

---

# Tracking 2 Degrees. Quarterly Report March 2022. Q3/FY2022

August 2022

---

## 1.1 Introduction

Under the Paris Agreement, the Australian Government originally committed to reducing emissions by 26-28% below 2005 levels by 2030. In June 2022, the Labor Government officially updated the target to a 43% reduction by 2030. However, to ensure global warming remains under 2 degrees Celsius, the independent body Climate Change Authority (CCA) has proposed that 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. Ndevr Environmental uses this target to model a quarterly emissions budget for Australia.

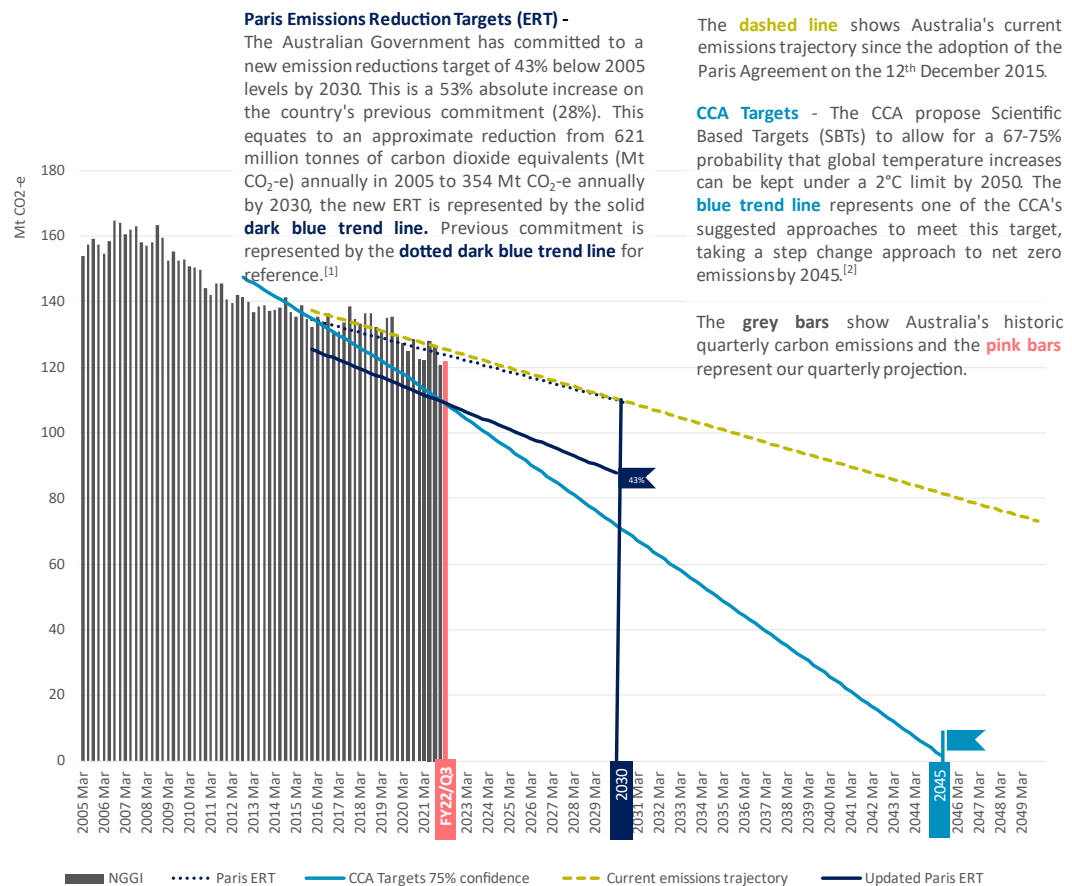
This report tracks Australia's performance against the Paris target and the CCA's carbon budget based on the latest available data, trends, and industry movements [for the months of January, February, and March \(Q3/FY2022\)](#). Our results are presented in tonnes of carbon dioxide equivalents (t CO<sub>2</sub>-e). 1 t CO<sub>2</sub>-e is roughly equal to the emissions of a standard 5-seat passenger vehicle driving approximately 5,400 km.

