- requiring that all NSW Government-owned and leased buildings over 1,000 square metres obtain and publish a NABERS[28] Waste Rating by 2026, to drive waste avoidance and recycling in government operations.

Requiring gas capture technology at all landfills

Legacy methane emissions from organics in landfill can continue for 25 years or more[29]. To stop these harmful emissions, many landfills in NSW have already put in place infrastructure to capture landfill gas for flaring or for power generation. To minimise the impact of landfill gas emissions, the NSW Government will:

- require landfill gas capture for landfills over a certain size and all expanded or new landfills, with exemptions for certain circumstances
- require net zero emissions for landfills that are subject to an environment protection licence by a prescribed timeframe.

To complement these regulatory measures, we will invest $7.5 million to support the installation of landfill gas capture infrastructure.

In addition, we will explore the introduction of a waste levy rebate for landfills that have landfill gas capture infrastructure installed. The levy rebate could be based on the amount of landfill gas captured and set at differential rates to encourage landfill operators to capture as much of the gas as possible. This could encourage installation of new infrastructure, the upgrade of existing equipment and changes to management practices to maximise capture rates.

The requirements could also incentivise further development of potential emerging technologies including low-flow flaring or bio-filter systems that could be used for smaller landfills, and mobile gas capture and offsite cleaning and storage systems that would require minimal infrastructure at landfill sites.

Recovery of energy from waste through biogas production

The new initiatives for the diversion of food and garden organics from landfills will increase the amount of source-separated organics, mainly food organics, from which nutrients and energy can be recovered. Currently, most source-separated organics are composted and used as a fertiliser and soil conditioner in agriculture and horticulture.

Another option is to use anaerobic digesters. Anaerobic digesters produce biogas through the same decomposition process that occurs in landfills, but in a more accelerated and controlled environment. Biogas, whether captured from landfills or generated through anaerobic

Penrith Community Recycling Centre

digesters, is a renewable energy source that can be converted directly into heat. It can also be a direct substitute for natural gas in electricity generation, heating, cooking and as a fuel for vehicles. The digestate from the anaerobic digestion process can be further processed into fertiliser products.

As biogas is produced from fresh organic material (as opposed to fossil fuel-derived natural gas), substituting natural gas or other fossil fuels with biogas and its derivatives, like biomethane, can further reduce emissions.

Anaerobic digestion is a mature technology in Europe, but there is a relatively low uptake of this technology in Australia. The key challenges include the high investment cost, difficulties in securing feedstock and revenue sources for biogas and digestate products, and the lack of favourable policy conditions.

Mandating the source-separated collection of food and garden organics will increase the available feedstock for anaerobic digestion facilities. Part of our funding for organics will support investment in anaerobic digestion facilities to help reduce the financial barriers for this technology.

In addition, the *Carbon Recycling and Abatement Fund* will include funding to support biogas recovery from waste.

We will also look at establishing a new regulatory framework to further incentivise the uptake of anaerobic digestion facilities and biogas production. This could include:

- creating a market-based instrument requiring landfills and thermal energy from waste facilities to surrender a minimum amount of biogas from waste certificates a year
- streamlining planning approval processes for anaerobic digestion infrastructure, particularly where they are co-located with high energy or heat users or energy producers
- supporting emerging uses for biogas – for example, the conversion of biomethane into renewable hydrogen and graphite.

Kroghsminde Biogas Plant

- The Kroghsminde Biogas Plant in Ølgod, Denmark processes nearly 70 tonnes per day of organic waste, such as grass silage, manure and bedding materials, from nearby farms[31]
- The plant digests the waste through an anaerobic process, producing biomethane which is used to generate 3 GWh of electricity per year, and a biofertiliser, which is transported back to the nearby farms where it is used to improve soil health
- The plant has resulted in:
  - reduced GHG emissions from agriculture (one dairy farmer recorded -0.82kg of CO_2 per litre of milk produced)
  - a 20–30% increase in crop yields from use of the biofertiliser, and
  - job creation and supplementary income for farmers.

Focus area: Building on our work to protect the environment and human health from waste pollution

Pollution from waste can have long-term impacts on the environment and human health.

Pollution can be caused by illegal dumping, littering and contamination from hazardous materials like asbestos. It can also be caused by poorly managed waste, where noise, odour and emissions can cause harm to the surrounding community.

