



TRACKING 2 DEGREES REPORT
Quarterly report for September
2019 – Q1/FY2020

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I Introduction

Under the Paris Agreement, the Australian Government has legally committed to reducing our emissions by 26-28% below 2005 levels by 2030. However, to ensure global warming remains under 2 degrees, independent body The Climate Change Authority (CCA) has proposed Australia set a national Science Based Target (SBT). This is a target calculated from Australia's share of emissions for a 2°C global outcome. Ndeivr Environmental has used this target to model a quarterly emissions budget for Australia.

This report tracks Australia's performance against our Paris target and the CCA's carbon budget based on the latest available data, trends and industry movements [for the months of July, August and September \(Q1/FY2020\)](#). Our results are presented in tonnes of carbon dioxide equivalents (t CO₂-e). 1 t CO₂-e is roughly equal to the emissions of a standard 5-seat passenger vehicle driving around 5,400 km.

2 Headline Results

- Emissions for the 12-month period to September 2019 declined by 0.2% on the previous 12 months, this represents the first decline in annual emissions since 2015.
- If emissions continue to decline at a rate of 0.2% p.a., the 2030 Paris target would be met in 2098, some 68 years after the deadline.
- While electricity emissions for Q1/FY2020 are projected to be the lowest on record (dating back to 2002), both stationary and fugitive emissions are projected to be the highest on record.
- Renewable energy generation across the NEM states for the period had the highest penetration rate on record while brown coal generation was at its lowest point in the data set (since 2005), totaling 7.8 TWh.
- Emissions for Q1/FY2020 are projected to be 133.1 Mt CO₂-e, this is the same as the previous quarter but a decline of 0.6 Mt CO₂-e on the corresponding quarter the year prior (Q1/FY2019).
- This quarter's Climate Champion is Intrepid Travel, who have been a certified Climate Active carbon neutral organisation offering carbon neutral travel experiences since 2018. In 2018 Intrepid purchased and surrendered almost 35,000 verified carbon offsets, each equivalent to removing one tonne of carbon dioxide from the atmosphere.

Figure 1: Australia's Quarterly Emissions Projections to a 2 Degree Target, 2005 - 2050