## 1.2 Headline results

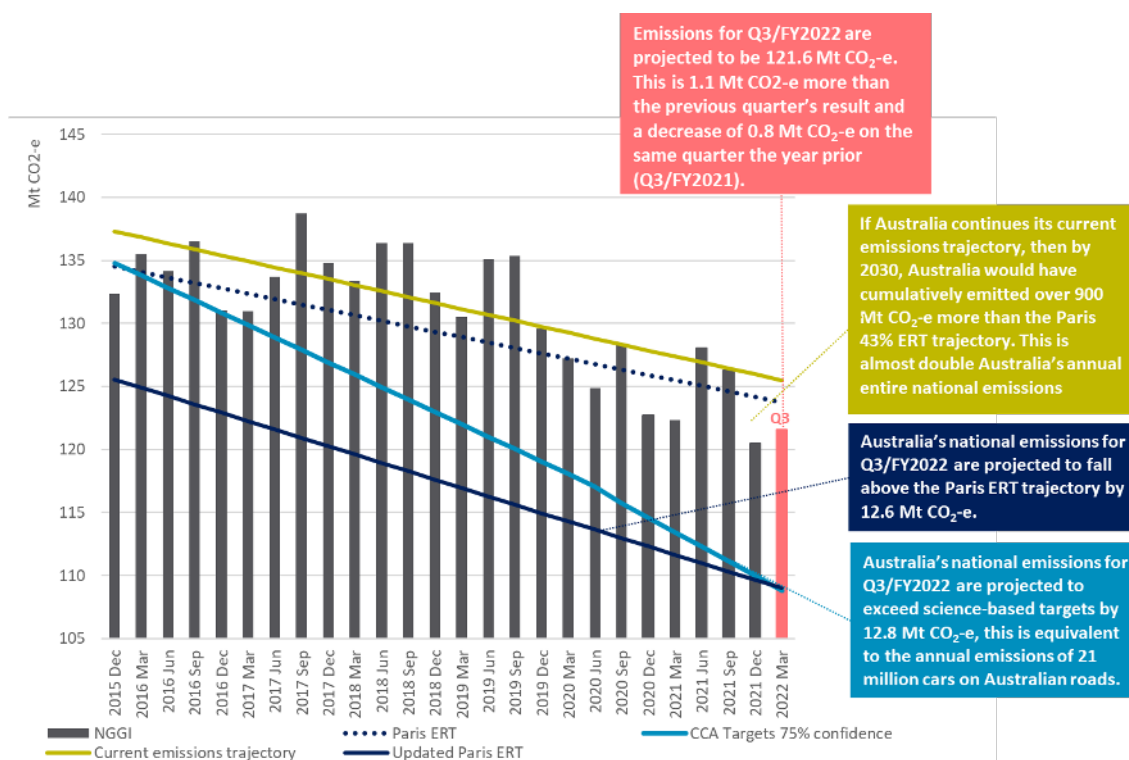
- Emissions for Q3/FY2022 are projected to be 121.6 Mt CO<sub>2</sub>-e, this is an increase of 1.1 Mt CO<sub>2</sub>-e (0.9%) on the previous quarter
- Emissions for Q3/FY2022 have increased 1.6 Mt CO<sub>2</sub>-e (1.3%) on the same quarter the year prior
- National emissions for Q3/FY2022 are projected to exceed the -43% Paris target by 11.5% or 12.6 million of tonnes of CO<sub>2</sub>-e based on a straight-line trajectory.
- Year-to-March 2022 total emissions are projected to be 489.5 Mt CO<sub>2</sub>-e, a 1.0% decrease on the previous 12-month period. However, excluding Land Use Change (LULUCF) we have noted a 2.0% increase over the same timeframe.
- Annual results for transport and stationary energy (year-to-March 2022) show signs of post COVID lockdown recovery with a 5.9% and 1.5% increase on the previous 12-month period.
- Annual LNG exports continue to rise driving Industrial and mining-related emissions, stationary energy and fugitive emissions upwards. Annual fugitive emissions are projected to increase by 5.0% over the year-to-March 2022 compared to the year-to-March 2021. The upwards trend is influenced by LNG export which increased by 4.4% on the previous year. Quarterly LNG export data shows that Q3/FY2022 was 7.0% higher than Q1/FY2022.
- The 43% Paris reduction target is a challenge for the new Government and will require strong emission reduction policies to make up for Australia's portion of the carbon budget already spent. The annual emissions for the year-to-March 2022 (LULUCF inclusive) exceed the 43% target trajectory by about 12.8% or 63 million tonnes of CO<sub>2</sub>-e.

- 
- Historical annual emissions (to the period ending March-2022) from the electricity and Industrial processes sectors have gone down by 20% and 6.0%, respectively over the last decade (2012-2022). Over the same 10-year period, annual emissions from stationary energy (17%), fugitive emissions (24.0%) and agriculture (9.0%) sectors have increased.

**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, 2015-2022 – Zoomed in view**





---

“Global surface temperature will continue to increase until at least the mid-century under all emissions scenarios considered. Global warming of 1.5°C and 2°C will be exceeded during the 21st century unless deep reductions in CO<sub>2</sub> and other greenhouse gas emissions occur in the coming decades.”

— IPCC Sixth Assessment Report, 2021.

A background image of two workers in white hard hats and high-visibility safety vests, viewed from the side, against a blue-tinted background.



---

## 2 Detailed Findings



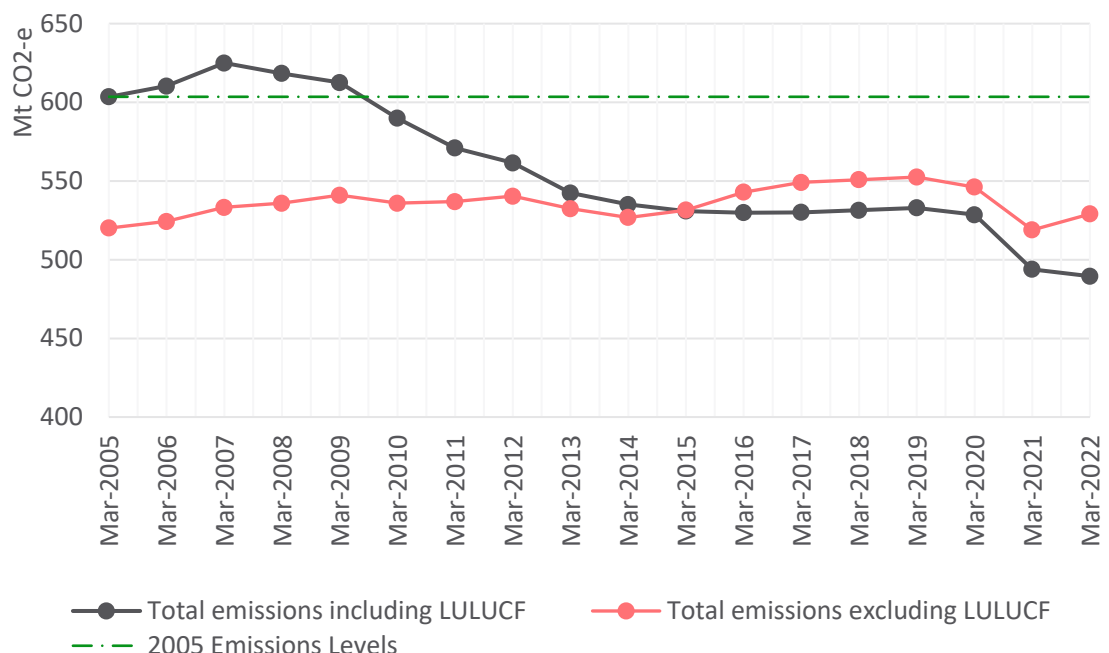
## 2.1 Detailed Findings

### 2.1.1 The challenges of the new Emission Reduction Target

The expected emissions for the year-to-March 2022, Including Land Use, Land Use Change & Forestry (LULUCF), are 489.5 Mt CO<sub>2</sub>-e, 1.0% decrease on the previous 12-month period. When excluding LULUCF emissions, the annual figure for the year-to-March 2022 results in 529 Mt CO<sub>2</sub>-e, a 2.0% increase on the year-to-March 2021.

