



Tasmanian Greenhouse Gas Emissions Update

Annual progress report for the 2021 reporting year

June 2023

Prepared by the

Tasmanian Policy Exchange



A photograph showing several traditional woven baskets and a red clay bowl. The baskets are made of natural fibers, some with intricate patterns. One basket in the foreground has a dark interior and a blue and white braided cord around its rim. The red clay bowl is filled with a dark, textured substance. The items are arranged on a wooden surface, possibly a table or a bench. The background is slightly blurred, showing more baskets and a green object.

Acknowledgement of Country

We acknowledge the palawa/pakana of lutruwita, the traditional owners of the land upon which we live and work.

We pay respects to Elders past and present as the knowledge holders and sharers. We honour their strong culture and knowledges as vital to the self-determination, wellbeing and resilience of their communities.

We stand for a future that profoundly respects and acknowledges Aboriginal perspectives, culture, language and history.



The Tasmanian Policy Exchange (TPE) has been established at the University of Tasmania to make timely and informed contributions to key policy debates occurring in Tasmania and beyond to make a positive contribution to the future of our state and its people.

The University of Tasmania has for the second year running been ranked the number 1 university globally for climate action in the prestigious [Times Higher Education \(THE\) Impact Rankings](#).

We would like to thank the numerous colleagues from across the University who contributed to the update.

Primary Authors

Dr Lachlan Johnson
Professor Richard Eccleston
Megan Langridge



Aims of this Report

This is the University of Tasmania's second annual report on Tasmania's greenhouse gas emissions.

Given the climate emergency we are facing, communities in Tasmania and beyond are demanding ambitious action on emissions reduction. This urgent challenge requires a clear understanding of how much we contribute to the problem of global climate pollution, but the way emissions are reported is complex and can be confusing.

Our annual updates are designed to:

- provide clear and independent analysis of greenhouse gas emissions in Tasmania
- keep tabs on how our performance compares to other states
- assess whether we are on-track to meet state and national targets, and
- highlight where we need to focus our efforts and improve outcomes to credibly claim national leadership on climate action.

The University of Tasmania's analysis of Tasmanian climate policy and strategy, including an ongoing work program developing options for decarbonising the Tasmanian economy, can be found [here](#).



Key findings

How are we tracking?

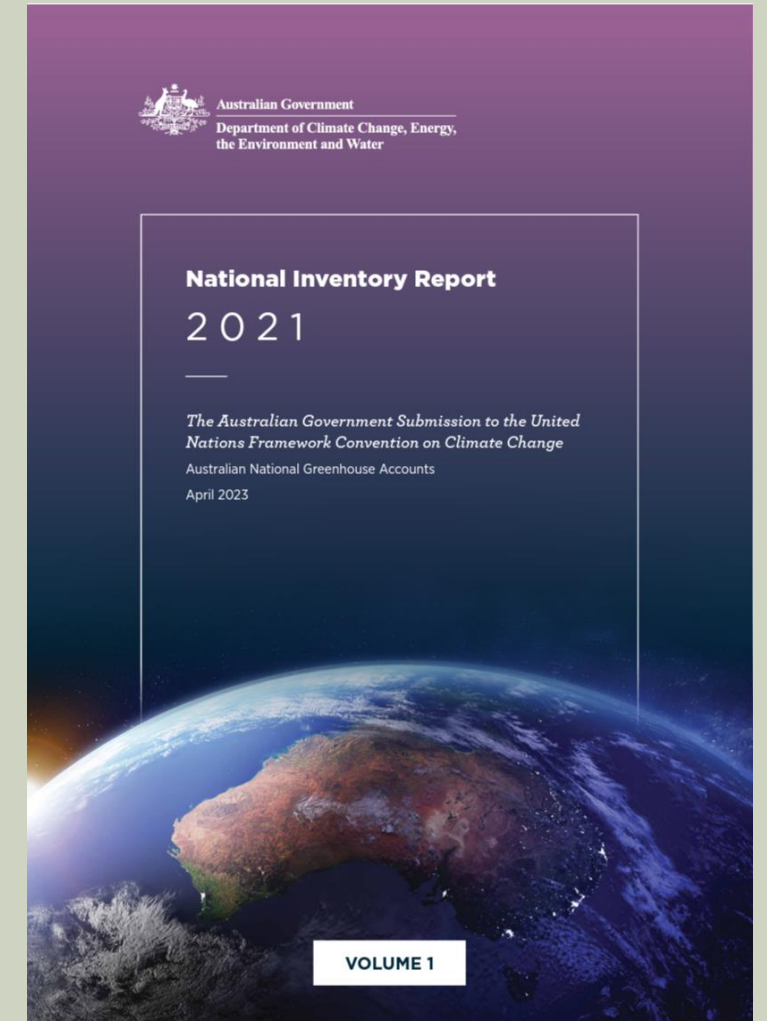
In May, the Australian Government released the most recent [State and Territory Greenhouse Gas Inventories](#) for the 2021 reporting year. The data show that while Australia's **net emissions fell by around 6%** over the past year, **as of mid-2022 we were not on track** to reach the Federal Government's **target of a 43%** reduction on 2005 levels by 2030.

How does Tasmania compare?

Once again, **Tasmania is the nation's best performer** overall, with net emissions of -4800kt of CO₂-e greenhouse gases. However, **our emissions have increased slightly on last year** and our 'net-negative' status depends entirely on carbon removed from the atmosphere and stored in forests (the 'land use, land-use change and forestry', or LULUCF, sector) which are likely to decline over time.

What are our emissions reduction priorities for the future?

Tasmania is one of the few places on earth to have achieved net zero, but we cannot afford to be complacent. Tasmania's new Climate Action Plan must provide concrete proposals to cut carbon emissions across the entire economy or our reputation as a leader on climate action will be in jeopardy. Our best near-term abatement opportunities are in the transport and agriculture sectors.





The State and Territory Greenhouse Gas Inventories

Australia's greenhouse gas emissions are reported according to guidelines developed by the United Nations Framework Convention on Climate Change (UNFCCC). The UNFCCC's method, while allowing flexibility to reflect local conditions, enables the production of comparable national and sub-national estimates of carbon pollution.

This system is enormously valuable but it is not perfect, and is therefore subject to continuous and ongoing evolution. As a result, the inventories published each year incorporate updates and adjustments. Such changes are applied retrospectively to previous years' emissions tallies.

For instance, in previous years, Tasmania was reported as having achieved net-zero emissions in 2013. The 2020 inventories released last year, however, revised this milestone forward by one year, to 2014. In the 2021 inventories, it has returned to 2013. The revisions can also involve major adjustments – particularly in the crucial land-use sector which has a significant impact on Tasmania's overall emissions profile. To give just one example, revision of land-use emissions estimates between the 2019 and 2020 inventories altered the net figure for 2008 by more than 5000kt CO₂-e.

Given that these adjustments can mean the difference between meeting legislated emissions reduction targets and falling short of them, it is important to use the data cautiously and primarily as a rationale for deeper and more ambitious action to address climate change.

