



UNDERSTANDING CARBON EMISSIONS AND TARGETS TO SUPPORT TYRE RECOVERY IN AUSTRALIA

For tyre reprocessors, remanufacturers
and end-users seeking to manage their
carbon contributions



Australian
Government
Accredited
Product
Stewardship
Scheme



TyreStewardship
AUSTRALIA

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This document can also be accessed on our website www.tyrestewardship.org.au

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TSA's purpose is to drive sustainable outcomes for end-of-life tyres (EOLT).

Our vision is a circular economy for EOLT which contributes to a sustainable society.

Our mission is to collaboratively ensure the sustainable management, recycling and productive use of EOLT.

THE ROLE OF TYRE STEWARDSHIP AUSTRALIA IN EMISSIONS REDUCTION

Tyre Stewardship Australia (TSA) is an industry-led group formed to implement the national Tyre Product Stewardship Scheme, which seeks to help develop new markets for end-of-life tyres (EOLT) and improve EOLT outcomes in an environmentally-sound way. TSA envisages a circular economy for EOLT, contributing to a more sustainable society.

TSA and the tyre industry want to minimise emissions and work with the EOLT sector to better understand their carbon emissions.

Greenhouse gas emissions and relevant targets

1

Worldwide awareness of climate change and its implications is growing, with more countries adopting the Paris Agreement. Key to the Paris Agreement is limiting increases in global average temperature to well below 2°C above pre-industrial levels, preferably to 1.5°C – this will require the world to reach net zero emissions by mid-century.

Locally, the Commonwealth Government has passed the *Climate Change Act 2022* committing Australia to reduce its emissions by 43% (compared to 2005) by 2030, along the way to achieving net zero emissions by 2050. The Commonwealth has a growing range of policies, programs and regulations to reach these goals.

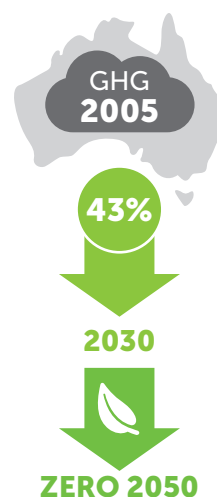
Two key examples of policies are:

The Safeguard Mechanism

Currently, under the Safeguard Mechanism, Australia's largest greenhouse gas (GHG) emitters (**those that emit >100,000t CO₂-e in a financial year**) are required to keep their net emissions below an emissions baseline set by the Clean Energy Regulator.¹

The National Greenhouse and Energy Reporting (NGER) scheme

This is a national framework for reporting and sharing company information about GHG emissions, energy production and energy consumption. Under the NGER scheme, **organisations with emissions over 50,000t CO₂-e** report them (with ongoing record keeping, auditing, monitoring and compliance obligations).²