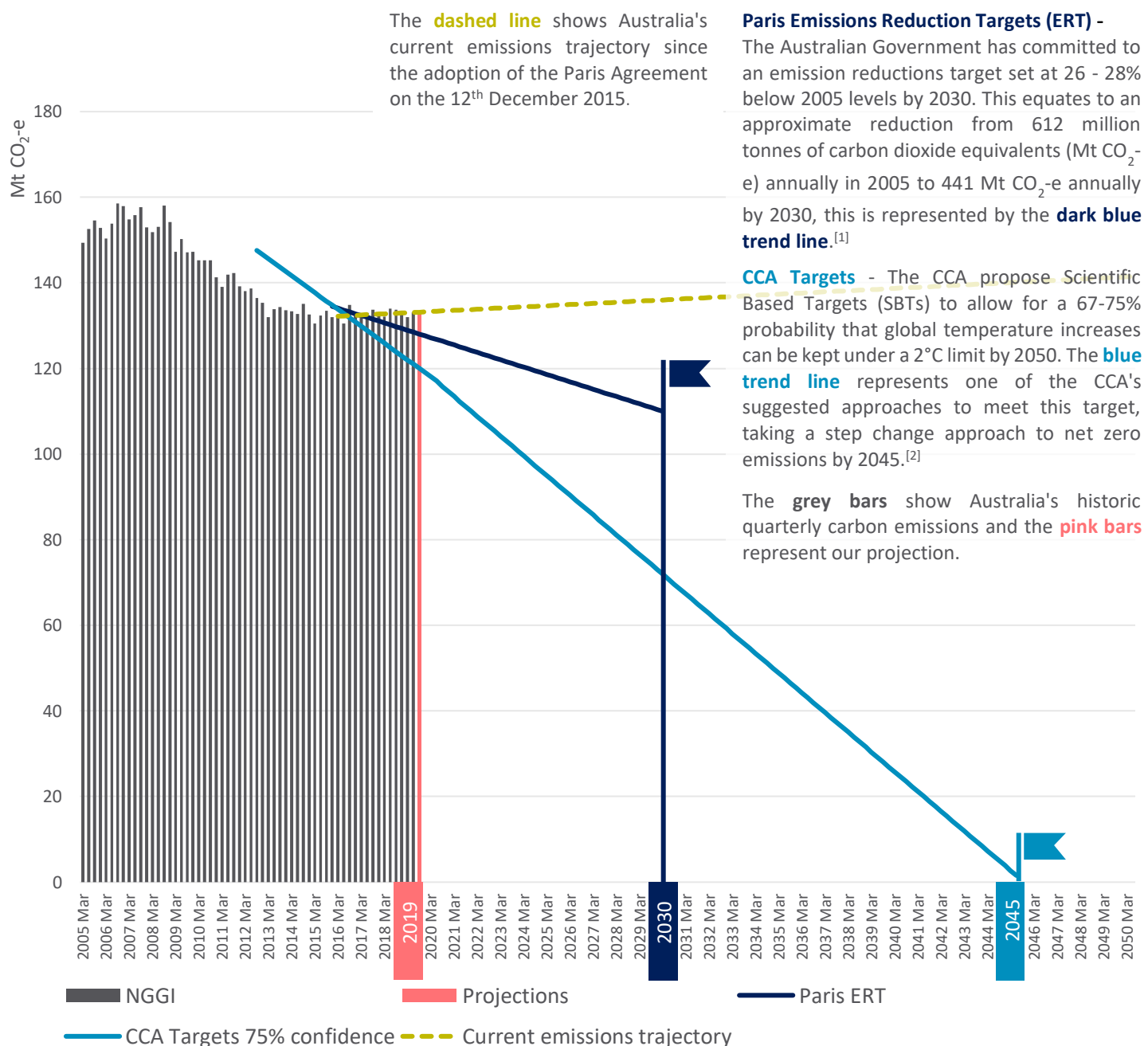
