

Planet

For a healthy environment

We recognise the impact that our business may have on the communities and environments in which we operate and take conscious steps to operate sustainably. We aspire to be a leader in sustainable business and continue to explore, trial and implement new initiatives, and partner with other stakeholders to amplify our impact and share our learnings.



Total food relief
diverted to people
in need

18.8M
meals



Stores with
transcritical or
waterloop system

18



Solar power generation

10,686
MWH



2019 carbon
emissions

18%

▼ below 2015 levels





Anna Playfair-Hannay, Animal Welfare Manager and her dog, Boss.



Moving to a circular economy

Woolworths Group continues to implement initiatives to reduce food waste, such as promoting greater organic recycling and strengthening our food rescue partnerships to provide hunger relief to those in need.

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Sustainable Development Goal



Sustainable Development Goal



Reducing food waste

As the largest food retailer in Australia, fighting food waste and addressing hunger relief are two of Woolworths' priorities for building and supporting healthy and sustainable communities.

Food waste is a \$20 billion problem in Australia and it is estimated that 40% of all food grown and manufactured in this country for Australian consumption is wasted. We are doing our part to reduce food waste going to landfill through our national 'Reducing Food Waste to Landfill Program', which was rolled out to Australian Supermarkets in July 2018. This program was designed to give store teams the education, training, resources, time and equipment to better identify and divert, surplus food away from landfill and towards at least one of the following beneficial streams of; food rescue for hunger relief; donations to local farmers for animal feed; or commercial organic recycling for composting.

Food rescue has doubled in the last year with the additional focus, and has only been made possible with the support of food rescue agencies in our local communities as well as our key national partners: OzHarvest, Foodbank, and FareShare in Australia. These partners are critical to rescue and redistribution of our surplus fresh food, so that instead of going to landfill a lot of this food can instead be donated free of charge to people in our communities affected by food insecurity.

Overall our stores have continued on average to reduce food waste to landfill by 8% year on year, for the past 4 years.

As of January 2019, 100% of Supermarkets across Australia now have a program to keep food out of landfill.

Food for thought

Did you know?

100%

of our stores now have a program to keep food out of landfill



Equivalent number of meals¹
provided
to people in need

OzHarvest **9.6** Million

Foodbank **2.9** Million

FareShare **1.2** Million

Local
charities
and others **5.1** Million



Countdown's Food Rescue Program

We continue to work towards zero food waste going to landfill in New Zealand and partner with more than 20 food rescue groups throughout the country with the aim of achieving that goal. Our Food Rescue Program continues to be an integral part of our efforts. 100 per cent of Countdown stores work with local food rescue partners and farmers, donating surplus food with the aim of directly benefiting families or farmers in need in our local communities. In F19, this meant that approximately \$5.2 million of food was donated to food rescue partners and \$1.7 million of food surplus was donated to local farmers. To ensure the ongoing success of this important program, we're also actively working to support our partners through our Countdown Food Rescue Partners Contestable Fund, which has seen more than \$435,000 worth of grants over the last three years go to 15 of our partner organisations. This year, the majority of funding awarded has gone towards helping our partners expand their operations - whether that's buying a new vehicle to transport food to recipients or hiring more team members to help them do their important work. We have also continued to work alongside our food rescue partners to share ideas and best practice with each other through our annual Food Rescue Summit, which is also helping drive collaboration in the sector. Another important element in reducing food waste is what happens in store, and we are working on improving our in-store waste management, and reducing our stock loss. Countdown's zero food waste project, funded in part by the Ministry for the Environment's Waste Minimisation Fund, will allow our business to identify further opportunities to reduce the amount of food currently going to landfill.



¹ The ratio of rescued food to number of meals is based on a 500g meal size, except for OzHarvest (F19 revised methodology) which uses 3 meals from 1 kg.



Moving to a circular economy

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We are continuing to work to remove or reduce plastic packaging across our product ranges, and provide further opportunities for our customers to contribute to the circular economy through recycling.



2025 national packaging targets

In September 2018, Woolworths aligned to the packaging targets set by the Australian Government and the Australian Packaging Covenant Organisation (APCO) by committing that 100% of all own-brand packaging be reusable, recyclable or compostable by 2025. Woolworths was the first supermarket to commit to the 'Australasian Recycling Label' which gives customers better guidance on which components of the packaging is recyclable. We will continue to add the label to more products as packaging is refreshed and updated. We have been working hard this year on making changes in line with these targets by reviewing our current range and introducing initiatives such as:

- Introducing recycled content packaging on our Own Brand 600ml water
- Adopting the 'Australasian Recycling Label' on many Woolworths' Own Brand products including readymade meals, pre-packed salads and yoghurt.



Sustainable packaging in drinks

Endeavour Drinks is collaborating with APCO and industry leaders such as the Winemakers' Federation of Australia to identify and address sustainable packaging issues affecting the industry. Several initiatives are underway, including:

- A pilot waste audit at 22 stores in South Australia to identify improvements and how sustainable packaging can be progressed at store level
- Identifying opportunities to reduce the quantity of plastic stretch wrap used to distribute wine products across the supply chain and how to increase recovery of this material
- Developing, with APCO and others, a set of guidelines for retailers, winemakers and their suppliers on sustainable packaging opportunities for wine, supported by awards that recognise good performance
- Collaborating with others in the industry to 'lightweight' wine stock bottles.





Plastic reduction in New Zealand

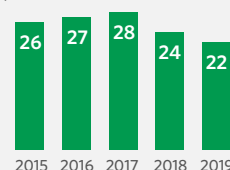
As the consumer demand for less plastic has increased, so too has the pressure on our business to make changes for the better. Over the last year we've delivered some positive results.