In 2021, Australia was not on track to achieve a 43% target by 2030, highlighting the need for more ambitious climate policy

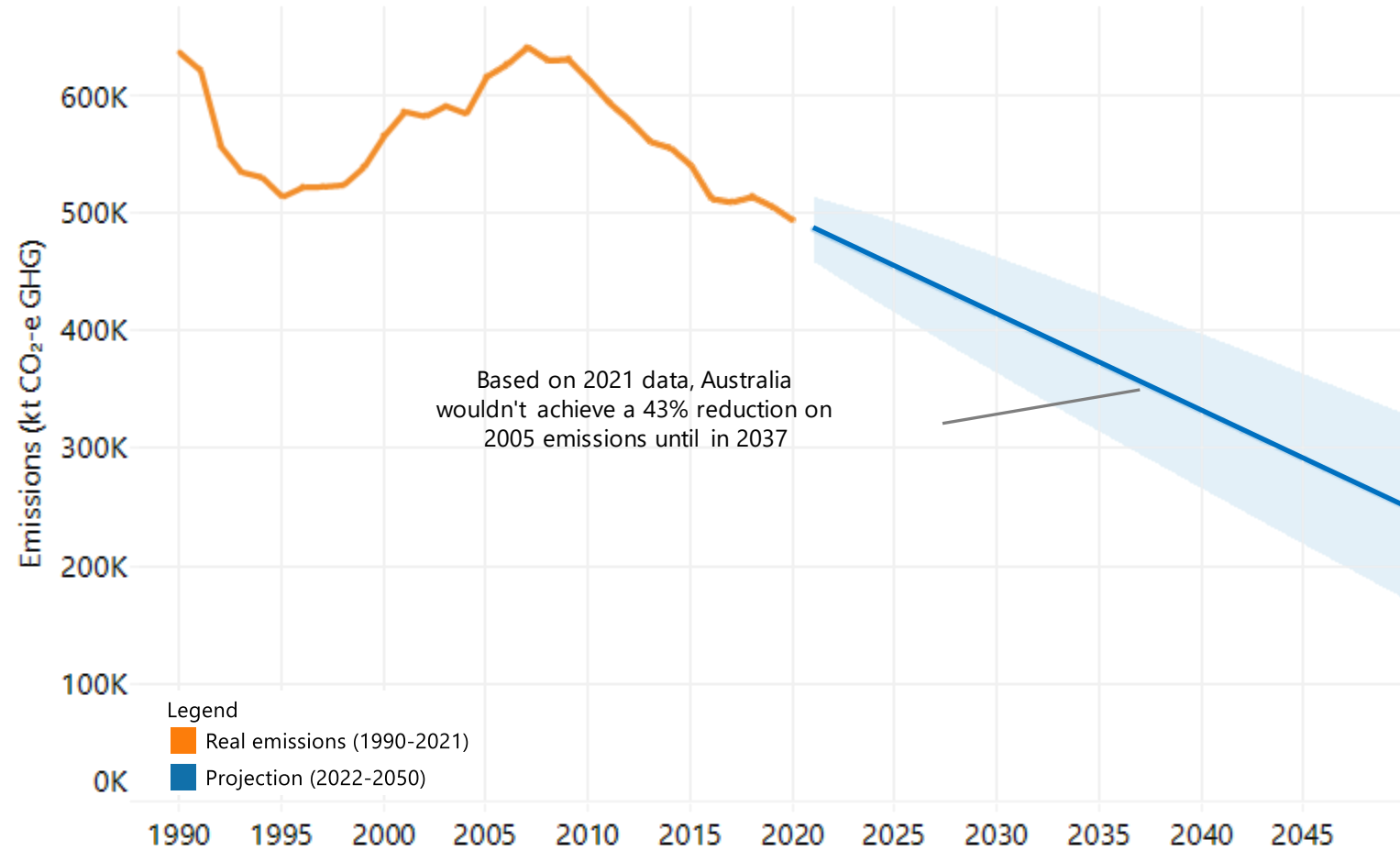
Australia's total emissions in the 2020-21 financial year were 464,771 kt of CO₂-e – a decline of almost 6% on the previous year. While this seems impressive, a closer analysis of the data suggests that restrictions on travel and economic activity associated with the COVID-19 pandemic contributed to the result.

Most of the decline in 'absolute' (non-LULUCF) emissions was confined to the energy sector, which includes fossil fuels used in transport and electricity generation. The remainder can be attributed to the increase in carbon sequestration in forests and soils. As the Australian economy recovered from the pandemic, it is likely that transport emissions in particular will resume their former upward trajectory.

Nevertheless, Australian net emissions have still fallen by 25% since 2005. This does represent some progress but, as the current Australian government has argued, more ambitious climate policy is required to achieve a 43% reduction by 2030 and to reach net-zero by 2050.

Australia's emissions reduction challenge

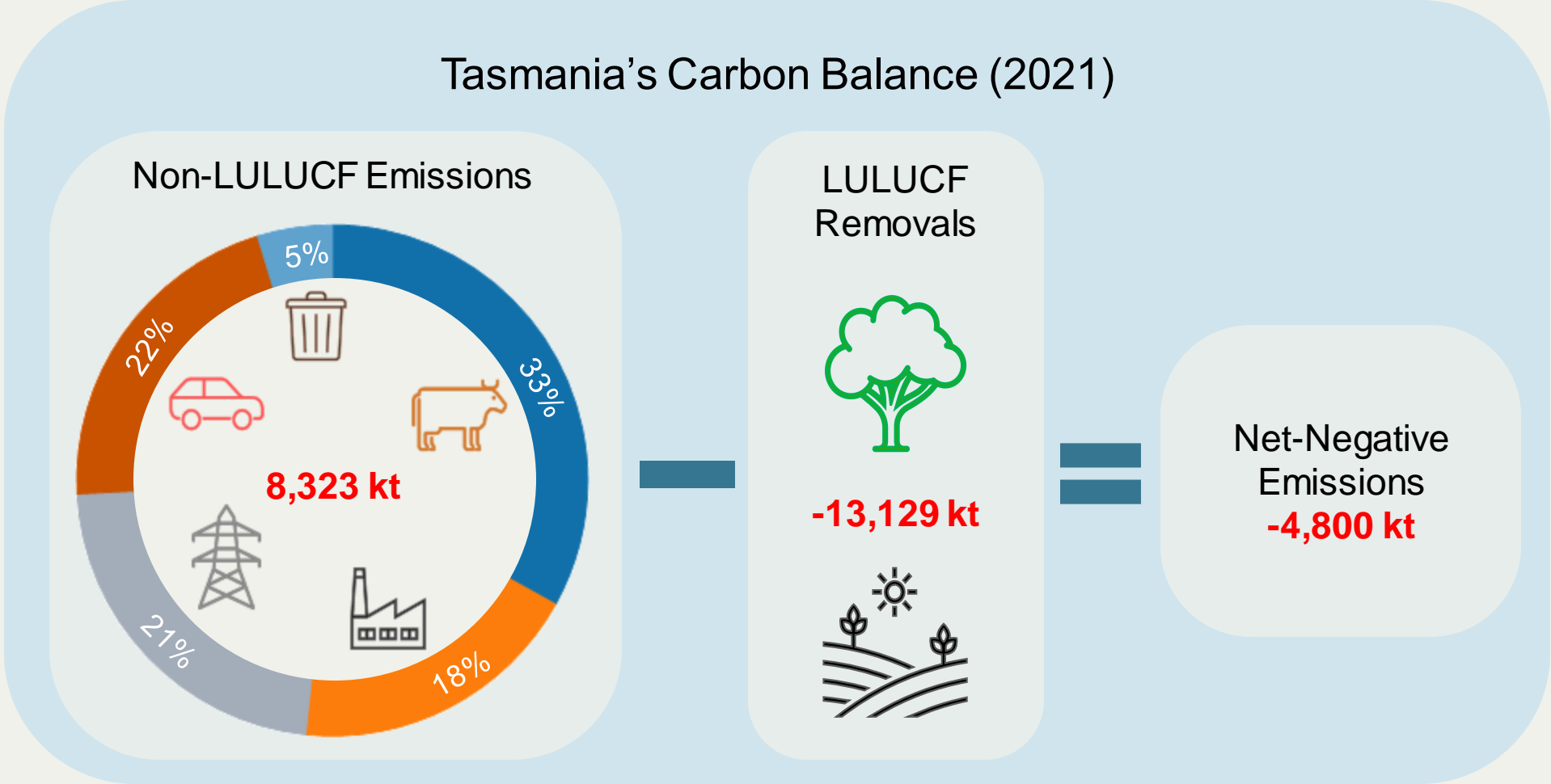
Australia's Emissions Reduction Trend, 2005-2050