We have a strong regulatory framework that sets the rules and standards for how individuals and businesses can handle waste. We also have strong compliance and enforcement backing up this regulation to make sure polluters are held accountable.

Stopping illegal dumping

Illegal dumping of waste poses a risk to human health and the environment, especially if the waste is hazardous (such as asbestos waste). Illegal dumping reduces amenity in areas of the community and burdens local councils and other land managers with clean-up costs.

Using a combined approach of stakeholder engagement, education, regulation and enforcement, the NSW Government has partnered with public land managers, local councils and the community to combat illegal dumping. The NSW EPA co-funds and supports Regional Illegal Dumping squads (RID squads) and programs with member councils. RID squads are regionally-based teams that specialise in investigating and preventing illegal dumping. RID squads have increased the regulatory focus on illegal dumping, and this has led to a reduction in illegal dumping in RID squad areas.

The EPA's Waste Crime Taskforce (WCT) is responsible for investigating and prosecuting offenders for serious waste crimes. The WCT runs strategic compliance campaigns to target opportunistic dumpers, illegal dumpers and organised networks of unlawful waste operators.

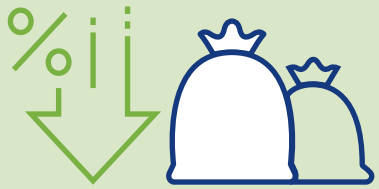
Rates of illegal dumping and identified illegal dumping hotspots in NSW are monitored using data sources like RIDonline. RIDonline is an online reporting database that records illegal dumping incidents in NSW and allows tracking of the success of illegal dumping prevention programs. Over 98,000 illegal dumping incidents have been reported in RIDonline since it launched in 2015. Reduced rates of illegal dumping have been recorded in locations where illegal dumping programs have been undertaken.

To continue successful programs, including maintaining the critical work of the RID squads and the RIDonline reporting system, we will provide an additional $16 million in funding. We will also introduce new measures to move to a modern regulatory approach to combat illegal dumping. Legislative measures may include:

- requiring electronic waste dockets at waste receiving facilities to minimise the opportunity to falsify dockets
- a requirement for the generator to pay disposal fees directly to waste facilities to ensure the waste is transported to the facility and not illegally dumped
- working to strengthen the investigation and enforcement powers of EPA officers to combat illegal dumping and increase the penalties for waste crime offences.

Managing hazardous wastes

There are many hazardous substances used in everyday commercial and industrial settings. There are also legacy substances like asbestos that persist in our community. Once they reach the end of their useful life and become hazardous wastes, these substances need to be handled, treated and disposed of or stored according to appropriate standards to minimise risks to human health and protect the environment.



Litter in NSW has fallen by

43% **since 2014,**

exceeding the state's target of

40% **by 2020**

There are already strong policy approaches and statutory requirements to ensure the safe handling, storage, transport, treatment and recycling (where safe to do so) or disposal of hazardous and harmful wastes. For example, the EPA has been leading the coordination of the NSW Asbestos Coordination Committee (NACC) since 2018. The NACC brings together NSW state agencies and organisations to improve the management, monitoring and response to asbestos issues in NSW. We will invest $5 million in the continued operation of the NACC.

The NSW Government's Asbestos Strategy, released in 2019, sets out priority areas where we will continue to work to reduce mismanagement of asbestos waste. These include:

- closing loopholes and increasing transparency in the transport of asbestos waste
- reducing cost of disposal
- minimising profitability and increasing penalties for unlawful and improper asbestos waste disposal (such as illegal dumping).

Our regulations require businesses to track the movements of hazardous controlled wastes into, within and out of NSW. This allows us to monitor the generation and handling of these wastes.

The NSW Government is leading the establishment of a nationally consistent tracking and data system, which will improve the quality of data and give us better oversight of hazardous waste movement in NSW and other jurisdictions. This will greatly increase our capability to detect and address potential illegal and dangerous stockpiling and support legitimate operators. We will also investigate using GPS to track vehicles transporting asbestos waste.

The new tracking and data system will be a critical part of our strategic infrastructure planning and will assist in identifying critical hazardous waste infrastructure needs. We will work with industry to encourage more investment to fill identified gaps.