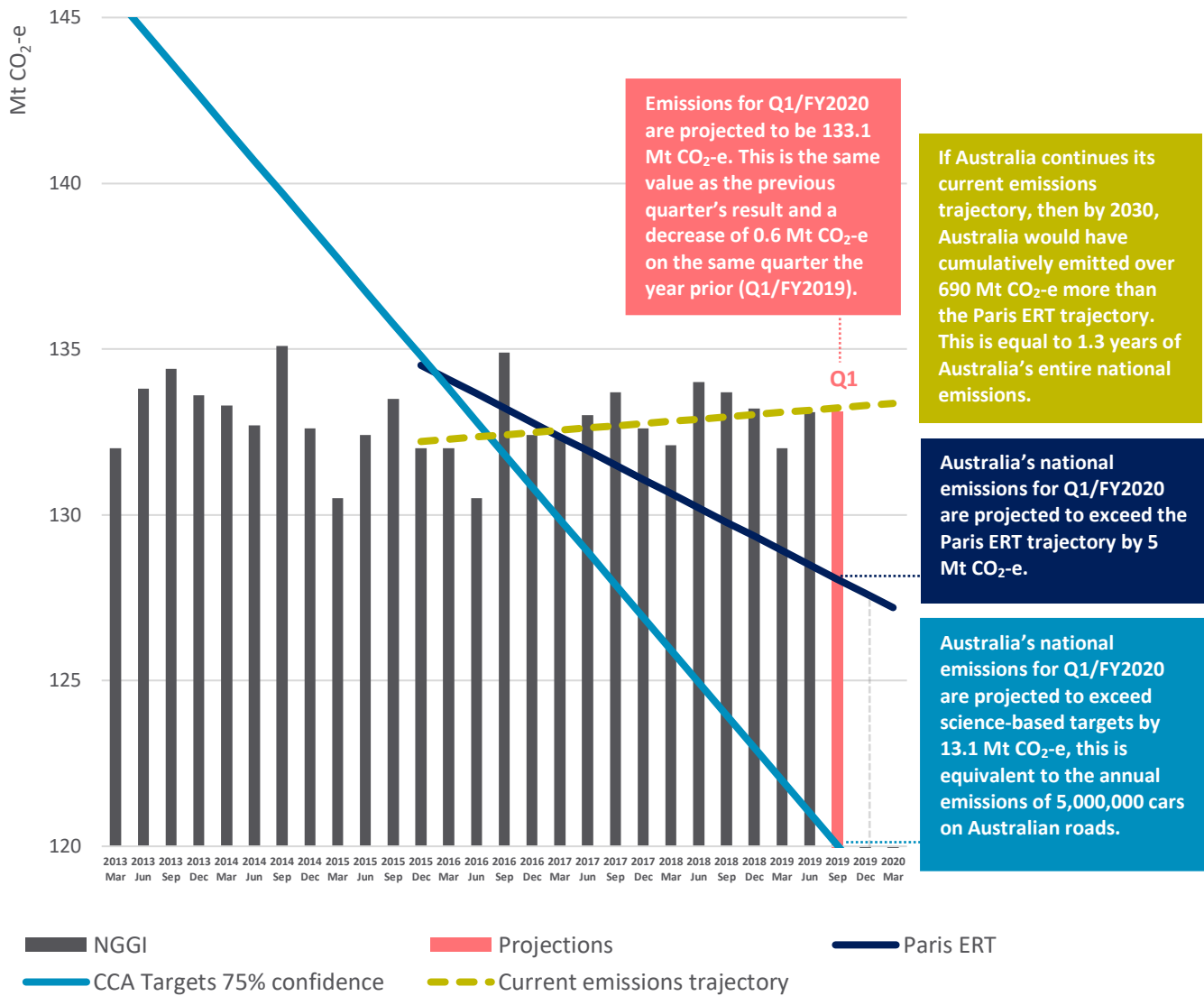