SOURCE: Australian State and Territory Greenhouse Gas Inventories 2021, available at <https://www.dceew.gov.au/climate-change/publications/state-and-territory-greenhouse-gas-inventories>

Tasmania's carbon balance in 2021

Land use and forest removals exceeded absolute emissions resulting in net-negative emissions (-4,800 kt)



SOURCE: Australian State and Territory Greenhouse Gas Inventories 2021, available at <https://www.dcceew.gov.au/climate-change/publications/state-and-territory-greenhouse-gas-inventories>

Tasmania's net emissions

Tasmania is one of the very few jurisdictions on the planet that removes more CO₂-e from the atmosphere than it emits.

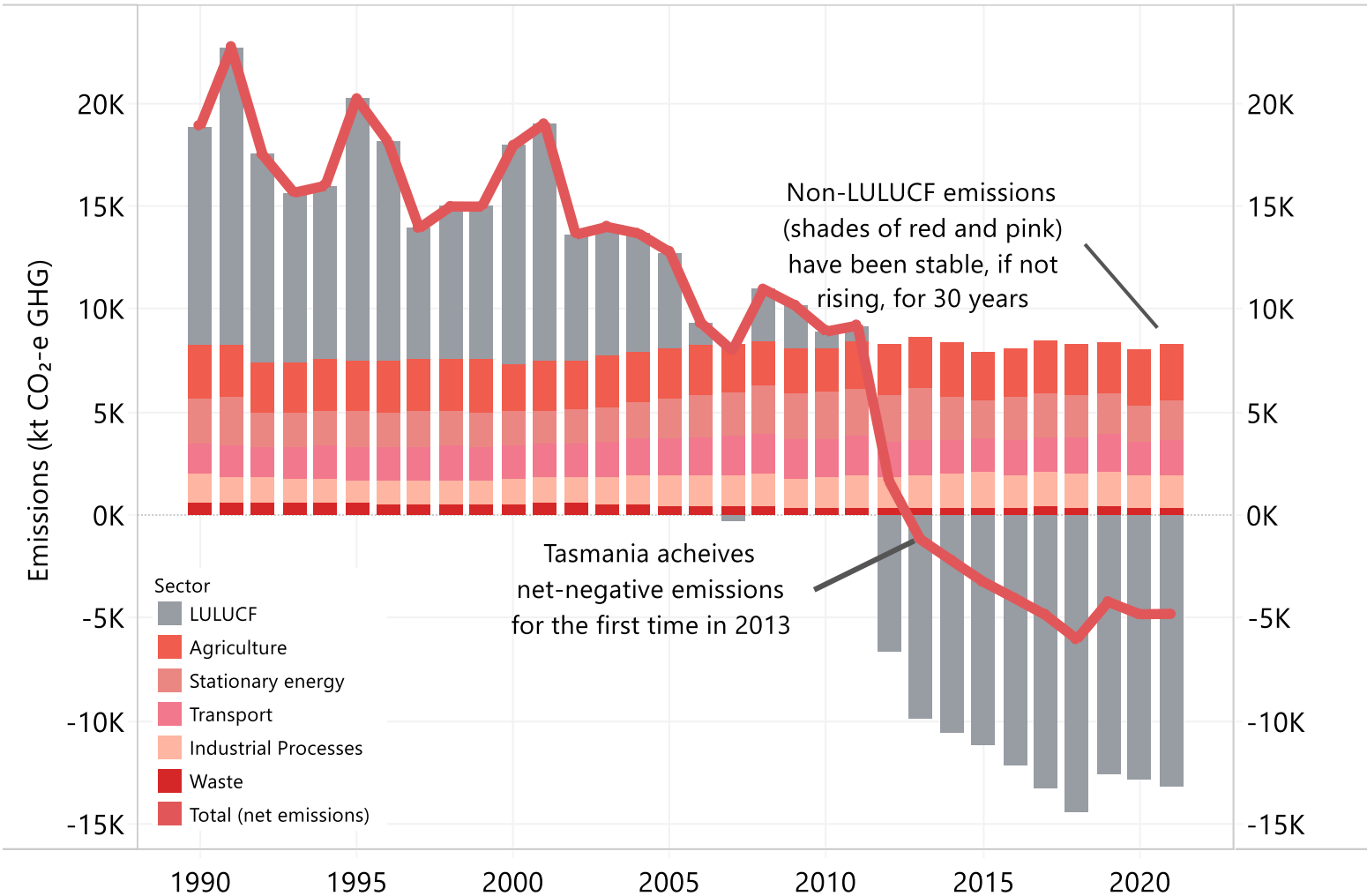
As the chart opposite shows, Tasmania's net emissions have been trending downwards for at least 30 years and reached net-negative territory in 2013. However, this 'headline' net figure is only part of the story.

Tasmania's emissions profile is determined almost entirely by two factors:

1. The first is the state's renewable electricity generation, which keeps energy emissions relatively low (although energy emissions in other states are declining rapidly).
2. The second factor is the decline of the state's forestry industry. Declining harvest levels following the collapse of the managed investment scheme program (MIS) resulted in LULUCF emissions plummeting in the early-2010s.