Since 2005, the reduction in emissions has been highly influenced by the change in emissions from LULUCF. The sector represented a 25 Mt CO<sub>2</sub>-e sink for Australia in the year-to-March 2021 and it's expected to exceed the 32 Mt CO<sub>2</sub>-e mark in the same period for 2022. Australia shows an upwards trajectory in its historical emissions when excluding LULUCF, right up to financial year 2020 when the pandemic hit. Signs of a recovery are starting to show for the year to March 2022, following reactivation of the economy and international travel.

**Figure 3: Total annual emissions, year-to-March 2005-2022**

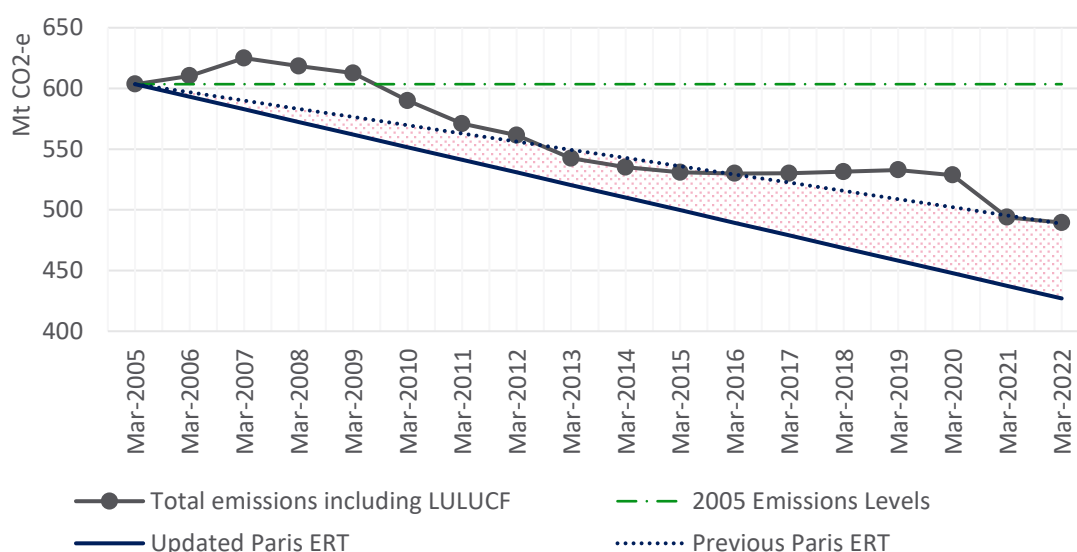




In June 2022, The Australian Government updated the National Determined Contribution (NDC), setting a more ambitious 2030 target. Australia aims to reduce greenhouse gas emissions by 43% below 2005 levels by 2030. The Net Zero commitment by 2050 was also reaffirmed. When compared against the new pledge, the annual emissions for the year-to-March 2022 (LULUCF inclusive) exceeds the target by about 63 Mt CO<sub>2</sub>-e.

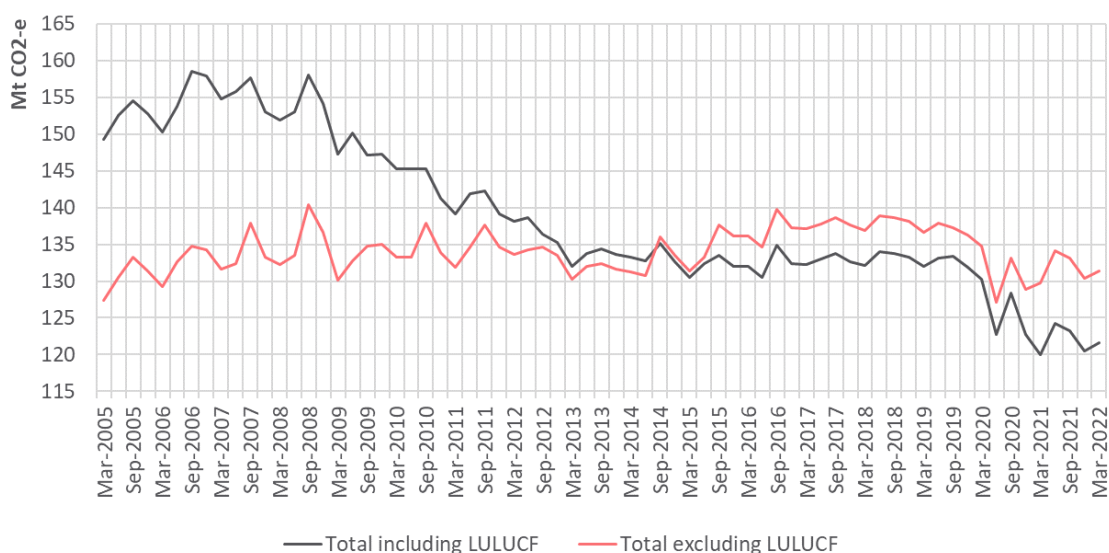
Australia's cumulative emissions to Q3/FY2022 are 48.5% of the 2013-2050 CO<sub>2</sub> budget, recommended in 2014 by the Climate Change Authority (CCA) required to stay within a 2°C warming scenario, meaning that Australia has spent the CO<sub>2</sub> budget for a 17-year period in 9.25 years. Although more ambitious, the new Paris Target is a challenge for the new Government and will require strong emission reduction policies to make up for the CO<sub>2</sub> budget already spent under the previous Government's less ambitious target of 28% reductions on 2005 levels by 2030.

**Figure 4: Year-to-March emissions (2005-2022) against Previous and New ERT**



Total National emissions for the March 2022 quarter (Q3/FY2022), estimated at 121.6 Mt CO<sub>2</sub>-e, are expected to increase 0.9% or 1.1 Mt CO<sub>2</sub>-e on the previous quarter. The total for the quarter is expected to be 1.3% or 1.6 Mt CO<sub>2</sub>-e higher than the corresponding quarter the year prior (Q3/FY2021).