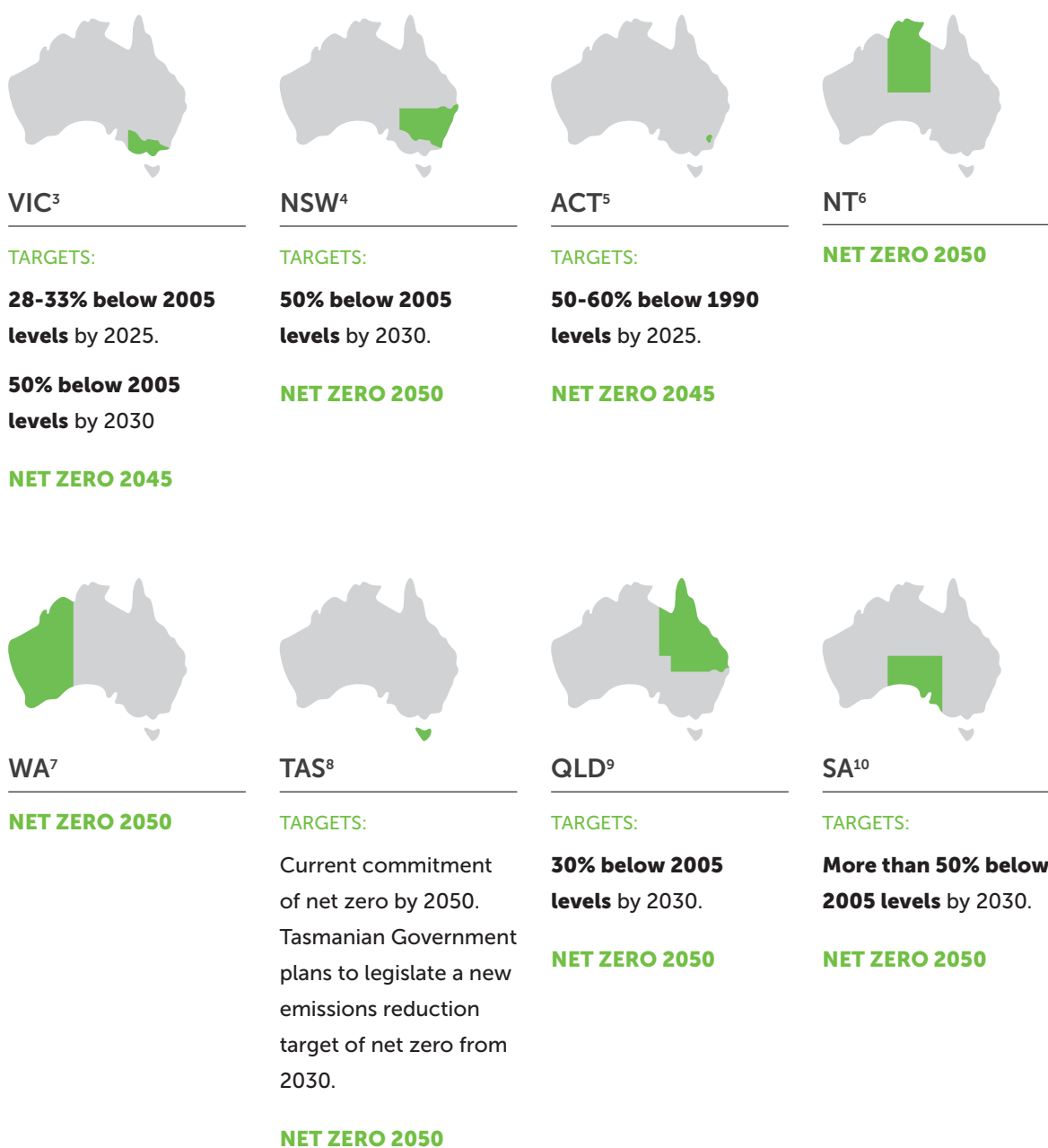
State and Territory reduction targets

Each State and Territory also has its own reduction targets, along with policies, programs and regulations that aim to achieve these goals. Figure 1 below sets out the States' and Territories' high-level emission reduction targets.

Rising public awareness

Along with government initiatives, rising consumer and investor awareness of climate change is increasing demand for corporate action. Eventually every business in Australia and around the globe will play a role in the transition to net zero emissions.

Figure 1: State and Territory Emissions Reduction Targets



What are scopes of emissions?

2

Three 'scopes' of emissions are defined to help create clarity and improve transparency for GHG accounting and reporting purposes, distinguishing them based on their source.

The GHG Protocol¹¹ defines them as:

Scope 1: Direct GHG emissions

Direct GHG emissions from sources that are owned or controlled by the company

Scope 2: Indirect (electricity) emissions

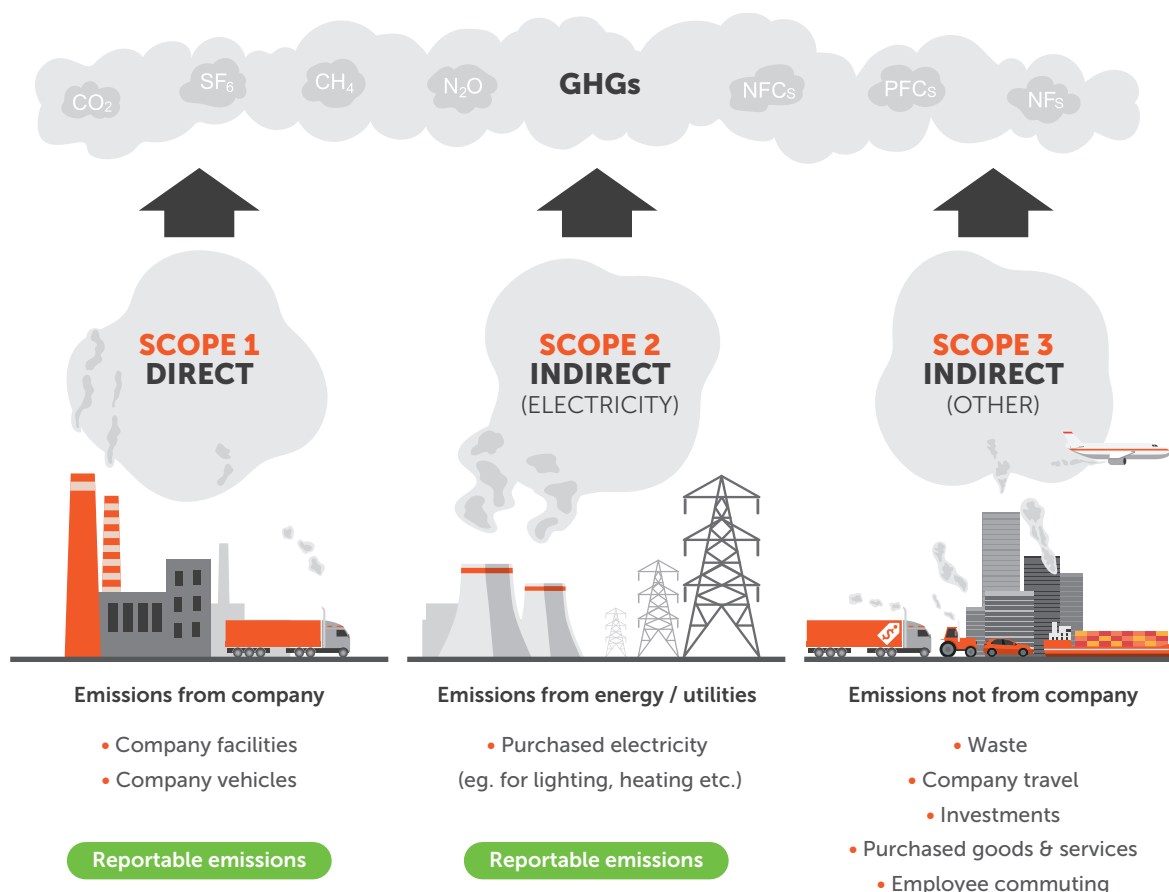
Indirect electricity-related emissions that account for GHG emissions from the generation of purchased electricity consumed by the company

Scope 3: Other Indirect GHG emissions

Other indirect emissions that are a consequence of the activities of the company but occur from sources not owned or controlled by the company

Scope 1 and 2 emissions are reportable, but scope 3 is not (but can be if an organisation chooses to). Figure 2 below illustrates the different scopes, examples of what they might include and their reportability.

Figure 2: Scope 1, 2 and 3 emissions.



Global action from the tyre industry

3

GHG emissions arise throughout the tyre value-chain, with emissions arising from:

- ▶ Production of raw materials
- ▶ Energy use during manufacturing
- ▶ Fossil fuel consumption in transport

There is a range of emissions associated with EOLT fates, including from landfilling, transportation and processing into tyre-derived products (TDP) and tyre-derived fuel (TDF).

Actions being taken by tyre companies include:



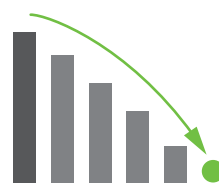
Emissions reduction targets

Many companies aspire to be carbon neutral by 2050 or earlier, alongside interim targets. Some set targets that are certified by the Science-Based Targets Initiative to confirm they're aligned with the latest climate science on how to meet Paris commitments.



Joining international initiatives

Tyre companies are supporting broader initiatives that encourage action on carbon. One initiative is Re100, a global corporate renewable energy scheme bringing together hundreds of large businesses committed to using 100% renewable electricity.



Climate change strategies/policies

To support their emission reduction targets, many organisations design and implement strategies that set out pathways to achieve their targets, identifying the key actions required. These include favouring raw materials that produce lower emissions, improving energy efficiency, decarbonising manufacturing facilities, greening the transport sector, route optimisation to lower logistics emissions, optimising tyre technology to improve vehicle fuel efficiency, and changing to renewable energy sources.



Coordination

Globally, tyre industry participants are collaborating on carbon issues including joint advocacy and engagement with governments and public institutions, to develop policies that support the tyre sector to achieve its climate goals.



Product stewardship

Many tyre companies support the collection and recycling of EOLTs, leading to more sustainable fates for tyres, as well as working to reduce emissions from EOLTs.