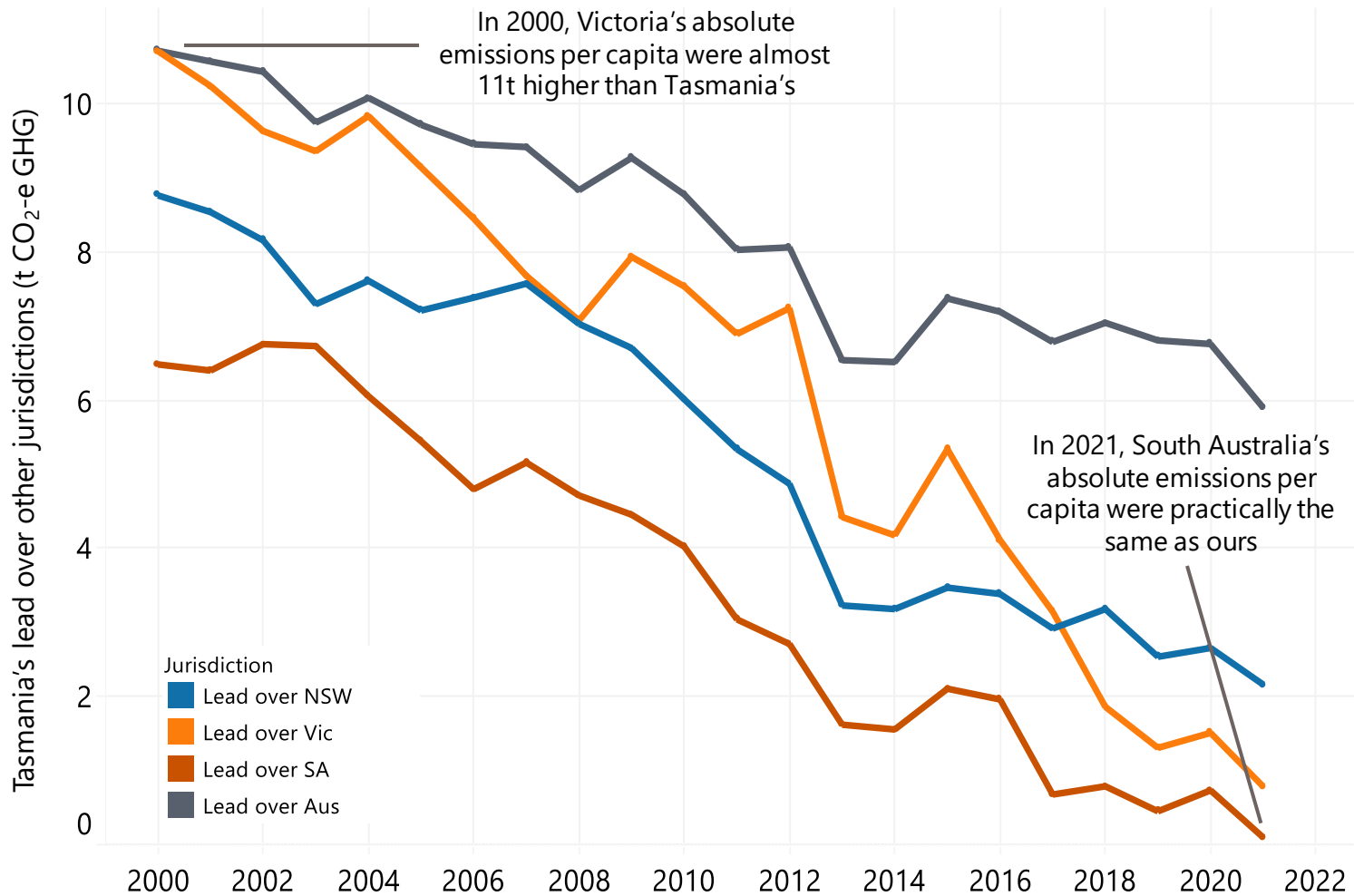
However, these two factors cannot be relied upon to maintain net-negative emissions forever. Despite our extremely rapid transition from a high-emitting to a net-negative jurisdiction, carbon pollution from other sectors - or 'absolute' emissions - have not changed for 30 years and, if anything, are trending slowly upward.

Tasmanian Net CO₂-e Greenhouse Gas Emissions by Sector, 1990-2021



SOURCE: Australian State and Territory Greenhouse Gas Inventories 2021, available at <https://www.dcceew.gov.au/climate-change/publications/state-and-territory-greenhouse-gas-inventories>

Difference between Tasmania's and Other States' Absolute Emissions, 2000-2021



Tasmania almost certainly no longer has the lowest per capita absolute emissions in Australia

While Tasmania's absolute emissions have been slowly rising for 30 years, all other states and territories except Western Australia and the Northern Territory have achieved significant reductions. As a result, it is highly likely that next years' inventories will show that South Australia, and possibly even Victoria, will have lower per capita absolute emissions than Tasmania.

- Other Australian states have made solid progress in reducing absolute emissions while Tasmania's have been static.
- In addition to shifting electricity generation towards more renewable sources, New South Wales, Victoria, and especially South Australia have also made significant progress reducing transport and agricultural emissions.
- The trend identified in the 2021 data suggests that in the 2022 reporting year (released in 2024), South Australia almost certainly will record lower per capita absolute emissions than Tasmania, and Victoria won't be far behind.
- Tasmania cannot credibly claim the mantle of [national leadership on climate action](#) without reducing absolute emissions.

SOURCE: Australian State and Territory Greenhouse Gas Inventories 2021, available at <https://www.dcceew.gov.au/climate-change/publications/state-and-territory-greenhouse-gas-inventories>



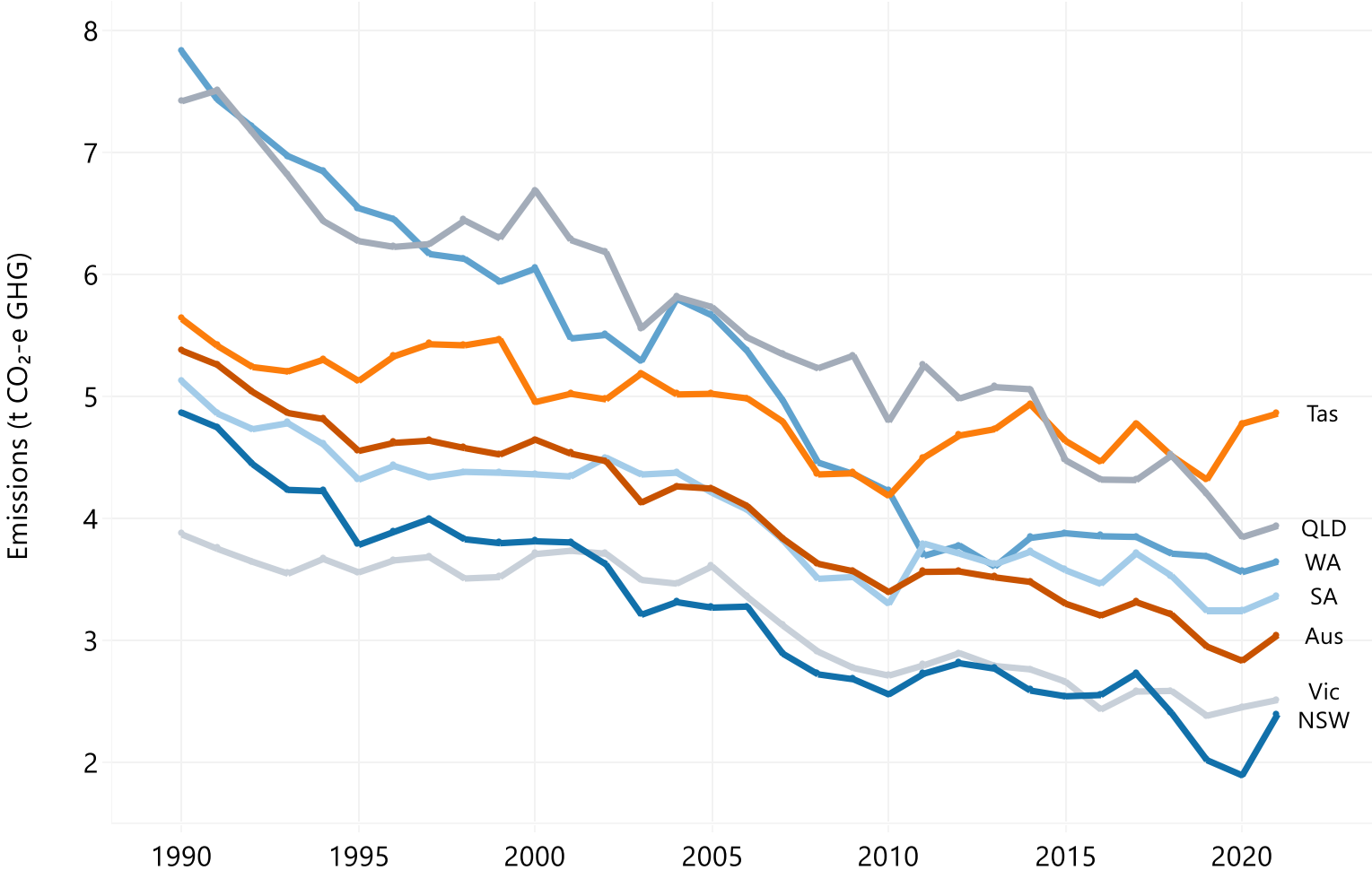
Tasmania's GHG emissions by Industry Sector