Figure 2: Australia's Quarterly Emissions Projections to a 2 Degree Target, 2013 – 2020

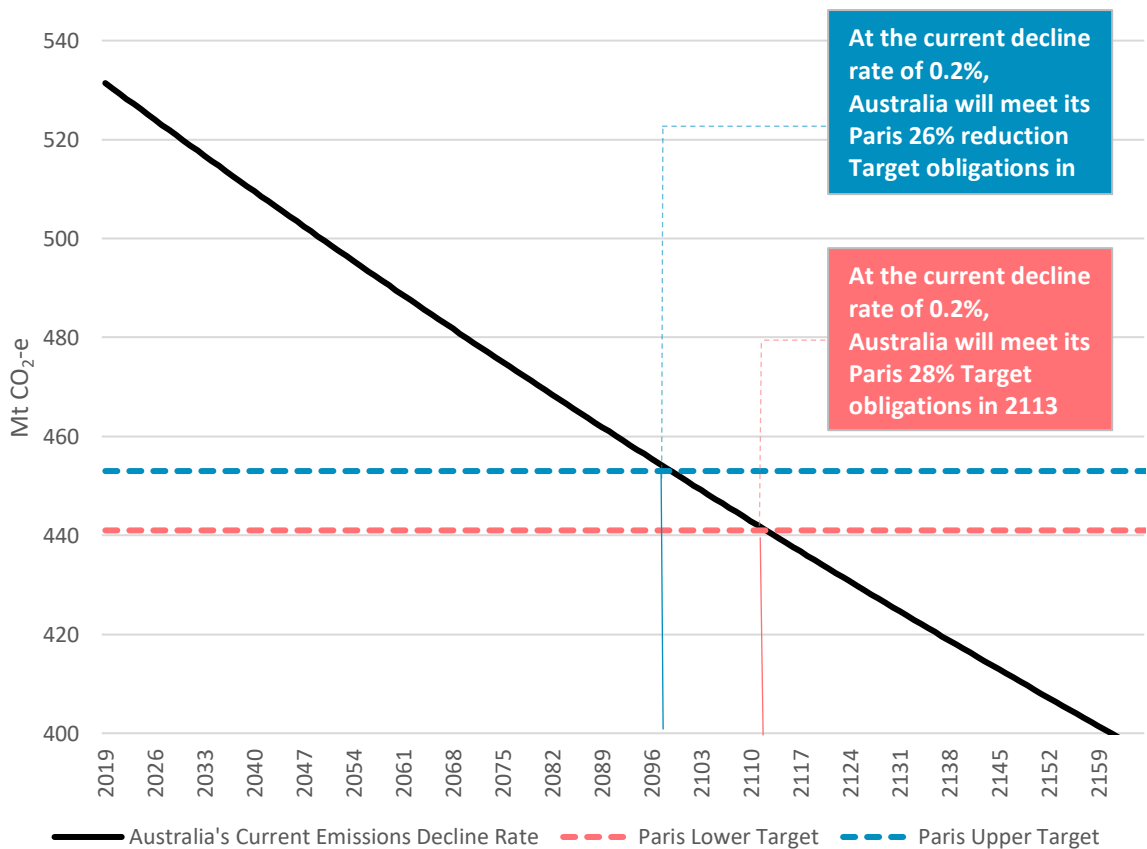


3 Detailed Findings

3.1 Annual emission trends

Australia's annual emissions have shown a decrease for the first time since 2015, edging down by 0.6 Mt CO₂-e, or 0.2% compared to this time last year.

Figure 3: Australia's Emissions Trend at the Current Rate of Decline

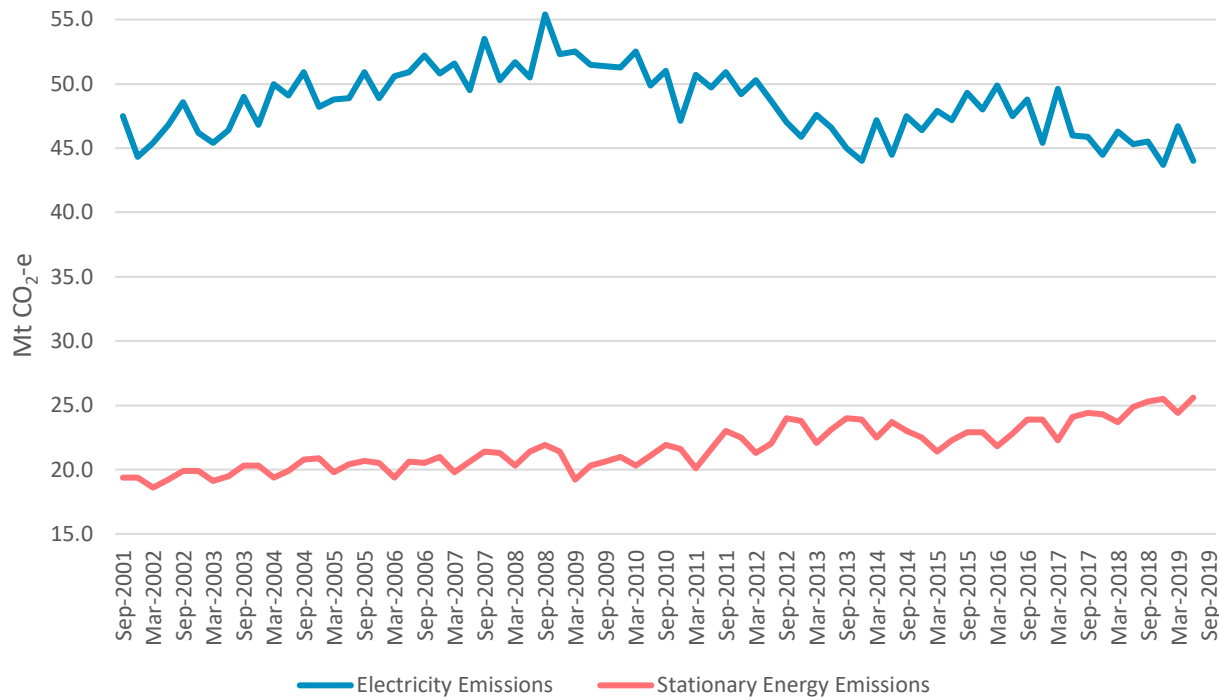


3.2 Reduced NEM emissions offset by other sectors

The National Electricity Market has achieved its highest ever quarterly renewable energy penetration, coming in at 24% and representing a 17% increase on 2006 levels. This contributed to a drop in electricity related emissions of 0.9 Mt CO₂-e nationwide.

The stationary fuel sector alone has offset these carbon savings with a 1.2 Mt CO₂-e increase, reaching the highest level of emissions from stationary fuel since our records began in 2001.

Figure 4: Reduced Electricity Emissions vs Rising Stationary Fuel Emissions



3.3 Electricity analysis for the National Energy Market

- Electricity emission projections for Q1/FY2020 were the lowest on record across the entire data set (43.1 Mt CO₂-e).