We've continued to remove plastic from our produce range. Since early 2018, we've removed more than 117 tonnes of plastic packaging and just over 70 tonnes of cardboard from our stores. We've also begun rolling out misting units in our stores, allowing certain fresh produce to be displayed without plastic and packaging. To date, five stores have been upgraded this way, and a further 30 stores will be completed by the end of 2019.

Single-use plastic bags removed from our stores in the last year

3 Billion

Waste intensity (t/square metres)



Reducing landfill waste



As part of Woolworths Group's sustainability commitments, our Endeavour Drinks business is making great progress towards addressing the waste that goes to landfill and improving the recyclability of its Own Brand packaging at its winery and production facilities in South Australia.

With funding support from Green Industries SA's Solid Waste Management Improvement Incentives Program and Dorrien Estate Winery, Vinpac and our Angaston production facility recently undertook an audit to measure their solid waste and recycling performance.

Both sites had outstanding waste and recycling performance, diverting over 99% of waste from landfill. These sites deal with, on average, around 40 different kinds of waste, including wine processing residuals, pallets, plastics, barrels and glass.

Since this audit, these facilities have switched from single-use to ceramic cups, begun recycling cork and are looking at innovative ways to recycle problematic waste, with the aim of closing the gap to achieve zero waste to landfill.



Reducing plastic across our stores

Produce

Our customers continue to tell us that reducing plastic packaging across the store, particularly for fruit and vegetables, is a key concern for them. Plastic reduction is a complex task given that packaging protects the quality and extends the shelf life of fresh produce as they are transported and in turn reduces food waste, another key concern for our customers. In response to both issues, we have been working hard to identify and address excess plastic packaging across our produce range and have so far removed 313 tonnes of plastic from our fruit and vegetables in the last 12 months, and close to 500 tonnes over the last two years. We have reduced plastic packaging across a range of our products, including organic bananas, tomatoes, stone fruit, celery, kale and organic spring onions. The tray we use for

our sweet potatoes and organic apples is now made of recycled cardboard, rather than plastic. This is an important start, and we will continue to remove excess plastic from our produce range over the coming year.

Bakery

We've removed 505 tonnes of plastic packaging from our in-store bakery items over the last 12 months. We've achieved this by replacing plastic with a reclaimed and rapidly renewable sugarcane pulp product which is certified home compostable and is also recyclable. In April 2019, we were recognised for this vital work with a special commendation at the Australian Institute of Packaging's annual Australasian Packaging Innovation and Design Awards.



Sourcing environmentally sustainable commodities

We are constantly working to source high impact commodities and key raw materials from sustainable supply chains and raise awareness of sustainably-sourced products with our customers, partners and suppliers.

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RESPONSIBLE CONSUMPTION AND PRODUCTION

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LIFE ON LAND

GOAL



Sustainable seafood

Seafood is a complex commodity to source sustainably due to the large range of globally sourced wild and farm-raised species that we offer. Working with fishermen and farmers around the world can create challenges for us in identifying and tracking all of our sources, especially when considering the varying size and reporting capabilities of our suppliers. Good progress has been made on packaged seafood, and we continue to build our understanding of the unique sourcing profile of fresh seafood.

Our partnership with the World Wildlife Fund

Woolworths and the World Wildlife Fund (WWF)-Australia established a partnership in 2019, to provide us with technical advice on the sustainability of our seafood supply chain, as well as offering strategic recommendations to transition our entire seafood range to more sustainable sources.

OpenSC

OpenSC is a new blockchain-enabled food tracking platform developed in partnership between WWF-Australia and BCG Digital Ventures.

OpenSC can track individual products from origin to consumer with the aim of helping businesses and consumers avoid illegal, environmentally-detrimental or unethical products, while also improving supply chain accountability and transparency.

OpenSC was developed through a series of successful pilots with a number of WWF’s corporate partners, including Woolworths.

“Woolworths has been working with OpenSC to pilot this innovative technology as part of our ongoing commitment to delivering high-quality, fresh and sustainable products to our customers.” – Alex Holt, General Manager of Quality, Health and Sustainability at Woolworths Group.

Sustainable Seafood Week

Woolworths participated in Sustainable Seafood Week in March 2019 – a celebration of the certified fisheries, retailers,

chefs and restaurants around Australia supporting the Marine Stewardship Council’s (MSC) mission to ensure sustainable seafood for future generations.

For the first time, the event was jointly coordinated by the MSC and the Aquaculture Stewardship Council (ASC), which together raised awareness regarding choosing responsibly farmed seafood (marked with the green ASC label) and sustainably-caught wild seafood (marked with the blue MSC label).

Traceability

In 2019, Woolworths became a signatory to the Australian Seafood Traceability Statement, an industry-led business commitment towards best practice in traceability across the seafood supply chain. We have also joined the Global Dialogue on Seafood Traceability, an international business-to-business platform seeking to advance a unified framework for global seafood traceability practices.

WOOLWORTHS GROUP

Paper straws



Reducing single-use plastics is top of mind for many of our customers, and following the removal of single-use plastic bags across the Woolworths Group. The Group ceased selling plastic straws in our stores in December 2018. This removed around 134 million straws from circulation per year.



Sustainable beef

We believe our role is not just to avoid negative impacts from deforestation, but to promote responsible production that benefits people, communities and the planet. An effective approach to address deforestation will require strong collaboration. As such, we will continue to actively engage with a variety of stakeholders to identify and protect high conservation value areas within our supply chains and work with suppliers, governments, producers and other corporate and NGO partners to achieve this. Woolworths is a signatory to the Australian Sustainability Beef Framework which tracks performance annually over a series of indicators, including environmental stewardship – one of which is ‘the balance of tree and grass cover’.