In conjunction with the tracking system, we will also investigate establishing a scheme for accredited waste assessors to assist with waste characterisation and classification and a product stewardship scheme for high-risk hazardous wastes like flammable waste solvents.

Helping the community deal with problematic and hazardous wastes

Households and businesses commonly use items like batteries, paints and gas bottles, but they can be difficult and/or costly to recycle or treat. When people dispose of these items in regular kerbside recycling, they can contaminate other waste streams or even cause fires at recycling facilities.

To help stop problematic wastes from being illegally dumped or sent to landfill, we have invested $127 million in household problem waste programs. This includes establishing and servicing 95 Community Recycling Centres (CRCs) around NSW, with another 15 in development. Since 2014, these CRCs have accepted more than 11,300 tonnes of waste, partnering with industry-led product stewardship schemes like Paintback to fund the recycling and treatment of these wastes.

The NSW Government will continue to support these important community resources, with more than $50 million in funding. We will continue providing support for the popular Household Chemical CleanOut events, which provide safe collection and disposal of harmful chemicals like garden, pool and hobby chemicals, household cleaners and poisons. We will also investigate a new product stewardship scheme for waste solvents.

Tackling litter

We all pick up the tab to clean up litter. It is estimated that the annual direct cost of litter clean-up in NSW is $180 million. The NSW Government has invested in a range of successful programs and initiatives to tackle litter including the NSW container deposit scheme, Return and Earn, which has successfully diverted over 5 billion containers from litter and landfill for remanufacturing. Coupled with the highly successful *Don't be a Tosser!* campaign and a suite of other litter behaviour and enforcement programs, litter in NSW has fallen by 43% since 2014, exceeding the state's target of 40% by 2020.

To build on the success of our litter programs, we will invest $38 million in litter prevention programs to protect our natural environment and waterways. These programs will be further enhanced by strengthening our regulatory framework with a focus on plastic litter through the phase out of problematic plastics (including single-use plastics) that end up in our waterways, and tackling problem littered items such as cigarette butts.

We will establish new litter partnerships designed to support capacity building and empower industry, community organisations and stakeholders to take ownership of local litter. A partnership approach with local councils, industry and the community will tackle place-based litter issues through prevention pilots and enforcement activities. The program will use a newly developed litter data framework to target problem hotspots and littering behaviour.

Banishing Bathurst Butts

- Cigarette butt litter was a real problem in the Bathurst area, with more than 18,000 butts littered in the Bathurst CBD per week
- In 2020–21, Bathurst Council developed and rolled out the Banishing Bathurst Butts project, supported by *Waste Less, Recycle More* funding. A blend of new infrastructure, community and business engagement, public transport advertising, social media and enforcement was used to reduce the butt littering rate by 79%, across six project sites
- This has saved approximately 14,200 butts from entering the Macquarie River and surrounding environment every week.

The role of the waste levy

The waste levy is a market-based instrument legislated under the *Protection of the Environment Operations Act 1997*. In operation for almost 50 years, the levy incentivises avoidance of waste and recycling over landfill disposal.

The waste levy applies in the regulated area of NSW made up of the metropolitan levy area (Sydney, Illawarra and Hunter regions) and the regional levy area (the Blue Mountains, Wollondilly and the area north of Port Stephens to the Tweed).

The stability of the levy over that time, and its relatively high rate, has driven investment in NSW's resource recovery industry, which now services households and businesses across the state. It has also been particularly successful in driving the construction and demolition recycling sector, where the levy makes heavy materials like concrete prohibitively costly to dispose of.

One-third of the waste levy revenue collected is returned to the environment portfolio, with more than half of that funding going to waste and circular economy programs and activities. Over the last 9 years, the waste levy has funded the $800 million *Waste Less, Recycle More* program, the largest waste program of its kind in Australia, and will continue to fund the implementation of this strategy.

The NSW Government recognises the need for regular, transparent reviews of the levy. In line with the recommendations of the NSW Auditor General, we will put in place formal, five-yearly reviews of the operation of the levy to ensure it is continuing to achieve its policy objectives. This process will include a review of the levy area boundaries.

Supporting recycling innovation

The NSW resource recovery framework provides clear rules and guidance for the use of recovered materials for land application and thermal treatment purposes. The framework has been refined since its introduction, and NSW is now the national leader, with by far the most robust, comprehensive framework for regulating resource recovery.