**Figure 5: Total emissions by quarter, March 2005 to March 2022**



## 2.1.2

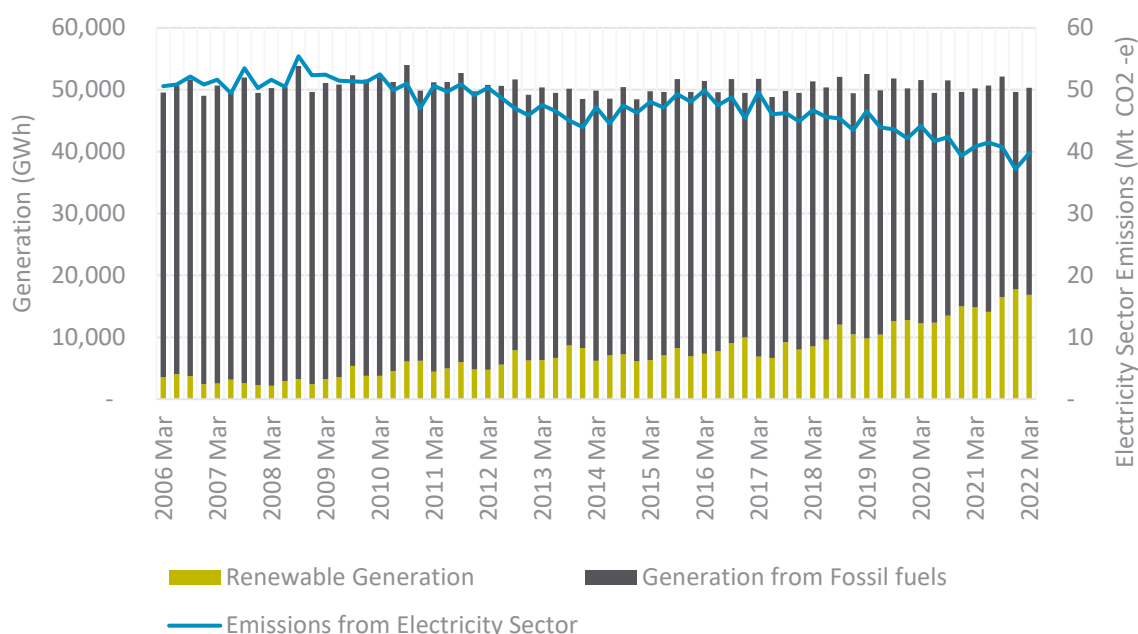
### The decarbonisation of the grid continues to drive Australia's annual emissions reduction

The electricity sector emissions for the Year-to-March 2022, estimated at 159.4Mt CO<sub>2</sub>-e, are expected to be 2.9% less than the year-to-Mar 2021 and 8.1% below the same period the year prior (2020). In the past decade, there has been an increasing uptake of renewables across the NEM states (Figure 9), emissions from the electricity sector have fallen by 20% over this period.

For Q3/FY2022 Australia's electricity emissions are estimated at 39.7 tCO<sub>2</sub>-e, a 6.8% increase compared to Q2/FY2022, and a 2.6% decrease compared to the same quarter the year prior (Q3/FY2021). With market, social and regulatory forces in its favour plus support from state governments, the renewable energy sector (both small and large) forges ahead.

Although the injection of renewable energy during Q3/FY2022 is expected to decrease by 2.2% compared to Q2/FY2022, the sector keeps breaking records with over a third of the electricity generation during Q3/FY2022 coming from renewable sources in both the NEM and SWIS. Quarterly results for the NEM showed a renewable energy market share of 33.5% for Q3/FY2022 (including large-scale solar, wind, pump-hydro, and rooftop solar). The net electricity generated from renewable sources exceeds Q3/FY2021 by 13.7%.

**Figure 6: Increasing renewable generation in the NEM and reducing total electricity emissions**



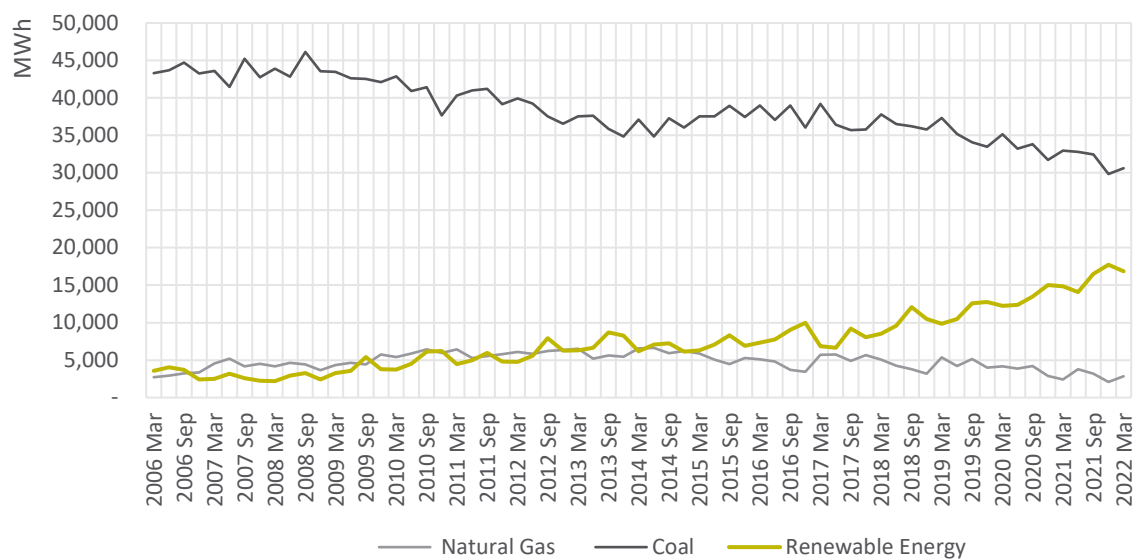
### An overview of NEM and WEM performance

- In the NEM states (NSW, VIC, QLD, ACT, TAS and SA), renewables contributed 33.5% of total electricity generation in Q3/FY2022. This is a 2.2% average decrease from Q2/FY2022.
- During Q3/FY2022, the penetration of renewable energy in the WEM (WA) was 36.9%, representing an increase of 2.2% on Q2/FY2022.
- Renewable energy share for the year-to-March 2022 was 32.2% in the NEM and 32.4% in the WEM
- Compared to the same quarter from the previous year:
  - Black and brown coal generation in the NEM decreased by 6% and 9.7%, respectively.
  - Generation from natural gas in the NEM experienced an increase of 16%.
  - Total aggregated generation from fossil fuel sources decreased by 5.5% in the NEM.