With quarterly electricity demand relatively stable across the NEM, the decline has been driven by an increase in renewable energy generation from wind power, hydro power, utility-scale solar and rooftop solar. Renewable energy generation across the NEM states for the period was 24% (including rooftop solar), the highest penetration rate on record for renewable energy. Brown coal generation was at its lowest point in the data set (since 2005), totaling 7.8 TWh.

For Q1/FY2020, results for the NEM states are as follows:

- NSW** generated 17.8 TWh of electricity with 79% from black coal, 4% from gas and 16% from renewable sources including wind, hydro, utility-scale solar and rooftop solar. NSW's renewable energy percentage is at an all time high.
- QLD** generated 15.5 TWh of electricity with 78% from black coal, 9% from gas and the balance from renewable sources including hydro, utility-scale solar, rooftop solar and a small portion of wind energy. QLD's renewable energy percentage increased on the previous quarter to reach an all-time high of 13%.
- VIC** generated 11.5 TWh of electricity with 68% from brown coal, 9% from gas and 24% from renewable sources including wind, hydro, rooftop solar and utility-scale solar. Victoria's renewable energy percentage is the highest on record.
- SA** generated 3.9 TWh of electricity with 49% from gas and 51% from renewable sources such as wind, rooftop solar, utility-scale solar and battery (discharge). South Australia's renewable energy percentage has remained relatively stable since 2014.
- TAS** generated 3.2 TWh of electricity with 99% from renewable sources such as hydro, wind and rooftop solar and the balance from gas. TAS's renewable energy percentage has not dropped below 78% since records began (2005).

Figure 5: Electricity Generation in the National Energy Market (NEM)