Palm oil



In F19, we continued to support the production of Roundtable on Sustainable Palm Oil (RSPO)-certified sustainable palm oil and palm kernel oil in all our own-brand food products. We are working hard with our suppliers to increase our use of certified sustainable palm oil across our product range through an increased uptake of the RSPO supply chain certification process.

We have identified all known and potential palm oil derivatives in our own brand Non-Food products (such as cleaning products). We support the production of these palm-based derivatives and working with our suppliers to use RSPO-certified sustainable ingredient.

We want to play our part in consumer awareness around palm oil products, and that's why Woolworths is part of Tiger Trek, an educational experience at Sydney's Taronga Zoo, designed to increase consumer sentiment towards Certified Sustainable Palm Oil (CSPO). Woolworths Own Brand products are featured in Tiger Trek to highlight our strong commitment to using sustainable palm oil and palm kernel oil, and to build public support to transform the industry.

Sustainably sourced own brand commodities:



Pulp, paper and timber

WOOLWORTHS GROUP

We are progressing well towards our target that all products containing paper, pulp and timber are sourced from independently certified sources or post-consumer recycled content. As of June 2019, we are proud to report that 89% of our Own Brand products sold in our Australian supermarkets, and 91% of our Own Brand products in Countdown supermarkets already meet our commitment.

In Woolworths Supermarkets, we achieved the following:

- Own Brand toilet paper, tissues and paper towels all come from Forest Stewardship Council (FSC)-certified or recycled sources
- All Own Brand cards, wrapping paper, gift bags and tags are FSC-certified
- All paper and timber products in our Armada and M.I.N.T. ranges are FSC-certified.
- As seen in our M.I.N.T. and Armada ranges, we are also embracing bamboo as a sustainable alternative to timber-based materials. It is a rapidly renewable resource, with most species maturing quickly in three to five years. Bamboo can be grown using less pesticides, fertilisers or irrigation, does not require replanting and has a lower environmental footprint than timber-based products.



Animal welfare

Animal welfare is important to us and to our customers. We are committed to working with our farmers and partners to focus on good animal welfare management in our supply chain.

WOOLWORTHS GROUP

Embedding the Five Freedoms in our practices

We continue to be the leading Australian retailer on animal welfare, and constantly strive to work responsibly to progress and influence best practice in the responsible sourcing of dairy, beef, lamb, poultry, eggs, pork and aquaculture products. Our approach is based on, and endorses, the following 'Five Freedoms', proposed by the Farm Animal Welfare Committee:

- 1 Freedom from hunger and thirst
- 2 Freedom from discomfort
- 3 Freedom from pain, injury or disease
- 4 Freedom to express normal behaviour
- 5 Freedom from fear and distress

We source all fresh beef, lamb, pork, poultry, eggs and dairy products from Australia, to support our local communities and networks.



RSPCA Chicken

We are proud to report that all fresh Own Brand chicken sold in Woolworths is now 100% RSPCA-approved.

We are working hard with our suppliers to transition all of our ingredient chicken in Own Brand products to RSPCA-approved or equivalent standard by December 2020. Currently, we are at 95% compliance (up from 70% last year).

Free range chicken

All free range chicken sold in our stores is certified to the standards set by Free Range Egg & Poultry Australia Ltd for production and quality.

Woolworths and the Business Benchmark for Animal Welfare (BBFAW)

The BBFAW is the leading global measure of farm animal welfare management, policy commitment, performance and disclosure for food companies.

To demonstrate our commitment to continually improving animal welfare in our supply chain, we work closely with CIWF to maintain and improve our internationally-recognised BBFAW score. This year, Woolworths was again rated Tier 3, the highest rated retailer for animal welfare in Australia.



Woolworths

Proudly cage-free

Since 2015, all Woolworths branded eggs are cage-free; laid by hens free from close confinement. We are continuing our work towards using only cage-free eggs as an ingredient in Own Brand products by 2025.

We are also committed to be cage free by 2025 in relation to all supplier-branded eggs and in the year to date we have seen a 6.7% decline in caged egg sales.

We are proud to report that we have been awarded the Compassion In World Farming (CIWF) Good Egg Award in 2019 for our commitment to ending the sale of caged eggs and caged egg products in our stores.



WOOLWORTHS GROUP

Committed to working responsibly with animals

We are committed to working responsibly with the animals in our care, and continue to drive and influence best practice within our supply chain. That is why we have a dedicated animal welfare manager and livestock team.

Our Animal Welfare Manager, Anna Playfair-Hannay, is responsible for the day to day management of animal welfare within our supply chain. She works together with our internal teams, suppliers and farmers to deliver and embed of our animal welfare commitments and standards.

Our Livestock team are based regionally and spend most of their time on farms with our suppliers. Combined, they have over 250 years of experience and are responsible for buying cattle, sheep and pigs directly from farmers we know and trust to bring our customers the best quality meat.

"The livestock team works closely with our farmers and suppliers to ensure the highest quality protein product is delivered every time. Spending time on farms and building a strong rapport and relationship is a vital aspect of our business. This ensures a sustainable and consistent product is delivered. Many of our farmers and suppliers have had a long-standing relationship with Woolworths for generations, and they are focused on delivering a consistent and quality product each and every time with a strong focus on animal welfare."