Opportunities to measure and reduce GHG emissions

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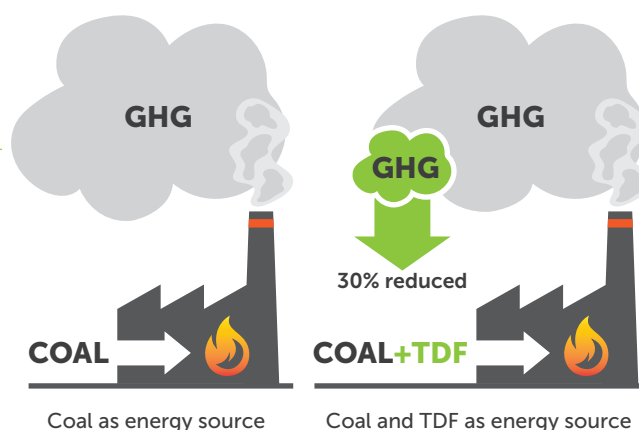
The first step in managing emissions is measuring them. TSA has worked with the NGER scheme to enable the EOLT sector to undertake carbon accounting. As a result, changes to the NGER scheme detail the opportunity to replace coal with TDF and reduce GHG emissions. The updates also create two new EOLT fuel types, allowing NGER reports to more accurately reflect emissions associated with tyre combustion¹².

TSA has worked with Edge Environment to identify opportunities for emissions savings for TDP compared to raw material alternatives. The Edge report sets out preliminary results on the potential benefits of EOLT use, that may reduce emissions compared to traditional raw material alternatives¹³.

Example reductions include ¹⁴:

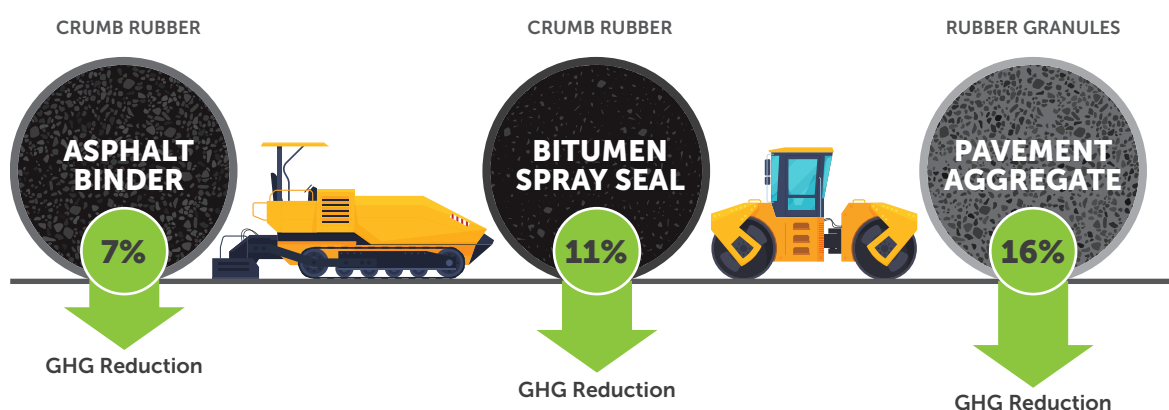
TDF used in combustion processes

- TDF has a higher calorific value than coal, so when partially substituted for coal as an energy source, GHG emissions would be around **30% less** than for the same energy input.



Crumb rubber used in roads and pavements

- Crumb rubber used as 15-20% of an asphalt binder in the wet process has a **7% improvement in GHG emissions** compared to an average polymer modified binder (PMB)
- Crumb rubber used as 15% of a bitumen mix sprayed seal has a **11% improvement in GHG emissions** compared to PMB spray sealed
- Rubber granules used as 15% of an aggregate mix for permeable pavements showed a **16% improvement in GHG emissions** compared to conventional permeable pavement aggregate



Pyrolysis products with the potential to replace raw materials

- Estimates for pyrolysis products indicate potential emissions reductions if partially replacing raw materials. As there are significant differences between all pyrolysis technologies and the quality of output products, emissions savings will be specific to each process and the post-production processing required to produce high value products. If pyrolysis technologies reach large scale commercialisation in Australia, businesses can assess any emissions reduction unique to their process.

What are carbon offsets and how are they managed?