Tasmania's agriculture emissions have increased (but so has our output)

Tasmania's 2021 agriculture emissions were 2760 kt CO₂-e. This is an increase of 2.3% over 12 months and almost 20% over 10 years.

- Tasmania is one of the nation's highest per capita agriculture sector emitters, second only to the Northern Territory.*
- Our agriculture emissions have been trending upward both in absolute and per capita terms for the past decade, during which time national emissions declined by 2%.
- The state's high per capita agriculture emissions can be explained in part by a dramatic increase in output, particularly over the past 10-15 years. However, this does not mean that we cannot or should not reduce our agriculture emissions in absolute terms – increasing output or economic activity does not alter the fact that climate change is driven by the total volume of CO₂-e greenhouse gases in the atmosphere.
- The importance of agriculture to the Tasmanian economy and community highlights the urgent need to develop and deploy low-emissions technologies.

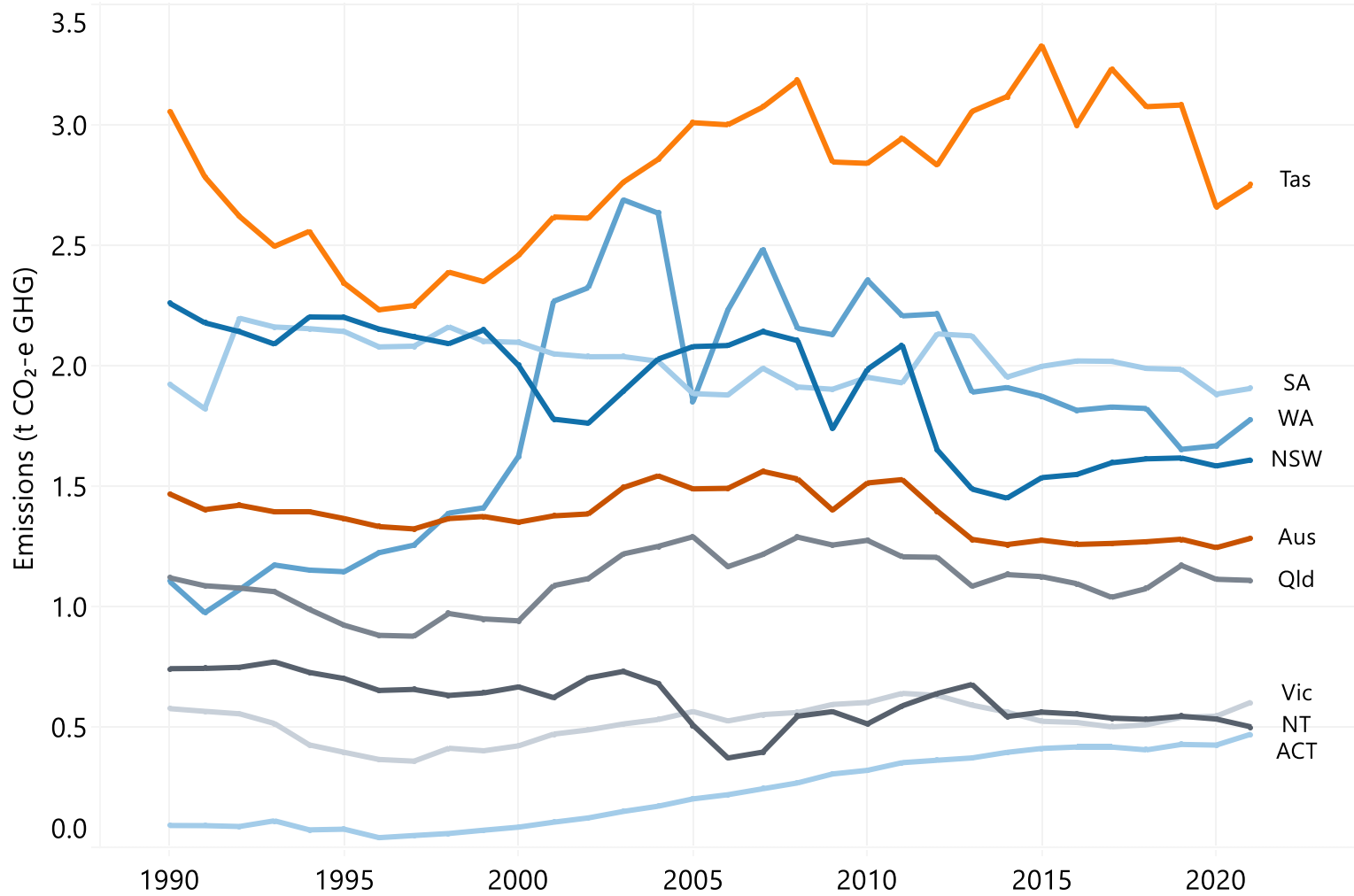
Agriculture Sector Emissions per Capita by State and Territory, 1990-2021



SOURCE: Australian State and Territory Greenhouse Gas Inventories 2021, available at <https://www.dcceew.gov.au/climate-change/publications/state-and-territory-greenhouse-gas-inventories>

* The NT has not been included because their emissions are too high for this chart's scale. At 11.6t per capita, they are 139% higher than Tasmania's. The ACT has also been excluded because its agriculture sector is so small.

Industrial Processes Sector Emissions per Capita by State and Territory, 1990-2021



SOURCE: Australian State and Territory Greenhouse Gas Inventories 2021, available at <https://www.dcceew.gov.au/climate-change/publications/state-and-territory-greenhouse-gas-inventories>

Tasmania's emissions from industrial processes are the highest (per capita) in Australia

Tasmanian industrial processes emissions remain unacceptably high. A significant share of our emissions profile in this sector is likely driven by the six industrial facilities covered by the Commonwealth 'safeguard mechanism', all of which will need to start making dramatic changes in order meet the emissions reduction requirements of the scheme.