MATT SPRY,
SENIOR LIVESTOCK MANAGER - BEEF

"Animal welfare is integral to any business that works with animals and is especially important to Woolworths. Good products start with good ingredients so it is fundamental for Woolworths to ensure animal welfare is never compromised and that we work together to continually improve our standards."

ANNA PLAYFAIR-HANNAY,
ANIMAL WELFARE MANAGER



Sam Burton Taylor, Beef Farmer;
Anna Playfair-Hannay, Animal Welfare Manager;
Matt Spry, Senior Livestock Manager – Beef.



Responding to climate change

We recognise the effects of climate change to our customers, our communities, our business and our planet and remain committed to contributing to climate change mitigation. We have revised our direct emissions target to 60% below 2015 levels.

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Australia's climate is characterised by variability and extremes. CSIRO's State of the Climate 2018 report outlines that Australia can expect to experience further increases in temperature, with more extremely hot days, an increase in fire risk, high-intensity storms, and intense heavy rainfall.

Woolworths Group is acutely aware that the way food is produced is impacting our environment. Agriculture is responsible for 75% of deforestation worldwide, and is the largest contributor of non-CO₂ greenhouse gas emissions. While there may be enough food for everyone on the planet today, this may not be the case in the future. Recently published scientific work suggests that climate change may reduce crop yields by 2% per decade over the next 100 years and the poorest regions of the world are expected to be the worst hit.

We acknowledge that the world is undergoing climate change, and global food systems must be transformed. We have a responsibility to act to reduce our own emissions as a business, but also understand our role to help influence this future evolution of our industry.

As we progressively adopt the recommendations of the G20 Financial Stability Board's Taskforce on Climate-related Financial Disclosure (TCFD), we continue to grow our understanding of the key climate risks for our business.

Climate change is a systematic risk that presents risks and opportunities throughout our portfolio. We are transforming our business, and sustainable success in a carbon constrained future is one of many drivers for this.

Our position on climate change

We accept the Intergovernmental Panel on Climate Change's assessment of climate change science and have identified climate change as a material sustainability issue relevant to our businesses (see materiality assessment, page 86). We understand the responsibility we carry in mitigating climate change and we are supportive of Australia's commitments under the Paris Agreement to limit global warming to 1.5°C–2°C above pre-industrial levels.

Our business may be impacted by the long term effects of climate change, including:

- Increased severity or regularity of extreme weather events which may result in business disruptions, changing supply conditions, safety risks for our team members and customers, and damage to our physical assets and transport infrastructure
- Changes to global policy and government regulations
- Changes to customer needs, preferences and behaviours.

Climate change strategy

Climate change is part of our broader sustainability strategy which is described on pages 4 to 5 of this report. We are focused on improving the emissions intensity of our operations, to contribute to climate change mitigation as well as reducing our business costs.

Task Force on Climate-related Financial Disclosures

Woolworths Group supports the recommendations of the Task Force on Climate-related Financial Disclosures (TCFD) which has developed voluntary, consistent climate-related financial disclosures for companies, and is committed to providing stakeholders with information in relation to how we are managing climate change risks. We recognise we are on a journey to enhance our management and disclosure of this critical issue and will work to progressively improve our disclosures against the TCFD recommendations, aiming to be completely aligned by 2020.

Climate change governance

We are striving to continuously improve our approach to climate change governance, to help embed it within our operations through improved procedures and Board oversight that strengthens our accountability. We continue to define roles, responsibilities and procedures at every level of our business from buying teams to the Board.

Woolworths Group considers climate change to be a critical, board-level strategic issue. The Board Sustainability Committee (SusCo) oversees our Group-level response to climate change risks and opportunities. SusCo comprises three directors and an independent Chair, and reports directly to the Board. Climate change forms part of our sustainability strategy, progress on which is reported to SusCo on a quarterly basis. As such, SusCo has responsibility for reviewing

actual or potential climate-related impacts to the Company and making recommendations to the Board and its relevant committees, as appropriate, regarding its findings. As part of this process, this year we conducted an assessment to determine the climate-related risks and opportunities we face; utilising the recommendations of the Task Force on Climate-Related Financial Disclosures (TCFD).

Heads of Business Units and Business Areas are responsible for identifying, assessing, responding, managing and reporting upon climate risks within their business units/area and implementing appropriate risk treatment where risks exceed risk appetite. The Woolworths Facilities Management team is responsible for the energy efficiency and greenhouse gas emissions of our own operations, and manage our board-endorsed energy strategy targeting supply, demand and innovation opportunities to reduce our carbon emissions.

Updating our emissions reduction target to a 1.5°C trajectory

The Intergovernmental Panel on Climate Change's (IPCC) 2018 Special Report on global warming of 1.5°C outlined that global warming is likely to reach 1.5°C between 2030 and 2050. The report also highlighted that climate-related risks for natural and human systems are significant even at 1.5°C. We unequivocally endorse the findings of the IPCC and recognise its call to action on climate change from all sectors of society.

As a food retailer, Woolworths has an extensive agricultural supply chain, and the agriculture sector is subject to climate-related risks arguably more than any other part of the economy. Assessing climate risk in the agriculture sector requires strategic long term planning and management strategies focused on the medium to long term, and it is because of this that we are committing to a science-based emission reduction target for 2030.

With warming already surpassing 1°C above pre-industrial levels, we have engaged management at the very highest levels on the practical steps involved in becoming a low carbon business. Constantly improving environmental performance has become a business-as-usual activity for Woolworths. This has driven cost savings and delivered very real improvements in operational efficiency, giving confidence that bold sustainability targets can unlock innovation and new commercial opportunities.

It is because of this that we are committing to an updated emissions reduction target that is in line with the level of carbon reduction required to limit global warming to 1.5°C above pre-industrial levels.