5

As the global focus on reducing emissions grows, so too does interest in carbon offsets. Carbon offsets are used by organisations to compensate for emissions they've produced, thereby reducing their overall carbon footprints. Offset units are generated by projects that reduce, remove or capture emissions. Examples include reforestation, using renewable energy and improving energy efficiency. These GHG reductions can be used to compensate for emissions created elsewhere. Offsets are also described as carbon credits. In accordance with the emissions reduction hierarchy, it's well accepted that offsets should only be used as a 'last resort' carbon mitigation strategy once emissions avoidance, reduction and replacement measures have been exhausted.

Carbon offsets can be created under a range of different schemes, each with its own processes and methods. In Australia, the five typical schemes used are those covered by the Australian Government's Climate Active Carbon Neutral Standard. **These are:**

Australian Carbon Credit Units (ACCUs)¹⁵

ACCUs are regulated by the Australian government through the Clean Energy Regulator and are the most commonly created and traded units in Australia. ACCUs also tend to fetch a higher market price than the other schemes listed below. To comply, projects must meet several requirements, including that the carbon abatement is additional and that the project applies an approved methodology. There is a list of approved methodologies, while new methodologies can also be proposed for approval by Clean Energy Regulator.



Verified Emission Reductions (VERs)¹⁶

VERs are issued by international organisation, Gold Standard. Gold Standard also asks projects to meet certain requirements, such as contributing to sustainable development, and has its own set of approved methodologies.



Verified Carbon Units (VCUs)¹⁷

VCUs are issued by another international organisation, Verra, which has a validation and verification process to ensure the integrity of projects and methodologies. VCUs can also be given additional certifications where there are co-benefits such as biodiversity or community.



Two other offset schemes exist but units for these schemes can't be generated in Australia, they are:

Certified Emission Reduction Units (CERs), and **Removal Units (RMUs)**.

Could using TDP create opportunities to produce offsets?

The work with Edge Environment also identified that the comparative carbon savings from using TDP could create opportunities to produce offsets.

Edge identified VERs and VCUs as the most likely attainable credits for TDP¹⁸. To attain VCUs and VERs, project proponents would need to develop and submit an acceptable methodology for verification if there is no existing methodology for the project type¹⁹.

Possible steps for the Australian Tyre Industry to claim carbon offsets

6

If a tyre reprocessor or TDP remanufacturer were interested in exploring this opportunity, the steps are outlined below.

1. Assess financial viability of creating carbon credits

Carbon offset units tend to be issued on a project basis, and financial viability should be assessed on a case-by-case basis. Any potential revenue created by producing offsets will need to be weighed against the cost of establishing and maintaining an offset certification under the particular scheme. It's up to individual organisations to initiate the development of any new methodologies as they see fit.

2. Determine whether the proposed project fits within an existing methodology

There's currently no existing methodology for alternative waste processing covering EOLT and TDP²⁰. There's potential that TDP production could fit within existing alternative waste methods, but methodologies would need to be verified to confirm this.

Propose a new methodology (if required) and develop supporting evidence

If TDP producers can demonstrate their EOLT processing and TDP manufacturing activities reduce GHG emissions compared to conventional landfilling, they might be eligible to create VCUs²¹.

If producers can also identify specific additional benefits, they might be eligible to create VERs²².