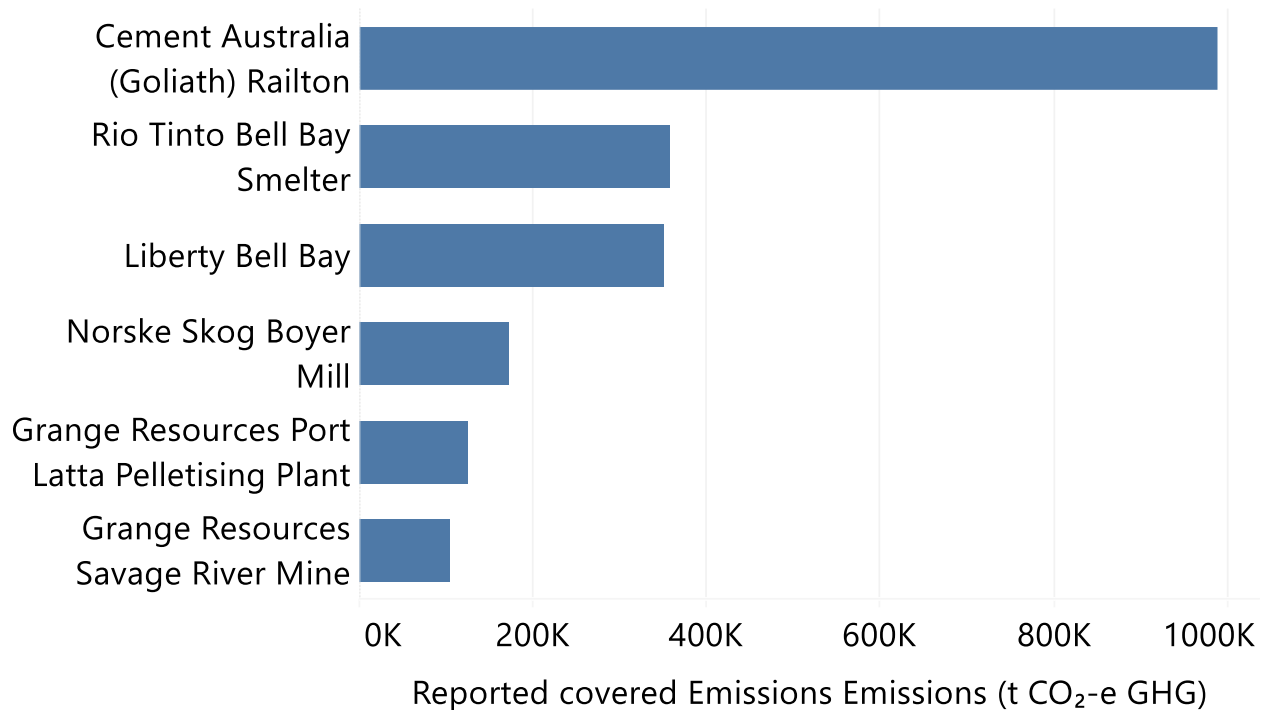
- Tasmania is the country's leading per capita industrial processes and product use (IPPU) emitter a large margin. Industrial emissions fell during the height of COVID-19 lockdowns but increased again in 2021.
- Six Tasmanian industrial emitters are among the largest 215 nationally and will be subject to the Commonwealth's Safeguard mechanism.
- Industrial processes and product uses emissions are among the most challenging to reduce due to the expense and relative scarcity of new abatement technologies. This means that we will need to start early work even harder to ensure that very high emitting facilities are able to meet their safeguard mechanism caps and avoid potentially ruinous financial penalties.

Tasmania's large energy and industrial processes emitters subject to the 'Safeguard Mechanism'

While Tasmanian energy and industrial processes emissions are relatively low in absolute terms, the state still has some very large individual emitters. For example, a single facility – Cement Australia Railton – produces more CO₂-e emissions each year than every car and light commercial vehicle on Tasmania's roads combined.

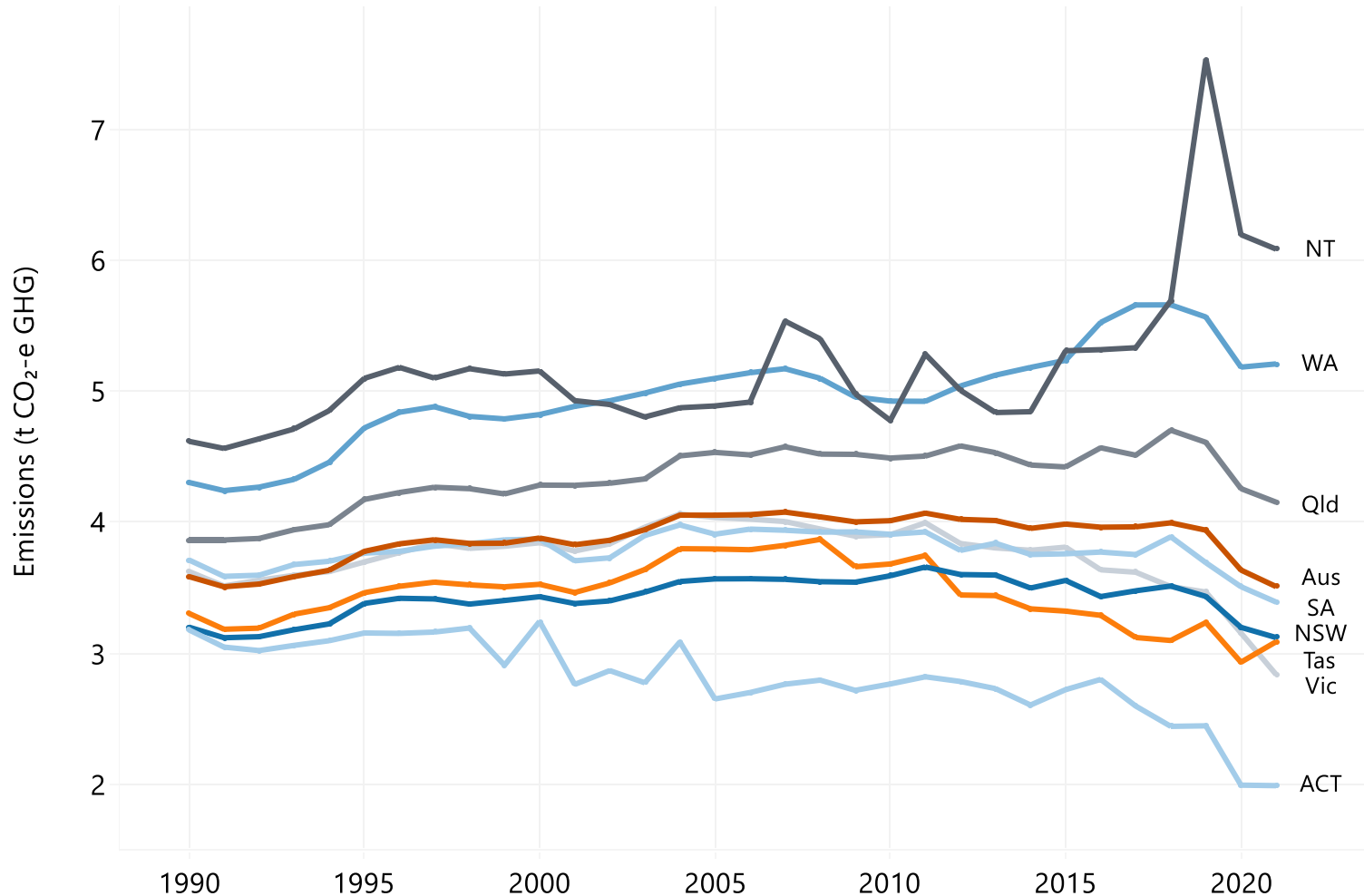
- The significant emissions attributable to the six safeguard mechanism facilities included in the graph opposite highlight this sector's enormous potential for targeted abatement solutions delivered in partnership with these regionally important employers and businesses.
- Most facilities subject to the safeguard mechanism will have to cut emissions significantly by 2030 or face financial penalties.
- Due to 'commercial sensitivity' considerations, almost half of Tasmania's total industrial processes and energy emissions – some 30% of our absolute emissions – are not reported by sub-sector in the national inventories. This omission makes it very difficult to meaningfully compare Tasmania with other states and hinders the development of informed abatement proposals.
- Greater transparency in emissions reporting may embarrass large emitters, but the magnitude of the climate challenge demands that all sources of carbon pollution be subjected to public scrutiny and that our largest contributors to climate change receive no special treatment.