The framework is centred on two documents that work in tandem – an order to give conditions for the supplier of a waste (for example, chemical specifications that the waste must meet to be safely re-used by application to land or thermal treatment), and an exemption to give conditions for the user of the recovered waste (for example, allowable types of re-use).

In 2018 and 2019, the EPA engaged with almost 100 applicants through the resource recovery framework to approve specific orders and exemptions on a case-by-case basis. These specific exemptions diverted 22 million tonnes of recycled products from landfill for beneficial reuse. This is in addition to wastes used under 40 general orders and exemptions that have been developed for common waste streams, for which no application is necessary.

We will continue to improve our policies, regulatory requirements and procedures so that they are clear, transparent and incentivise high-quality resource recovery.

As part of this strategy, we will review and optimise legislation or other measures to facilitate feasibility and viability testing of innovative business models, technologies or processes for resource recovery in NSW. This may include actions to create new time-limited licences for different trial phases, enabling risks to be controlled by using co-designed standard parameters for each phase.

By shifting our focus towards supporting innovation, we can work with local government and industry to help meet gaps in the market and create opportunities for more jobs and investment in NSW.

Improving Tenterfield's landfills

- In 2013, Tenterfield Council identified the need to improve its rural and village landfills
- Limited access control had led to dumping around the site perimeters, windblown litter, fires, vermin, dumping of hazardous materials including asbestos, no recycling and concerns for safety of residents accessing the landfills
- Over the next four years, *Waste Less, Recycle More* funding assisted Tenterfield Council to close five rural landfills and upgrade to four transfer stations facilities to provide residents with clean and safe sites. Council operators at each site now manage access and provide education opportunities to the community
- Fencing and signage now discourages illegal dumping and establishment of recycling and the permanent covering of the landfill tipping faces has improved vermin, litter and fire management.

Support for local communities

Local governments play a critical role in managing the impacts of waste. The NSW Government will continue to support councils' litter reduction and illegal dumping prevention activities with more than $10 million in grants. We will continue to support collaboration for regional organisations of councils (ROCs), council groups, joint organisations and voluntary regional waste groups through $15.6 million in funding. We will provide further support through our $16 million investment in a new joint procurement facilitation service. The service will make it easier for local government to come together to procure waste services that deliver good value for ratepayers and achieve better waste and recycling outcomes.

There will be continued funding of $6 million for the *Landfill Consolidation and Environmental Improvements Grant Program* to support regional councils to improve community safety and amenity through better site security and access, litter control and overall supervision and operations of landfills. Landfill consolidation programs will complement upgrades requiring gas capture at landfills at an investment of $7.5 million.

We will provide continued funding of $4 million for the *Aboriginal Communities Waste Management Program* to allow for ongoing investment to support the planning and delivery of waste management projects working in partnership with Aboriginal communities across NSW. Some $1 million in grants for *Aboriginal Land Clean Up and Prevention* will continue to tackle illegal dumping on Aboriginal land in partnership with Aboriginal organisations.

Part 3

Consultation schedule

Consultation

The NSW Government will conduct two initial phases of detailed consultation on the highest priority actions.

Phase 1: 2021–22

Action	Consulting on...	Consulting with...
Diverting organics from landfill	• Implementation plans for councils and businesses to transition to source-separated organics collections • Scope of funding program	• Local government • Food waste-generating businesses • Organics processors
Supporting councils to jointly procure waste services	• Options for the scope and operation of the service	• Local government
Strategic infrastructure planning	• Initial feasibility studies for critical waste and circular economy infrastructure projects	• Local government • Waste industry
Review of the resource recovery framework	• The operation of the current framework • How the framework could be made more responsive	• Processors of recovered material • Users of recovered material • Local government

Phase 2: 2022 onwards

Action	Consulting on...	Consulting with...
Waste levy review framework	• Timing and scope of the new 5-yearly review	• Local government • Waste industry • Community and businesses
Biogas generation and capture	• Regulatory and market-based mechanisms to incentivise biogas generation and capture	• Gas and energy users • Biogas generators
Hazardous waste management	• Proposed regulation to require GPS tracking and the use of a national tracking system • Scope and operation of an accreditation scheme for waste assessors • Proposals for a flammable waste product stewardship scheme	• Waste industry • Hazardous waste generators