Using the Sectoral Decarbonisation Method, we investigated the 2°C and 1.5°C warming trajectories and modelled what it would take to achieve these. With a sector trajectory established from the Science Based Target (SBT), we traced back to 2030 to what our emissions target would need to be. The analysis found that Woolworths' direct

Risk identification process

Woolworths Group identifies climate-related risks and opportunities as part of our Group risk management process in line with our Enterprise Risk Management (ERM) framework. The ERM framework comprehensively sets out the requirement for consistent identification, assessment, escalation, management and monitoring of risks across the Company through the major risk categories:

- Strategic risk
- Operational risk
- Financial risk
- Compliance risk.

As a material business risk included in our Group Risk Register (see [Annual Report page 31](#)), climate

change is identified, assessed and monitored in line with the Group Risk Management Policy.

Strong risk governance provides for formal and informal oversight of climate risk from both top down (at an enterprise level of material risks) and bottom up perspectives. It improves decision making by considering both the consequences and the rewards associated with risk taking and risk management.

The Board Audit, Risk Management and Compliance Committee (ARMCC) is the primary Board committee that has oversight of Enterprise Risk Management (ERM) framework and the Group Risk Register. Governance is supported by the Woolworths Executive Committee and relevant committees and forums across the Group. Specific oversight of climate risk is managed by SusCo.



emissions need to be 60% less than 2015 emissions levels by 2030, which becomes our new target.

Committing to a science-based target helps Woolworths improve our climate resilience. Taking ambitious action helps Woolworths stay ahead of future policies and regulations to limit greenhouse gas emissions, ensure we comply with Australian Corporations law to the highest standard and the growing requirements on governance and disclosure in relation to climate risk

management. We are also conscious of the role we play to show leadership and help to raise the ambitions of others.

Through our continued investment in abatement measures such as onsite solar, and the phase-down of synthetic refrigerant use, we will achieve significant emissions reduction in our business. However, we are working on our pathway to achieve the 1.5°C target. We are committed to actively scanning emerging technologies, explore renewable energy sourcing

strategies and continually improving the energy efficiency of our business in order to meet this ambitious goal. With the increasing speed of technological improvements in energy efficiency and renewable energy production, we believe there will be new and exciting carbon reduction opportunities in the future that we cannot accurately forecast today.

We are working with the Science Based Target initiative to have our target independently assessed and approved and will report once this process is complete.

Climate risks and opportunities

Risks were identified in the following themes, and the outcomes are discussed in the following sections. Potential financial impacts have not been modelled, however indicative financial impacts were determined using our Enterprise Risk Management framework.

Climate change risk themes



PHYSICAL



MARKET



TECHNOLOGICAL



REPUTATION



POLICY

CLIMATE ISSUE	POTENTIAL RISK	MITIGATION AND OPPORTUNITIES
 <p>Policy</p>	Change in policies which apply a carbon price will impact our energy, fuel and raw material costs and operating costs for refrigeration systems.	We are looking into conducting scenario analysis to establish the potential impact of a carbon price on our direct operating costs, and integrate these costs into our business planning and decision making.
 <p>Technological</p>	The delayed adoption of new technologies in our facilities will reduce Woolworths Group's competitiveness.	We will investigate new initiatives for optimising efficiencies such as innovative renewable energy installation, batteries and renewable energy procurement approaches. Our science-based target will bring particular focus to this work.
 <p>Reputation Risk</p>	Consumer and community expectation is that the Woolworths Group, being an iconic brand and ASX10 company, will lead in mitigating and adapting to climate change. As more extreme weather events occur in relation to climate change, if Woolworths Group fails to act and communicate climate action, there is a risk in being perceived to be laggards and 'climate change culprits', resulting in brand/reputation damage.	Woolworths Group will continue to actively engage with our stakeholders and improve our disclosure on climate-related risk management. We will work to ensure that our existing and future commitment for climate action is effectively communicated.
<p>Extreme weather impacting our:</p> <ul style="list-style-type: none"> Facilities Stores, distribution, logistics operations Teams. 	Our operations are susceptible to extreme weather events such as flooding and electricity blackouts. This can lead to increased product damage and stock write-offs. There is also potential wellbeing risks for our teams as, for example, the number of extreme heat days increase.	We will assess the use of climate modelling to assess the risks to physical assets and help us plan for extreme events.

Identifying the climate risks and opportunity

During the year, we undertook risk assessment workshops with key stakeholders across the Group to assess the potential physical and transitional risks that may arise under Australia's changing climate, their impacts and their opportunities for Woolworths' operations.

Given the breadth of the impacts of climate change and our expansive supply chain, the climate risk identification and evaluation workshops were undertaken in two sessions:

- Operational risks (retail stores, logistics, distribution centres)
- Upstream and downstream risks (suppliers and customers).

An overview of the potential climate risks on these areas of our business is as follows:

- **Customers:** Woolworths Group's corporate trust and brand association could be impacted by climate change, if our ability to meet customer demand for sustainable, low-price, high-quality products is compromised. Moreover, the definitive momentum towards sustainable

attitudes, met with increasing public concern about climate change, ethical sourcing and health will likely affect both customer preferences and stakeholder expectations of Woolworths Group's role as a large listed company.

- **Suppliers:** Woolworths has a large and complex supply chain network across Australia and internationally. Physical climate-related events such as droughts, cyclones and flooding, along with climate-related regulatory interventions, can directly affect the quality and quantity of fresh produce and compound business disruptions.
- **Operations:** The transport, distribution and storage infrastructure for our businesses are expected to grow, as customer demand continues to increase for more convenient delivery solutions. Greater centralisation of infrastructure assets (such as large distribution centres) could potentially concentrate our exposure to the physical impacts of climate change.