Reported Covered Emissions for Tasmanian Safeguard Mechanism Facilities, 2021-22



SOURCE: Australian Government Clean Energy Regulator, National Greenhouse and Energy Reporting, <https://www.cleanenergyregulator.gov.au/NGER/The-safeguard-mechanism/safeguard-data>

Transport Sector Emissions per Capita by State and Territory, 1990-2021



SOURCE: Australian State and Territory Greenhouse Gas Inventories 2021, available at <https://www.dcceew.gov.au/climate-change/publications/state-and-territory-greenhouse-gas-inventories>

Tasmania's transport emissions are relatively low but, unlike other states, increased in 2021

Tasmania's low per capita transport emissions largely reflect the state's small size and shorter average commutes. On a per-km-travelled basis, however, Tasmania's transport system as a whole is very carbon-intensive.

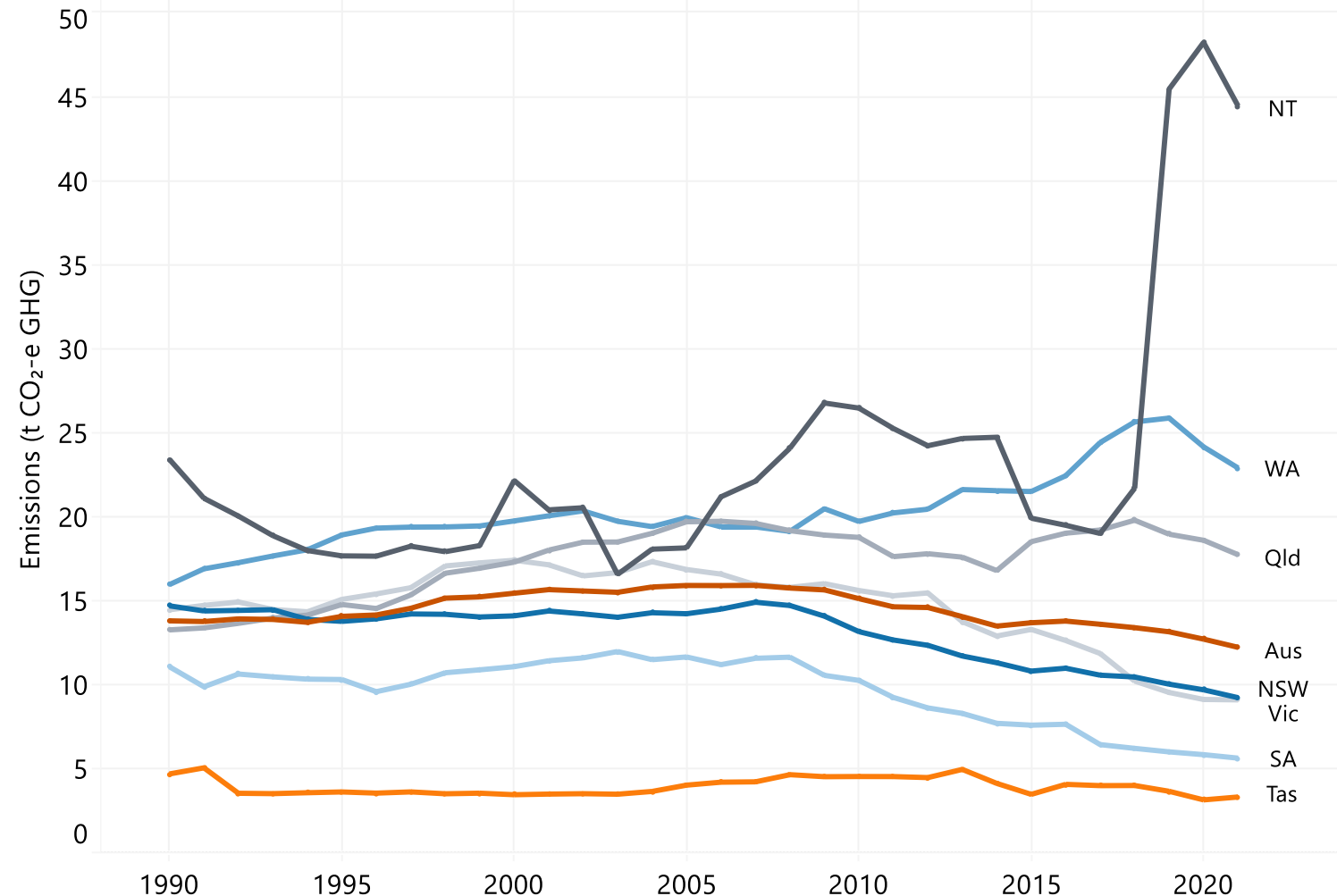
- Tasmanians own more cars per capita and are more reliant on them than the residents of any other state or territory. While the average Australian owns 0.78 vehicles, Tasmanians own 0.95.
- This statistic includes people below driving age, meaning that there is more than 1 registered vehicle in the state per adult Tasmanian.
- Our cars are also older on average than anywhere else in the nation, and for this reason are likely to be much less efficient and therefore more emissions-intensive. Finally, very few Tasmanians drive zero-emissions vehicles (ZEVs). In 2021, just 0.07% for cars on Tasmanian roads were electric; only the Northern Territory had a lower share.
- The University of Tasmania will release an *Options Paper* on reducing transport emissions in July 2023.

Tasmania's energy emissions are low thanks to renewable electricity, but we still need to phase out coal and gas

Tasmania's emissions in the stationary energy sector are relatively low due to renewable hydro and wind electricity generation. This sector includes all direct or fugitive emissions from combustion, except for transport emissions (see previous slide).