Appendix

References

1 OECD. Global Materials Resources Outlook to 2060, Economic Drivers and Environmental Consequences 2019

2 CSIRO. Mission Area: Resilient & Valuable Environments 2020

3 Ocean Conservancy, Stemming the Tide: land based strategies for a plastic-free ocean, 2015.

4 European Commission. First Circular Economy Action Plan, EC website, 2020.

5 United Nations. Sustainable Development Goals, UN website, 2021.

6 NSW Government. Return and Earn, Return and Earn website, 2021.

7 Pickin J et al. National Waste Report 2020, report to the Department of Agriculture, Water and the Environment, Blue Environment, 2020.

8 DPIE projections

9 PwC. NSW Waste Sector Key Findings: Volume I, 2019.

10 Internal DPIE figures

11 Department of Industry. State and Territory Greenhouse Gas Inventories: 2018, 2020

12 Ellen Macarthur Foundation. Completing the Picture: How the Circular Economy Tackles Climate Change, 2019.

13 PwC. Building a more circular Australia: The opportunity of transition to a circular economy, 2021.

14 Carre MA et al. LCA of Kerbside Recycling in Victoria, report to Sustainability Victoria, RMIT University, 2015; Center for International Environmental Law. Fueling Plastics: Fossils, Plastics and Petrochemical Feedstocks, 2017. Zheng J and Suh S. Strategies to reduce the global carbon footprint of plastics, Nature Climate Change, vol. 9, 374-378, 2019; Environmental Paper Network, State of the Global Paper Industry, 2018; Union of Concerned Scientists, Wood Products, UCSUSA website, 2016; Paraskevas D et al, Environmental impact analysis of primary aluminium production at country level, 13th Global Conference on Sustainable Manufacturing – Decoupling Growth from Resource Use, 2016; Australian Government. Embodied Energy, Your Home website, 2013.

15 OECD. Circular economy - waste and materials, in Environment at a Glance Indicators, OECD Publishing, Paris, 2021. https://doi.org/10.1787/f5670a8d-en.

16 NSW EPA. Waste Performance Data, NSW EPA website 2021.

17 Marsden Jacob Associates. Reducing Impacts of Single-Use Plastics – Cost-Benefit Analysis of Options: Final Report Revised, report to NSW DPIE, Marsden Jacob Associates, 2020.

18 Lacy P and Rutqvist J. Waste to Wealth: The Circular Economy Advantage, Palgrave Macmillan, 2015. doi:10.1057/9781137530707.

19 Centre for International Economics. Headline Economic Value for Waste and Materials Efficiency in Australia, 2017.

20 KPMG. Potential Economic Pay-off of a Circular Economy, 2020.

21 NSW Treasury. NSW 2040 Economic Blueprint, 2019.

22 MRFs, or Materials Recovery Facilities, sort mixed waste (like kerbside recyclables) into different material types. These materials streams, such as plastics, glass and paper, are then usually sent to a secondary facility for further processing.

23 Assumes mandatory FOGO for households in the levy area and mandatory food collection for select businesses.

24 NSW EPA. NSW Local Government Waste and Resource Recovery Data Report: 2018-2019, 2020.

25 Rawtec. Analysis of NSW Kerbside Red Lid Bin Audit Data Report: Results of the 2011–2019 audits, 2020.

26 PwC. Building a more circular Australia: The opportunity of transition to a circular economy, 2021.

27 Access Economics. Employment in waste management and recycling, report to the Department of the Environment, Water, Heritage and the Arts, Access Economics, 2009.

28 National Australian Built Environment Rating System – see https://www.nabers.gov.au/

29 Agency for Toxic Substances & Disease Registry. Landfill Gas Basics. Landfill Gas Primer website, 2001.

30 NSW EPA. Waste Performance Data, NSW EPA website, 2021; NSW EPA. Data Quality Statement: Waste generation and recycling performance data for NSW in the 2018–2019 financial year, 2020.

31 IEA Bioenergy – Task 27. Organic biogas unit improves nutrient supply – Kroghsminde Bioenergy I/S, Denmark February 2019, Case Stories website, 2019. Danish Energy Agency and IB Tech. Biogas plants in Denmark and Mexico, 2019.

dpie.nsw.gov.au