Potential disruption and relocation of commodity supply chains

According to the latest IPCC report, Australia will observe:

- Changes in temperature (further increases in sea and air temperatures, more hot days and marine heatwaves and fewer cool extremes)
- Changes in precipitation (decrease in rainfall across Southern Australia with more time in drought, but an increase in intense heavy rainfall throughout Australia)

- Global and local sea level rise (further sea level rise and ocean acidification)
- Extreme weather events (cyclones, storm surges, bushfires).

This is a new paradigm for Australia's agricultural sector, and it could have widespread supply-chain implications for our fresh food and drinks businesses. Acute shocks to supply will increase price volatility in the food industry. We have identified some potential risks in the table below:

ACUTE RISKS	CHRONIC RISKS
Droughts affects fresh produce, and lead to price shocks for customers. Vegetables, fruit and honey have historically been vulnerable to price spikes during Australian droughts.	Suppliers' ability to adapt to climate change may have long term effects on our supply chain and logistics. This includes cold-chain management issues and current distribution centres and logistics not being in locations that are optimal for sourcing produce in the future.
Cyclones and storm surges can affect produce that is grown in concentrated locations in Australia, such as bananas.	Diversified sourcing will provide some insulation from climate risk for products where more alternative growing regions exist (for example, where berry farms can shift further south). However, risks are heightened for products that have limited options for relocation (such as wine grapes) which could deeply affect availability of produce and price to customers.
Heatwaves may affect the quality of produce from farm to store, increasing damage and write-offs should the cold-chain be compromised along the way, especially for delicate fruits such as berries, mangos and avocados.	Higher priced goods may lead to substitution/reduction in demand.



We examined the potential climate-related impacts on key commodities, examples of which are shown below:

PRODUCT	CURRENT CONDITIONS	PROJECTED CLIMATE CHANGE IMPACTS
Beef 	Beef cattle are grown in every Australian state and territory with cattle breeds of temperate origin, (such as Angus and Hereford) typically raised in southern regions, grazing on intensively managed pastures. Woolworths mainly sources beef produced in Queensland, with smaller production from NSW and Victoria.	Warmer and drier climates in the future will contract pasture-growing seasons, leading to lower and more variable animal stocking rates and increase reliance on supplementary grain feeding. The negative effects of climate change on the grain industry (see grain section below) may have flow-on costs to dairy production. Reduced rainfall will limit the capture of runoff to supply drinking water, an issue highlighted during the Millennium Drought. Increased heat stress may lead to farmers choosing more heat-tolerant cattle breeds, possibly of lower meat-eating quality.
Poultry 	Commercial chicken meat production is established in most states and territories in Australia. Major chicken-growing areas are generally within 100 kilometres of processing plants, with many of the largest operations within 50 kilometres of a capital city. The ideal temperature range for broiler chickens to thrive is 18–22°C, and 19–22°C for laying hens. Intensive poultry industries rely heavily on feed such as wheat and barley.	Heat stress for broiler chickens causes them to reduce feed intake, resulting in poor weight gain and poorer meat quality. Heat stress affects laying hens' laying rate, and reduces egg weight and shell quality. The negative effects of climate change on the grain industry (see below) will have flow-on costs to poultry production.
Bananas 	85% of Australia's bananas come from North Queensland's coastal region.	Tropical cyclones can destroy large portions of banana crops (as occurred with Cyclone Yasi in 2011). Future changes to tropical cyclones are uncertain, with studies projecting a lower frequency of cyclones but increase in their intensity.
Apples 	Apples are largely resilient, but they are sensitive to extreme heat conditions. As little as 10 minutes of extreme sunlight (more than 35°C) is enough to cause penetrative burns through apple skin, leading to sun damage.	Climate change is expected to increase the number of hotter days (more than 35°C) in fruit-growing regions such as Goulburn Valley, increasing the rate of fruit damage. Additional netting may be required, which could add to production costs.
Avocados 	Grown in subtropical fruit trees, avocados need a frost-free climate with little wind, as high winds can increase moisture stress, dehydrate the flowers and reduce pollination. Both male and female plants need to be open for as long as possible to increase the chances of pollination.	Hot weather can cause sunburn damage and yield a smaller fruit. Temperatures above 35°C can reduce flowering, because some avocado trees only produce flower buds under cool temperatures. As the climate warms, daily temperature ranges will narrow in the tropics and sub-tropics, reducing the overlap between open stages of male and female parts and thus decreasing pollination chances.
Citrus 	Lemons are commercially grown throughout Australia and are the dominant citrus crop in central NSW and NT. Lemon trees flourish in warmer, sunny climate with mild winters and are frost sensitive. Their optimum temperature range is between 25–30°C.	Temperatures over 37°C can cause trees to shed fruit too soon, reducing yields. In the southern states, shifting production further south is less of an option, with spring frosts becoming a particular risk if trees have flowered due to warmer winters.
Grains 	Most grains are highly dependent on water availability. Half of Australia's corn production comes from rain-fed agriculture, and yields are highly variable. Soybeans are an annual summer legume grown in irrigated or heavy rainfall areas of southern Australia. Irrigated paddy rice requires ample water resources. Wheat growth is strongly affected by rainfall and temperature.	Water scarcity will increase due to more frequent and extended droughts. While the price of grain commodities is linked to the global market, and dependent not just on Australian conditions, Australia is a major supplier of grain globally so droughts in Australia influence global prices. Increased atmospheric carbon dioxide can increase wheat growth but decrease nutritional value.
Wineries 	Wine grapes are Australia's largest fruit industry, and mostly come from areas with a favourable temperate or Mediterranean climate.	Iconic winery regions such as Margaret River, Barossa and Riverina will be affected by higher temperatures and lower rainfall, especially for red varieties such as Shiraz, Cabernet Sauvignon and Merlot.