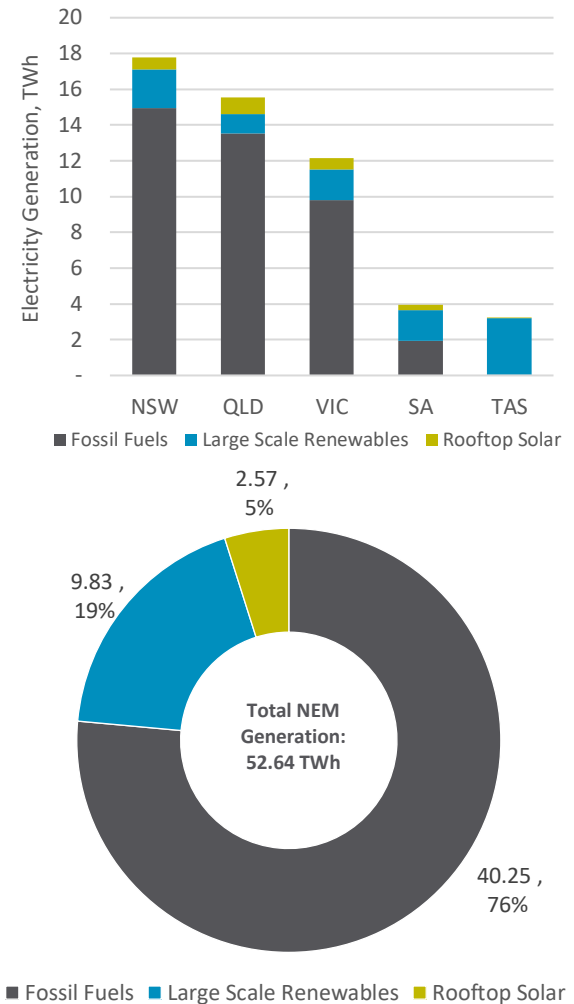


Figure 6: Australia's Annual Emissions

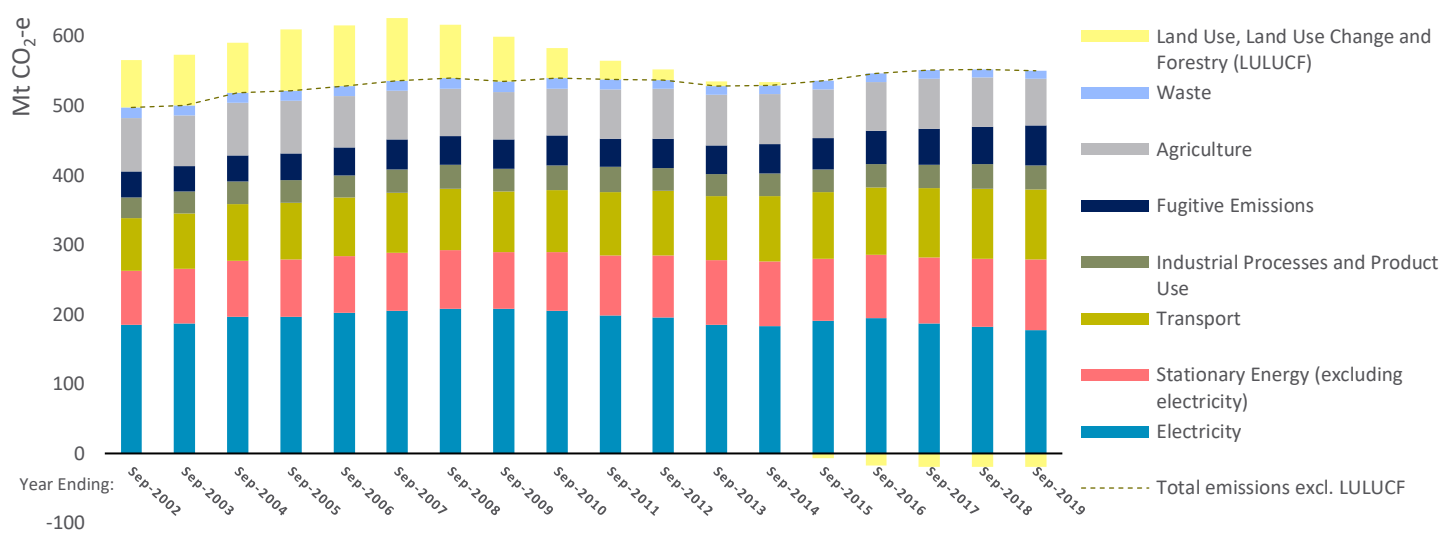