Year-to-March data from 2006 to 2022 shows that large-scale generation (solar and wind) along with rooftop solar have been shaping the future of the energy mix in Australia. This trend shows no sign of slowing down as it continues to displace generation from coal and natural gas.



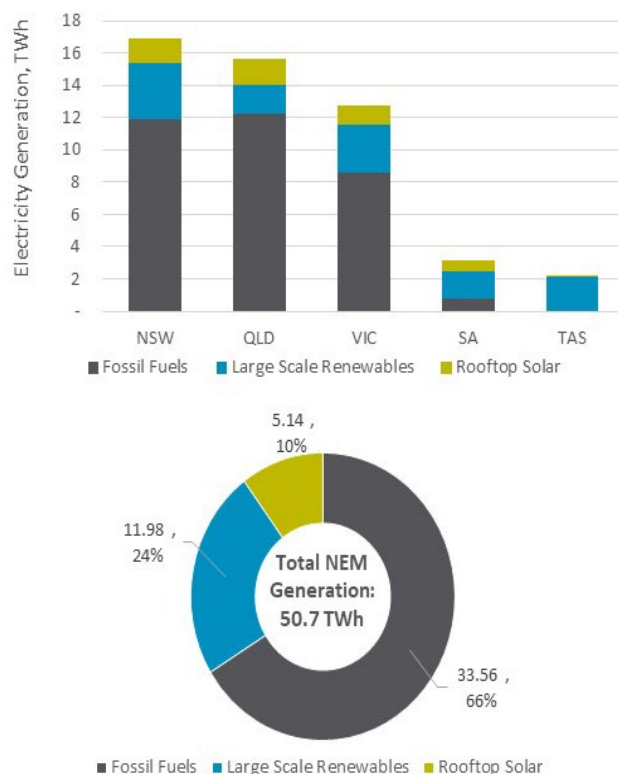
**Figure 7: Electricity generation trend from natural gas, coal, and Renewable Energy in the NEM (March 2006-March 2022)**



For Q3/FY2022, results for the NEM states are as follows:

- **NSW** generated 16.9 TWh of electricity with 66.8% from black coal, 3.7% from natural gas and 29.5% from renewable sources including wind, hydro, utility scale solar and rooftop solar.
- **QLD** generated 15.64 TWh of electricity with 70.4% from black coal, 8.1% from gas and 21.5% from renewable sources including utility-scale solar, rooftop solar, wind and a small portion of hydro energy. QLD's electricity generation from Black Coal has decreased by 1.9% compared to the Q1/FY2022.
- **VIC** generated 12.75 TWh of electricity with 65.0% from brown coal, 2.0% from gas and 33.0% from renewable sources including wind, hydro, rooftop solar and utility-scale solar. Renewable energy share for Q3/FY2022 is the second highest on record.
- **SA** generated 3.19 TWh of electricity with 24.3% from gas and 75.7% from renewable sources such as wind, rooftop solar, utility scale solar and battery (discharge). Rooftop solar (23%) and large-scale wind (45%) make up for most of the estate's energy production from renewable sources.
- **TAS** generated 2.2 TWh of electricity with 100% of generation from renewable sources.

**Figure 8: Electricity market generation in the NEM Q3/FY2022**

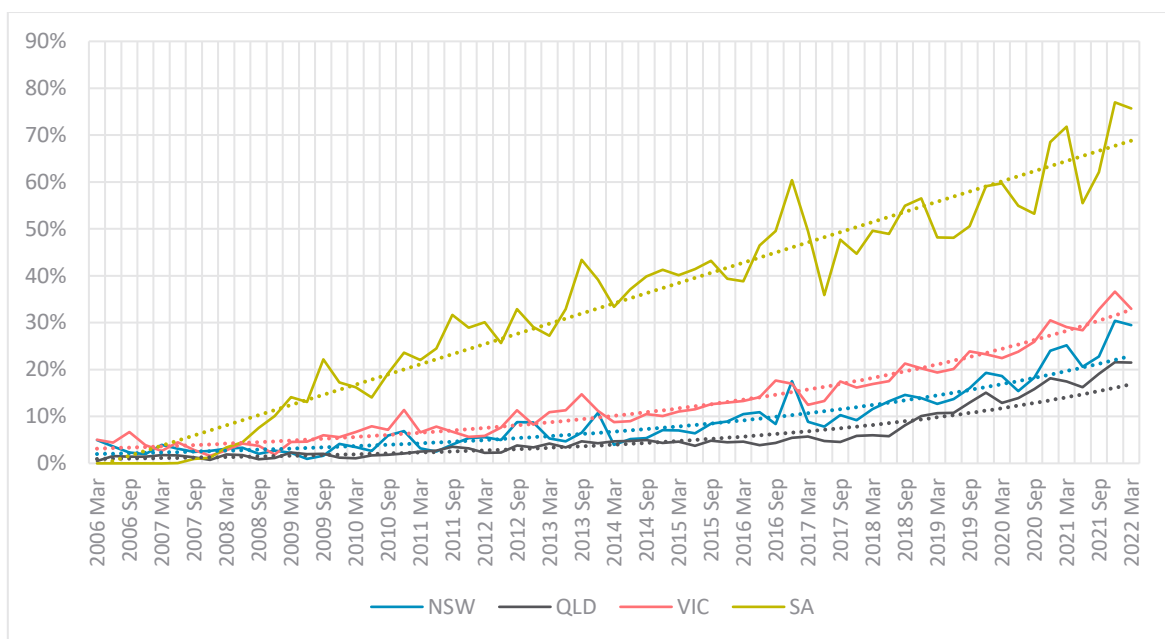


The increasing expansion of renewable energy in the grid is also noted across the Wholesale Electricity Market (WEM) through the Southwest Interconnected System (SWIS).