Changing customer preferences

The demand for sustainable products is growing, and consumers are increasingly making purchasing choices based on not only what is good for them but what is good for the planet. The EAT-Lancet Commission report, published in early 2019, recommended the *planetary health diet* as a global reference diet that is best for health and the planet. It calls for global consumption of red meat and sugar to decrease by more than 50%, and consumption of nuts, fruits, vegetables and legumes to increase by 100%. The report also calls for dramatic reductions in food losses and waste and major improvements in food production practices including fertiliser and water use.

In the coming years, consumers will experience and become more aware

of the physical impacts of climate change, whether it is through exposure to bushfires, extreme storms, or the rise in costs for certain living staples on the dinner table. New research and technology into low carbon food alternatives such as lab grown meats and edible insects, currently present in the market as niche products, may become more readily available.



What's next?

Woolworths has committed to monitoring, managing and reducing where possible, greenhouse gas emissions of our operations, and we are working to understand and address the risks created by climate change for our business.

We have undertaken:

- Energy price risk analysis, and invested in a range of initiatives that optimise our energy use and boost budget certainty
- Scoping research to understand the impact of water shortages on our supply chain, especially for 13 of our key product groups.

We will continue to work to deepen our understanding of the climate risks identified through our assessment processes. We will also undertake scenario analysis in the coming year and will report on this in our 2020 Sustainability Report.



Graeme Wellman, Endeavour Drinks Viticulturist



Our emissions profile

We emit greenhouse gases both directly and indirectly. Emissions from our retail stores make up around 90% of our direct carbon footprint, mostly resulting from activities such as refrigeration, air conditioning and lighting. This year, we emitted a total of 3.1 million tonnes of carbon dioxide equivalent (CO₂e), which is 18% lower than our 2015 baseline levels. In F19, our facilities emitted

553,801 CO₂e of direct (scope 1) emissions which mainly come from our use of refrigeration gases and natural gases at our stores. Electricity accounts for the majority of our emissions footprint, and this year we have emitted over 2 million tonnes of CO₂e resulting from electricity use. Our scope 3 emissions include the indirect emissions that occur as a result of our waste disposal.



2019 carbon emissions

18%

below 2015 baseline levels



Energy efficiency

Woolworths Group committed to reduce carbon emissions to 10% below 2015 levels by 2020. We are significantly ahead, with a 18% reduction reported this year.

We are constantly investigating and trialling new technology to help us manage and reduce our emissions towards our 1.5°C ambition, and deliver commercial benefits. Our energy efficiency projects have this year delivered a 7% year-on-year energy reduction.

LED lighting: We have now rolled out LED lighting across more than 800 sites and are continuing this upgrade across all our stores.

Energy Management Centre (EMC): All Australian supermarkets are now connected to the EMC, which allows for real-time visibility of our energy usage. We will continue to connect our other retail stores in a phased approach. The initial 500 stores originally connected to the EMC to date have achieved an average of 10% reduction in store energy consumption.

Heating, Ventilation and Air-Conditioning (HVAC)

Optimisation Strategy: We have changed HVAC system settings to be more energy efficient while maintaining store conditions and customer comfort, with pleasing results. After the first phase of the project was completed, over 1,500 changes to our HVAC systems were identified, which equates to potential energy savings of \$1.3 million. Without the EMC these changes would have gone unnoticed. Data gathered has been key in changing behaviours and increasing team knowledge on energy efficiency.

Solar: We continue to roll out solar installations and have over 100 stores and two DCs with solar panels with a total capacity of 14MW. The TESLA battery at Erskine Park Liquor Distribution Centre entered full operation in September 2018 and is paired with a 400kW solar system. The site participated in six Peak Demand events – assisting the grid over Summer during the hot days of high demand.



Green Factories leading the way in Bangladesh

While the Group has not formally engaged its global supply chain on specific climate change strategies, many of our strategic suppliers are proactive in addressing environmental and climate concerns. In Bangladesh, five of our supplier's factories have achieved Gold Tier Green factory certification from the United States Green Building Council (USGBC). There are only 90 garment factories in Bangladesh total that have achieved Green Status.

There are a number of indicators in the Green Factory certification, but generally these factories have lower energy consumption, use of renewable energy, consider water efficiency, have enhanced safety features and, importantly, are structurally sound. A common feature of Green garment factories in Bangladesh are heat efficient windows that help reduce energy expenditure and costs, and water management.

Certified Green Bond

In April 2019, Woolworths Group issued \$400 million of Green Bonds and has become the first retailer in Australia, and the first supermarket operator globally, to issue Green Bonds certified by the Climate Bonds Initiative (CBI).

Our Green Bonds are issued under a framework this is aligned to the Green Bond Principles published by the International Capital Market Association and will:

- Support the financing of projects, assets or expenditure that will deliver positive environmental outcomes, for example solar installations, or waste reduction initiatives
- Encourage other companies, by our example, to invest in projects and assets that will deliver positive environmental outcomes
- Contribute to the development of the green bond market as we are the first issuer of green bonds

under the CBI low-carbon buildings criteria for supermarkets globally.

Woolworths Group's Green Bonds have been certified by the CBI and a second party opinion has been provided by Ernst & Young.