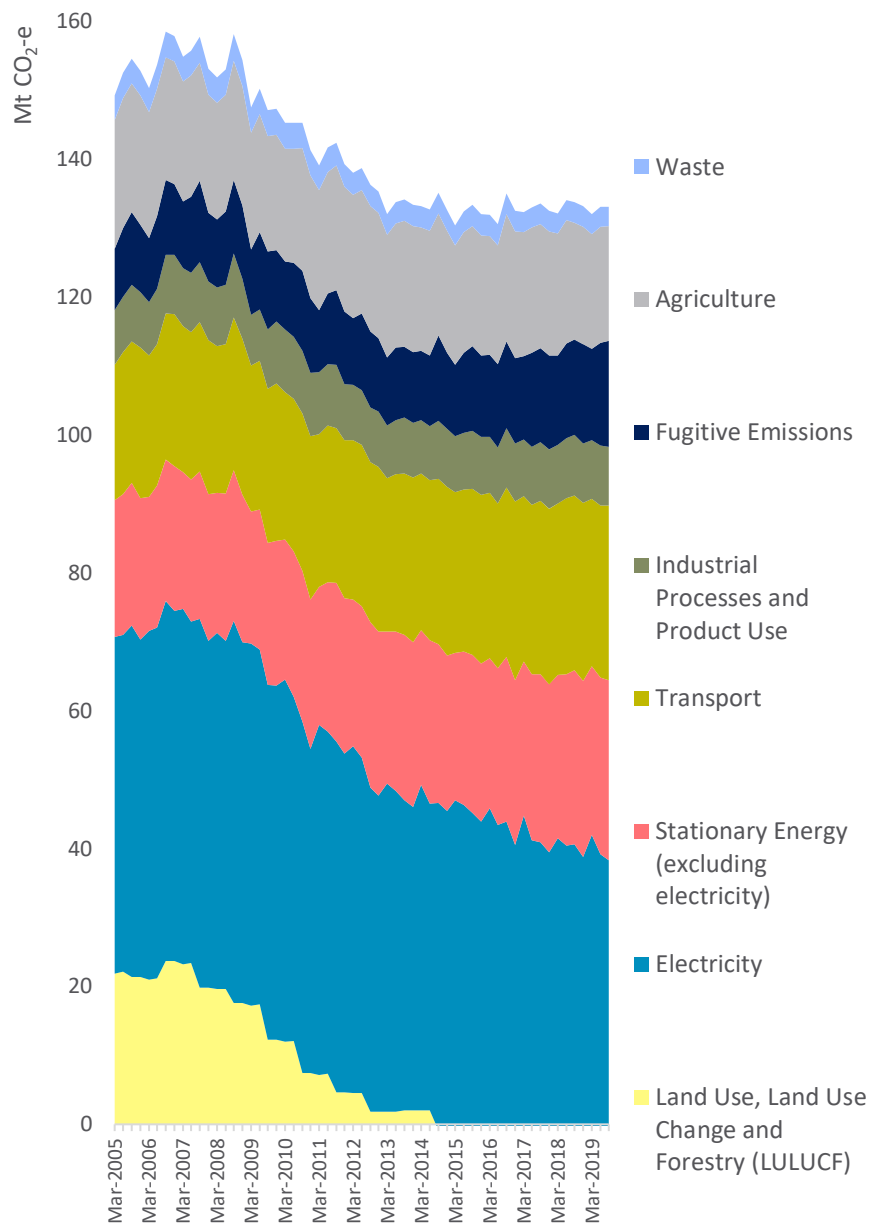
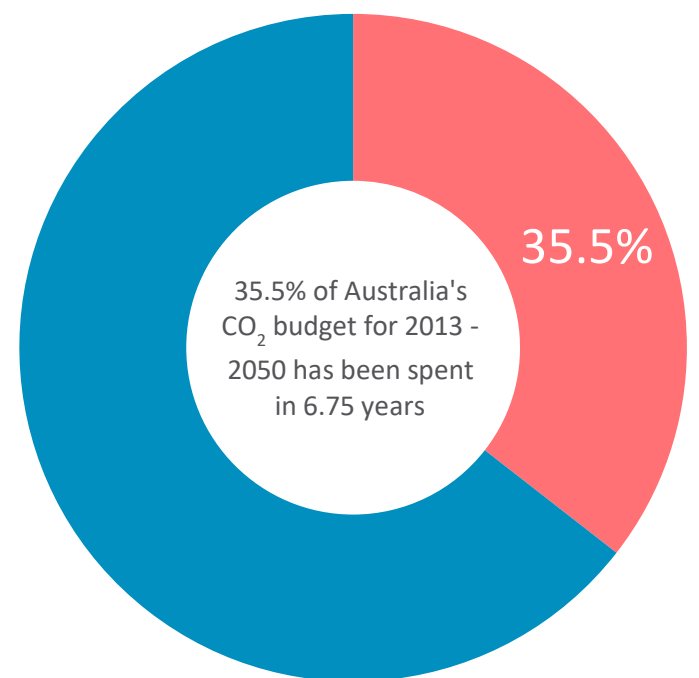