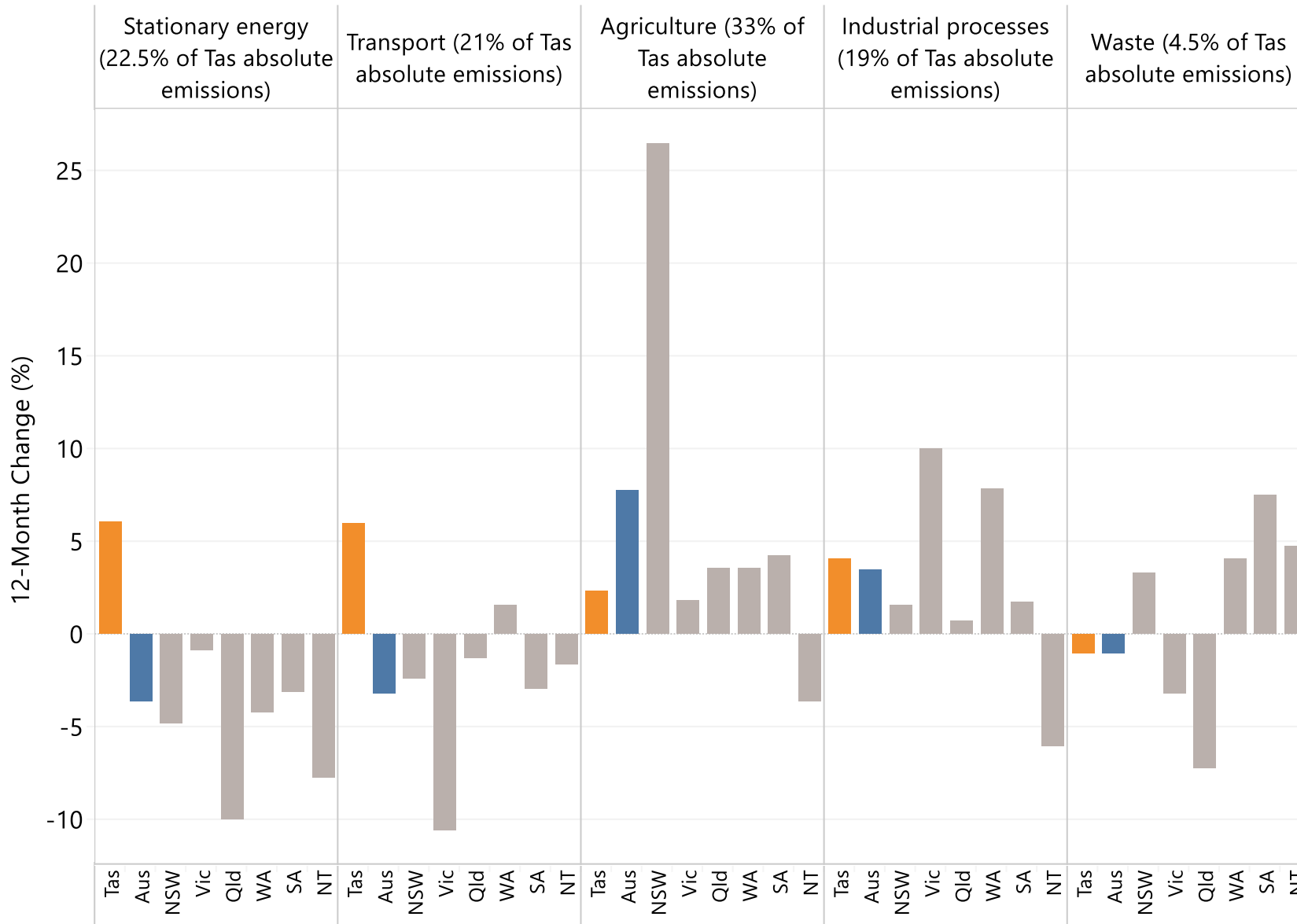
- Tasmania was almost 90% self-sufficient in renewable energy in 2021, but still produced 1740kt CO₂-e emissions from stationary energy. These are attributable to natural gas and fossil-fuel processes used in some industrial facilities. Though challenging, decarbonising these industries must be a priority.
- The challenge of abating energy emissions is made even more difficult by the absence of transparent emissions reporting in this sector due to 'commercial sensitivity' concerns associated with identifying big emitters.
- As previously noted, there should be greater transparency around emissions reporting in Australia.

Stationary Energy Sector Emissions per Capita by State and Territory, 1990-2021



SOURCE: Australian State and Territory Greenhouse Gas Inventories 2021, available at <https://www.dcceew.gov.au/climate-change/publications/state-and-territory-greenhouse-gas-inventories>

12-Month % Change in State and Territory Emissions by Sector



Tasmania's relative emissions performance over the past year

Over the 12-month period between the 2020 and 2021 inventories, all sources of absolute emissions in Tasmania increased except for waste. While most other states saw increases in agriculture and industrial emissions, Tasmania was alone in recording large increases in the stationary energy and transport sectors (though Western Australia saw a very small increase in transport emissions).

As the waste sector accounts for only a tiny share of the state's overall profile, Tasmania was the only jurisdiction in the country to increase its absolute emissions in 2021 – by 4%. The extent to which this is attributable to Tasmania's ability to ease COVID restrictions before other states will be revealed in next year's national inventories.

As we have noted here and elsewhere, it is neither scientifically nor politically credible for Tasmania to continue relying solely on unsustainable and short-term LULUCF sector removals to maintain its net-negative emissions status.

SOURCE: Australian State and Territory Greenhouse Gas Inventories 2021, available at <https://www.dcceew.gov.au/climate-change/publications/state-and-territory-greenhouse-gas-inventories>



Can Tasmania continue to rely on LULUCF removals to remain net-negative?

Tasmania's net-negative emissions status is largely a result of the dramatic increase in carbon sequestration in our forests and soils through the late-2000s and early-2010s (Slide 9). While the causes are complex – and often misrepresented in public debate – the main drivers were a simultaneous decline in native forest harvest, and a dramatic increase in the size of the plantation estate in the late 1990s and early 2000s (driven primarily by Managed Investment Schemes). A shift in the age structure of harvested areas from older forests to younger regrowth forests also contributed.

Young plantation forests remove significant amounts of atmospheric CO₂ as they grow, but they will gradually become carbon neutral over time as they mature. [Independent analysis](#) produced for the state government's review of the *Climate Change (State Action) Act 2008* shows that these 'removals' cannot be relied upon indefinitely to sustain our emissions profile and that without ambitious action, Tasmania could return to net-positive emissions by the end of the decade.

The climate science is clear – we must remove as much carbon from the atmosphere as possible to avoid catastrophic climate impacts in the second half of the century. Achieving net-zero, which Tasmania reached in 2013, is an important step towards establishing a truly climate-positive economy but the work is far from over and we need to commit to delivering a world-leading, deeply negative emissions profile.

In order to be a credible leader on climate action Tasmania needs to further reduce its emissions while also decreasing its unsustainable reliance on sequestration, which will require both behavioural and economic change as well as careful management of our forests and land.



Conclusions: what's next and where should we focus our energy?

The 2021 edition of the *State and Territory Greenhouse Gas Inventories* report shows that Tasmania remains the country's only net-negative jurisdiction, but this does not necessarily mean that we are on track or that we shouldn't be trying much harder than we currently are to aggressively reduce our emissions. On the contrary, despite Tasmania's enormous head start and unparalleled natural advantages, we were the only state or territory in the nation to record an **increase in both net and absolute emissions**.

In short, we can't be complacent and put our feet up. There are two reasons for this.

The first is that, as both [we](#) and [other independent analysts](#) have argued, the rate at which carbon is sequestered in Tasmania's forests and soils will slow as young, fast-growing plantations and managed native regrowth forests mature. The risks of relying on our forests and soils to maintain net-zero are exacerbated by land clearing and the increased likelihood of severe bushfires as our climate becomes hotter and drier.

The second reason is that the developing and adopting low- and zero-carbon technologies and processes is critical for Tasmania's exports and future prosperity in an increasingly carbon-conscious world. Our aim should be to build on our net-zero status and commit to delivering negative emissions in the years ahead to establish Tasmania as an innovative, sustainable, and prosperous economy that can provide an example to the world on climate action.



UNIVERSITY of 
TASMANIA

Update prepared by the
**Tasmanian Policy
Exchange**

www.utas.edu.au/tpe