- **WA** generated 5.7 TWh of electricity during Q3/FY2022 with 36.9% coming from renewable sources such as solar (including rooftop), wind and biogas. Rooftop solar accounts for an 16% of the energy source for this quarter.

The rapid transition in the electricity sector and therefore, the decline in scope 2 emissions has been strongly supported by States and Territories. Tasmania became the first state to generate 100% of its electricity from renewable sources. SA is rapidly trending towards the same goal with a sharp upwards trend in the renewable energy share, while NSW and Victoria are on an upward trajectory surpassing the 30% mark for Q2/FY2022 and continuing the trend in Q3/FY2022.

**Figure 9. Quarterly penetration of renewable energy in the NEM by state. Mar 2005 to Mar 2022**



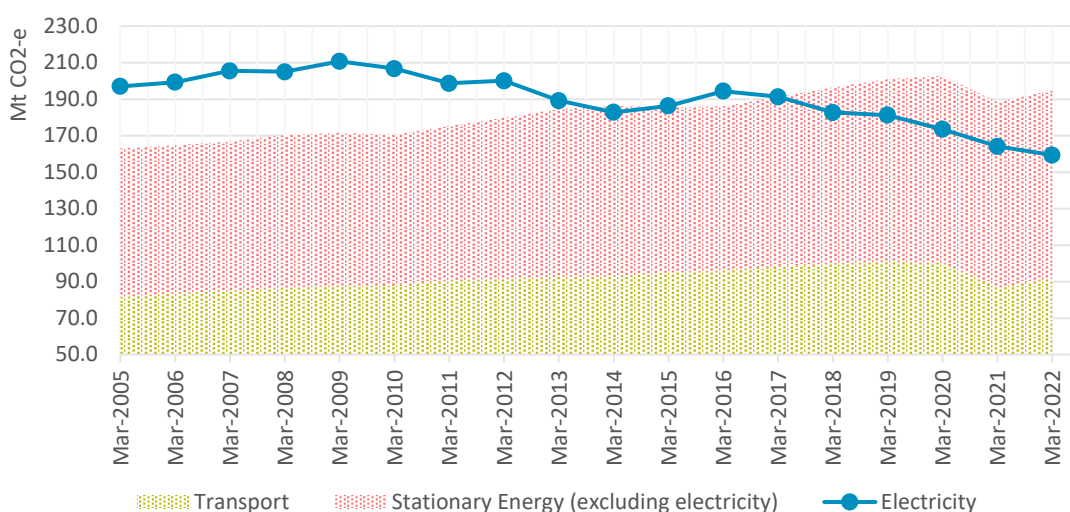
### 2.1.3 More attention needed in the Stationary and Transport Energy Emissions trends

Quarterly projections of stationary energy resulted in 24.7 Mt CO<sub>2</sub>-e for Q3/FY2022. This is 2.7% below the previous quarter (Q2/FY2022) but 2.8% more than the same quarter the year prior (Q3/FY2021). Quarterly emissions from transport (fuels in transportation by road, rail, and domestic aviation and shipping) for Q3/FY2022, are expected to be 23.7 Mt CO<sub>2</sub>-e. This is 0.2% less than Q2/FY2022 but 3.3% more than Q3/FY2021.



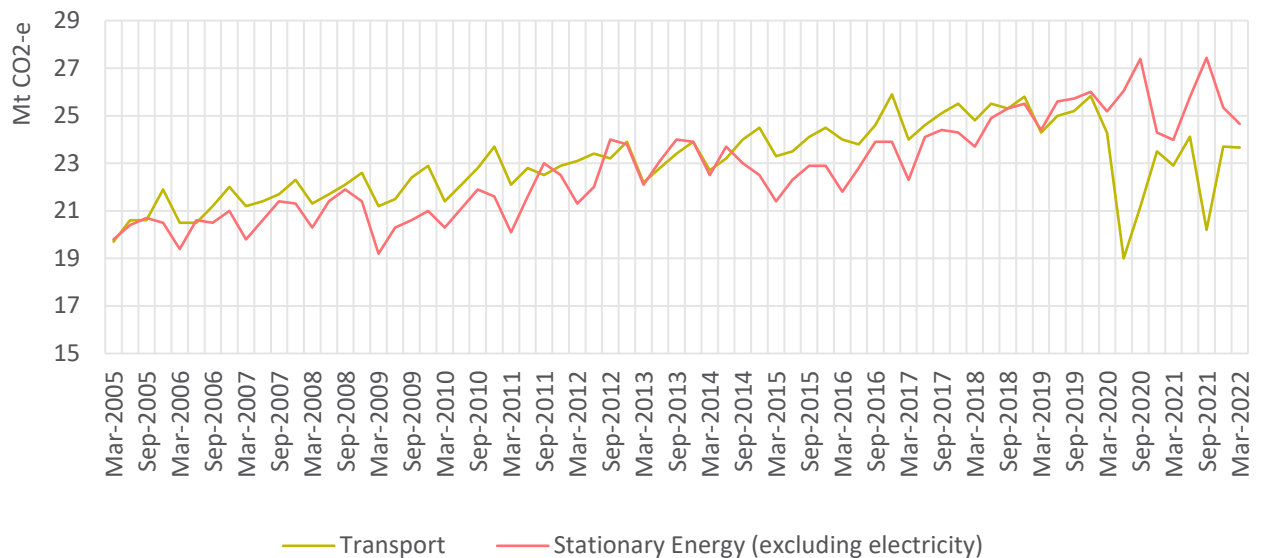
Since last quarter of financial year 2016, stationary and transport energy combined have surpassed emissions from the electricity sector, accounting for over a third of Australia's quarterly emissions. Arguably, more emission reduction strategies and policies need to start happening across these two sectors (Figure 10).

**Figure 10: Annual electricity vs stationary and transport emissions, Mar 2005 to Mar 2022**



Compared to the year-to-March 2021, both annual transport and stationary energy emissions have started to bounce back to a growth trend over the year-to-March 2022, were a 5.9% increase for transport and a 1.5% increase for stationary energy is expected.