Figure 7: Australia's Quarterly Emissions by Sector*



*Negative LULUCF sector emissions cannot be seen on the above chart

Figure 8: 2 Degree Budget Expenditure to Date



4 Real-world Effects

While the year to September 2019 represents a 0.2% decrease in national emissions, it's important to take stock of how Australia's climate has varied in response to the often delayed greenhouse gas effect. The following observations have been extracted from the Bureau of Meteorology's Annual Climate Statement, issued on 9 January 2020 and referring to the 2019 calendar year:

- 2019 was Australia's warmest year on record with the annual national mean temperature being 1.52°C above average.
- January, February, March, April, July, October and December all breached the top ten warmest on record for their respective months.
- 2019 was Australia's driest year on record with annual national rainfall coming in at 277.6mm, 40% below average.
- Due to decreased rainfall, much of Australia has experienced significant drought. This was particularly prevalent in NSW and southern QLD.
- Globally, and with December 2019 data still to come, 2019 is on track to be the second warmest year on record. While 2016 was warmer, the five warmest years on record are the most recent five years. Additionally, the heat of 2017, 2018 and 2019 was experienced without the presence of El Niño, which usually raises temperatures.

With severe drought affecting much of the country, mid-late 2019 saw one of Australia's worst ever bushfire seasons commence. There are varying reports detailing the devastating effects around the nation, the most egregious of which were described in an article by CNN on 9 January 2020, which claims that 27 people, over 2,000 homes and around 500 million animals are estimated to have perished due to the fires. The figure for animal mortality is backed up by ecologists at the University of Sydney, who say that this estimate is highly conservative.

Ndevr Environmental's Climate Champion Q1/FY2020

Our Tracking 2 Degrees report tracks Australia's carbon emissions against our international Paris Agreement commitments. While more substantial and immediate efforts are required for Australia to meet emission reduction commitments, Australian businesses, councils and states nationwide are sending a strong message by taking the lead in sustainability initiatives and climate action. Ndevr Environmental's Tracking 2 Degrees reports will recognise and commend Australia's 'Climate Champions' for their significant contribution to emission reductions and sustainability practices and initiatives. The Climate Champion this quarter is **Intrepid Travel**.



Company: Intrepid Travel is an Australian company that started in 1988. They run more than 1,000 itineraries across the globe, employing over 1,500 staff and leaders and are continually adding to their global list of itineraries. They are the largest small group adventure travel company in the world.

Location: Melbourne, VIC

The Goal: Intrepid Travel needed to transition from a self-certified Carbon Neutral organisation to achieve the Climate Active Carbon Neutral Certification and BCorp Certification.

Project: Ndevr Environmental supported Intrepid Travel through two certification processes, the globally recognised BCorp certification, and Australia's Climate Active Carbon Neutral certification, the latter of which is one of the most rigorous Carbon Neutral programs in the world.

"With our global operations we needed a globally recognised certification, and BCorp certification is readily recognizable proof that we are doing what we say we are, while the Climate Active Carbon Neutral standard is one of the most rigorous Carbon Neutral programs in the world, which is the level of assurance we require as a business. Both of these certifications require external professional verification and ongoing reviews of our operations to maintain."

Leigh Barnes, Chief Customer Officer, Intrepid Travel

Environmental Outcomes: For the 2018 calendar year Intrepid Travel purchased and surrendered almost 35,000 carbon offsets from projects across the world, focussing on regions where they operate – from Australia to Borneo. Only verified, high quality offsets are allowed under the Climate Active program, offsets that represent removals of a tonne carbon dioxide from the atmosphere per unit. Intrepid's offsetting effort is equivalent to removing the emissions associated with almost 2,000 average Australian households. The 2019 offsetting effort is just as impressive.

Business Outcomes: As a result of the work done by the team at Ndevr Environmental, Intrepid Travel have realised some directly measurable business benefits from the project, such as how to substantially reduce the emissions generated by their business as usual operations, they are also now able to tackle other initiatives, such as the commitment to science based targets, and the drive to become a climate positive organisation through double offsets.

Carbon Neutrality may well have a positive impact on revenue, not just the environment. As Ndevr Environmental Managing Director Matt Drum states:

"Over the last 12 months we have seen a massive increase in interest from businesses looking to take action on climate change. Customers, employees and investors are simply demanding it. Research in 2015 has shown that 66% of consumers are willing to pay more for sustainable products, and concern on climate change doubled from 2018 to 2019. Going carbon neutral makes good business sense, as reducing emissions will save energy costs and waste, while new consumers will be attracted by your commitment to climate action."

This report has been compiled by Ndevr Environmental Pty Ltd, using the latest information available from: AEMO, Office of the Chief Economist, Australian Petroleum Statistics and the Department of the Environment and Energy's National Greenhouse Gas Inventory (NGGI) reports. Detailed electricity generation data for the National Energy Market (NEM) are sourced from Open NEM.

GDP trends are sourced from Trading Economics, information about Australian car use is sourced from the National Transport Commission, 2018 and the Australian Bureau of Statistics. Emission factors are sourced from National Greenhouse and Energy Reporting (Measurement) Determination 2008.

Government and CCA target information is available at the following sources:

[1] - Australian Government (2015), Australia's 2030 Climate change target, Commonwealth of Australia

[2] - CCA (2014), Reducing Australia's Greenhouse Gas Emissions – Targets and Progress Review, Final Report (page 9)

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Ndevr Environmental is a specialist carbon, energy and sustainability focused consultancy firm that partners with clients to achieve positive business and environmental outcomes.