Sean Kidney, CEO and co-founder of the CBI adds,

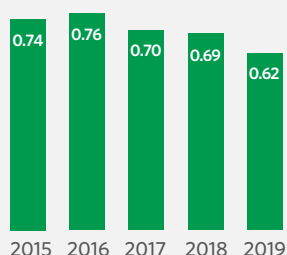
"We applaud Woolworths for taking further steps to improve its environmental footprint via the issuing of the first certified Green Bonds by a supermarket operator globally. Purpose-driven investors now have a further opportunity to put their money to work in mitigating long term environmental and carbon risks."

As a result of Woolworths' commitment in this space, we have developed a global low-carbon buildings criteria for supermarkets, applicable in multiple jurisdictions. We hope Woolworths' leadership will encourage other companies, from SME-sized

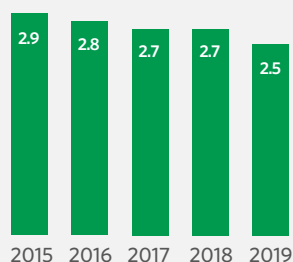
to ASX-listed, to invest further in projects and assets that deliver positive environmental and climate outcomes, while also contributing to the development of green finance and Green Bond markets."



Carbon Intensity
(tCO₂-e/square meters)



Energy Intensity
(tCO₂-e/square meters)



Townsville floods - Fairfield Central store



We are continually considering the climate change resilience of our network and incorporating features into our store design. In February 2019, our Fairfield Central store was inundated with 600mm water during the Townsville floods. The store experienced an estimated loss of stock, fixtures, equipment, demolition plus rebuild at around \$12 million. Thanks to an extraordinary effort from our team, the store was reopened after six weeks, instead of the usual 16-24 weeks, which minimised trade loss allowed our team members to return to store and our customers to have access to grocery needs.

We have also installed a flood protection system in the store. These removable aluminium flood barriers will flood-proof the store to the height of 1 metre and can be deployed by a single individual in the event of a flood warning. At an approximate cost of <\$100,000, the business benefit is clear in areas like Townsville that are subject to repeated extreme weather events. As well as the financial benefit, opening in the shortest possible time after an event allows us to service a community in need and helps them to return to normality.





"Eve" – Australia's largest electric truck

It has no engine, no gearbox, emits no fumes and can deliver up to 14 pallets of groceries to our supermarkets while hardly making a sound. Woolworths' first fully electric heavy vehicle made its debut on 1st August 2018.

Woolworths began trialling electric vehicle technology last June in one of our online delivery trucks, and our latest refrigerated heavy rigid electric vehicle is currently being used for secondary freight

(grocery and produce deliveries from DCs to stores) in Melbourne's metro area with Linfox drivers. Linfox is a key carrier supporting Woolworths in this journey.

It's the first of its kind and currently the largest in Australia. It has no petrol tank and no vibrations or jolting from changing gears – the only noise you hear are the tyres.

Unlike a normal car or truck, the electric vehicle doesn't need engine

servicing nor require regular repairs and maintenance. The battery will last around 10 years based on charge cycles. It takes six to eight hours to recharge the battery while the truck is parked at the distribution centre overnight.

Woolworths will have a second electric heavy vehicle making deliveries to stores in Sydney from August 2019.

A greener built environment

Woolworths' Heidelberg store in Victoria has been designed in accordance with the requirements of a 5 Green Star Design and is now undergoing certification for an As-Built v1.2 Rating from the Green Building Council of Australia, setting the benchmark for a standalone sustainable supermarket development.

With 25% fewer greenhouse gas emissions than a regular Woolworths supermarket – equivalent to taking 147 cars off the road each year – Woolworths Heidelberg has incorporated a range of environmental features into many aspects of the store's renewal. These include:

- Acoustic treatments and lighting to deliver a comfortable indoor experience for customers and teams
- Use of engineered wood products, timber laminates and responsibly sourced steel, concrete, PVX
- 95% of all demolition of construction waste on site was recycled
- Access to fresh outdoor air as well as monitoring to maintain indoor air quality
- Electric vehicle charging bays, bike racks and end of trip facilities to encourage the use of low emissions transport.

We are committed to obtaining a Green Star Performance rating for currently owned retail centres and achieving a minimum 4 Star Green Star rating for future developments.



Refrigeration management

We continue to implement new technology and initiatives to reduce our reliance on certain refrigeration gases, which is a material contributor to our carbon footprint.

Refrigeration is crucial for ensuring our customers have access to the freshest and safest food. Operation of our refrigeration systems is a material contributor to our overall carbon footprint and we continue to work towards reducing our reliance on certain synthetic refrigeration gases with high global warming potentials.

We have now rolled out 14 stores with a transcritical CO₂ system and four stores with a water loop refrigeration system across Australia and New Zealand. We continue to roll out hybrid refrigeration when we perform store renewals and currently have over 300 stores with these updated systems.

Our Woolworths Prestons supermarket represents a technological milestone for our business as it is the first in our fleet that combines the natural refrigeration and HVAC systems into an integrated transcritical CO₂ platform. This virtually eliminates synthetic refrigerants from the store.

Our refrigerant technology is currently susceptible to leaking gases of high global warming potential, at a rate of around 11 per cent below 2015 levels. By reducing our leakage rate and switching to alternative refrigerant technologies, we can reduce emissions and the cost of recharging our systems. We will align our phase down of refrigerants in accordance with Australian Government's phase-out schedule under the Montreal Protocol.

IMPACT:

Commitment **14**

Sustainable Development Goal



WOOLWORTHS GROUP



2019 refrigerant leakage

11%

below 2015 levels