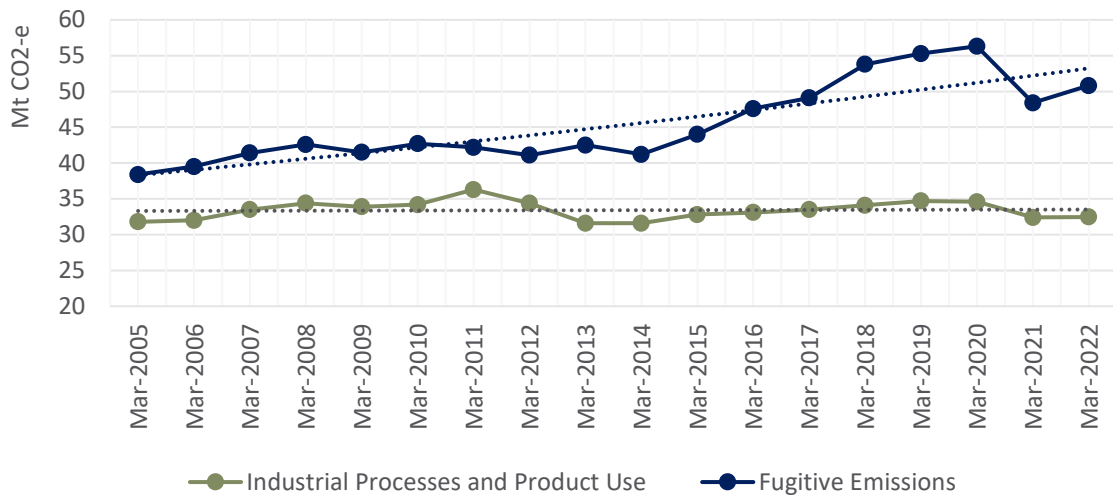
**Figure 11: Stationary and transport emissions by quarter, Dec 2005 to Dec 2021**



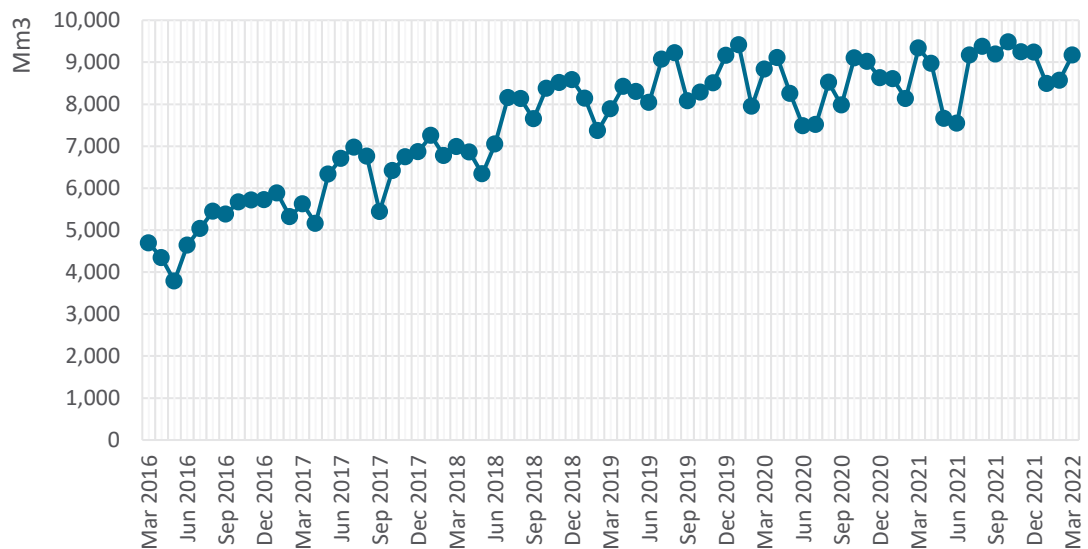
#### 2.1.4 LNG exports continue to drive up Industrial and Fugitive Emissions

Q3/FY2022 fugitive and industrial emissions are expected to exceed Q3/FY2021 by 0.3% and 0.2%, respectively. Annual fugitive emissions are projected to increase by 5.0% over the year-to-March 2022 compared to the year-to-March 2021. The recovery of the historical upwards trend is influenced by LNG export which increased by 4.4% on the previous year. Quarterly LNG export data shows that Q3/FY2022 was 7.0% higher than Q1/FY2022.

**Figure 12: Annual Emissions from fugitive and industrial processes, year-to Mar (2005 - 2022)**



**Figure 13: LNG quarterly exports volumes (2016 - 2022)**



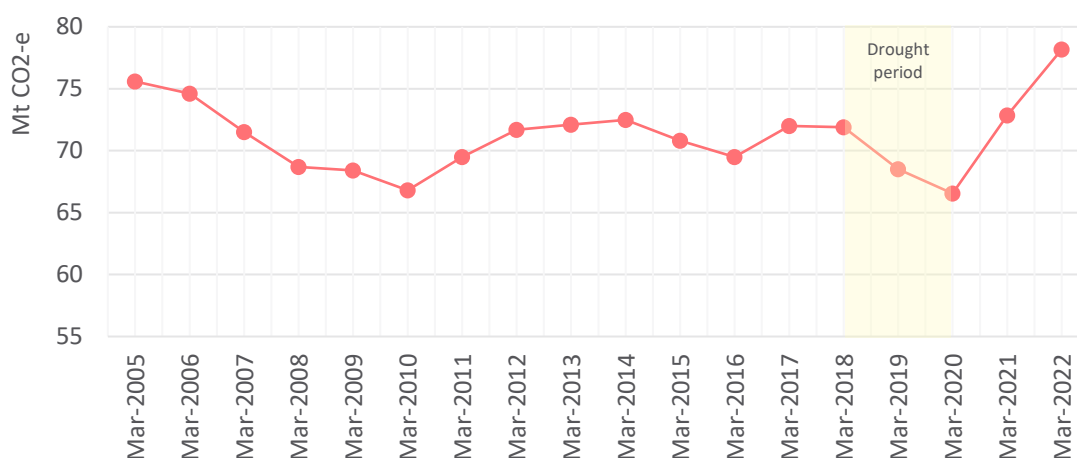


### 2.1.5 Agricultural Emissions Determined by Extreme Weather

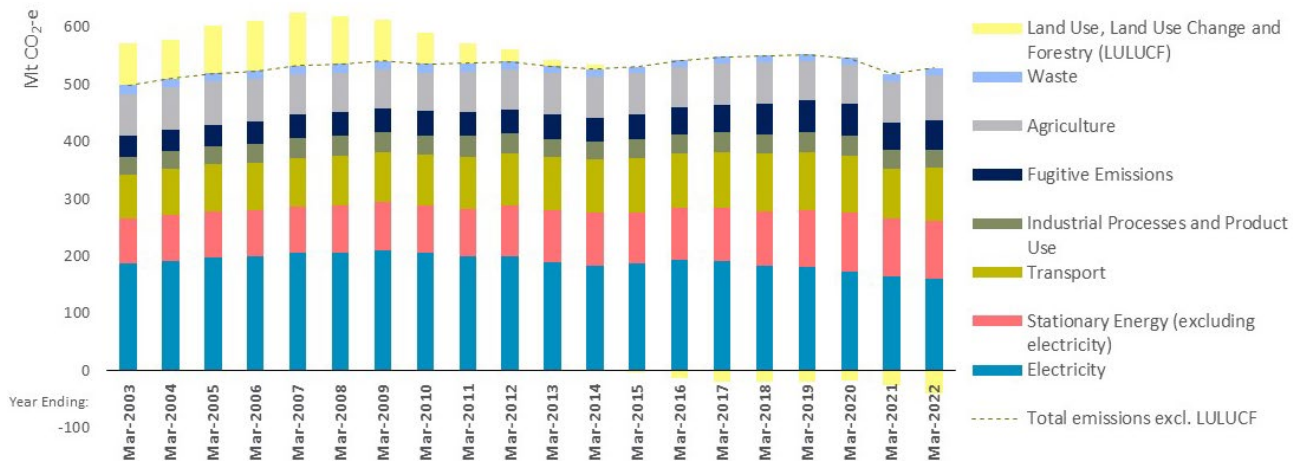
Emissions from agriculture account for 16% of the total year-to-March 2022 annual emissions. The agriculture sector has been highly affected by extreme weather conditions. The intense droughts experienced in FY2020 in many states, are reflected in the emissions reduction from this sector. Quarterly results have shown a gradual recovery. Q3/FY2022 emissions are expected to be 19.5Mt CO<sub>2</sub>-e, a 1.9% fall on (Q2/FY2022) but an 5.5% increase on the same quarter the year prior (Q3/FY2021). Q3/FY2022 are 10.4% larger than the same period in FY2020.

Annual results (year-to-March 2022), show a steady increase in agriculture emissions, expecting them to be 7.3% higher than the year-to-March 2021 and 17.5% more than the same period in 2020. Significant impacts on emissions from agriculture are expected for the last quarter of FY2022 as the sector faces another weather challenge with extreme rain events on the east coast of Australia.

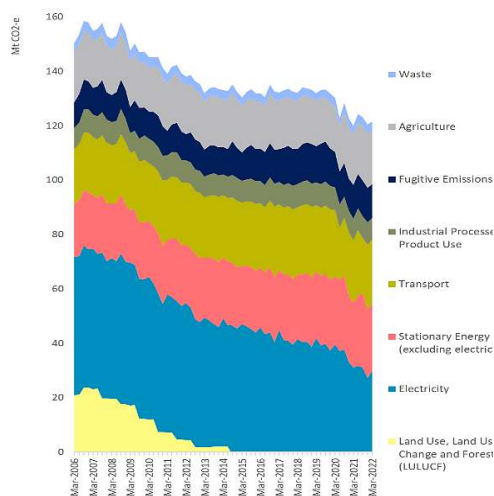
**Figure 14: Emissions from agriculture by quarter, Dec 2005 to Mar 2022**



**Figure 15: Australia's annual emissions by sector, year to Mar 2022**

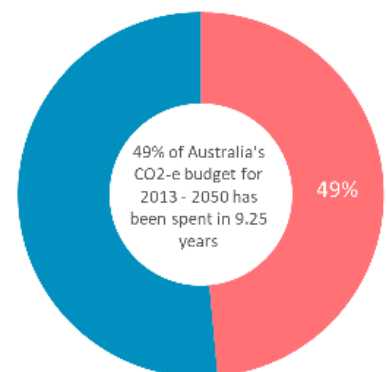


**Figure 16. Australia's quarterly emissions by sector\***



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

**Figure 17: Degree budget expenditure to date**



## We're tracking Australia's carbon budget, find out how we can help you monitor and reduce yours...

Ndevr Environmental is a climate change and human rights advisory firm, focused on accelerating the economy's transition to a sustainable, net zero future. For over 10 years, we've partnered with businesses and governments, to provide innovative solutions to meet emerging challenges, and relentlessly pursue the transformation of commitment into action – to create real and meaningful impact. [www.ndevrenvironmental.com.au](http://www.ndevrenvironmental.com.au)



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, Australia Resources and Energy quarterly and historical reports 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) and South West Interconnected System (SWIS) are sourced from Open NEM.

GDP trends are sourced from Trading Economics, information about Australian car use is sourced from the National Transport Commission, 2020 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)

This work is copyright. Apart from any use permitted under the Copyright Act 1968, no part may be reproduced by any process, nor may any other exclusive right be exercised, without the permission of Ndevr Environmental, L2 27-31 King Street, Melbourne VIC 3000. ©Ndevr Environmental 2021

For further information contact:

Matt Drum  
Managing Director  
Ndevr Environmental

Melbourne – Sydney – Perth – Brisbane – Adelaide – Singapore

e [environment@nde vrenvironmental.com.au](mailto:environment@nde vrenvironmental.com.au)  
w [nde vrenvironmental.com.au](http://nde vrenvironmental.com.au)

*We acknowledge the Traditional Owners of the lands on which we work and live. We are committed to advancing reconciliation through our Innovate Reconciliation Action Plan and look optimistically towards a sustainable and inclusive future.*