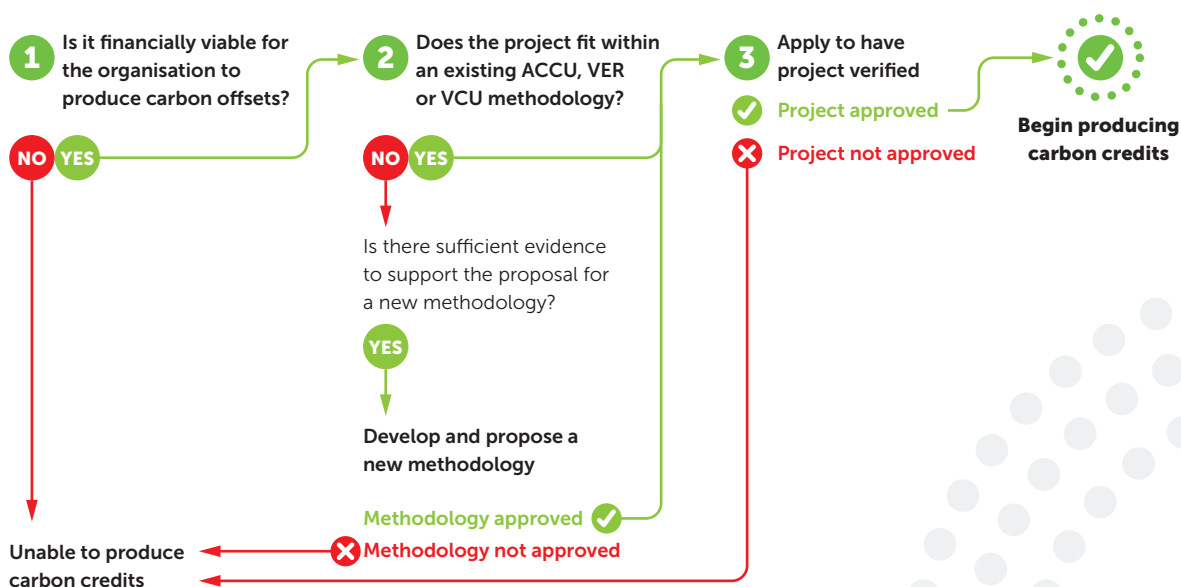
New methodologies can be developed and proposed, but the process can be lengthy. Carbon offset schemes tend to have high standards for approving new methods. For example, proposed VCU methodologies will be prioritised if they already have broad application, high climate change mitigation potential, support sustainable development, and are not associated with unmitigable social, environmental, legal, or regulatory risks²³. A high standard of evidence is needed to support the claim that an activity is creating meaningful emissions reductions.

TSA's role in this space is limited but may be able to assist partners by sharing existing data.

3. Apply to have project verified

If an organisation's project is verified, there will be ongoing monitoring and reporting requirements.

Figure 3: Carbon offset process flow.





Important considerations when making carbon claims

7

Using TDP or TDF may lower carbon emissions in certain applications when compared to fossil-fuel based alternatives, meaning some organisations within the EOLT sector could potentially claim their products create lower emissions when compared to conventional alternatives.

Along with growing global interest in reducing emissions, there's more attention being paid to 'greenwashing', where an organisation claims to create environmental benefits for marketing purposes but isn't doing what it claims²⁴.

When making carbon claims, organisations should:

- Ensure claims are accurate to avoid greenwashing
- Substantiate claims with evidence
- Follow rigorous carbon accounting standards based on the international Greenhouse Gas Protocol

More Information

8

For further information on carbon issues for EOLTs, please contact:

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1. For more information, see <https://www.cleanenergyregulator.gov.au/NGER/The-safeguard-mechanism>.
2. For more information, see <https://www.cleanenergyregulator.gov.au/NGER/About-the-National-Greenhouse-and-Energy-Reporting-scheme>.
3. https://www.climatechange.vic.gov.au/victorian-government-action-on-climate-change#toc__id_2_victoria%E2%80%99s.
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5. [https://www.climatechoices.act.gov.au/policy-programs/act-climate-change-strategy#:~:text=The%20ACT%20is%20committed%20to,from%201990%20levels\)%20by%202025](https://www.climatechoices.act.gov.au/policy-programs/act-climate-change-strategy#:~:text=The%20ACT%20is%20committed%20to,from%201990%20levels)%20by%202025).
6. <https://climatechange.nt.gov.au/nt-climate-change-response/northern-territory-climate-change-response-towards-2050>.
7. <https://www.wa.gov.au/service/environment/environment-information-services/western-australian-climate-change-policy#:~:text=The%20Western%20Australian%20Climate%20Policy,greenhouse%20gas%20emissions%20by%202050>.
8. https://recfit.tas.gov.au/climate/reducing_our_emissions.
9. <https://www.des.qld.gov.au/climateaction#:~:text=Queenslanders%20are%20taking%20strong%20action%20on%20climate%20change&text=We%20will%20deliver%3A,70%25%20renewable%20energy%20by%202032>.
10. <https://ghgprotocol.org/>.
11. <https://www.environment.sa.gov.au/topics/climate-change/south-australias-greenhouse-gas-emissions>
12. For more information, see <https://www.tyrestewardship.org.au/news/tsa-welcomes-new-changes-to-the-ngers-co2-emission-factor-for-tyres/>.
13. The Edge report is currently going through a peer review process to verify results and these results may change as a result.
14. Edge Environment 'Greenhouse gas emissions analysis of waste tyre recovery: Key findings' (2022), available at <https://www.tyrestewardship.org.au/wp-content/uploads/2022/07/GHG-Emissions-Analysis-of-Waste-Tyre-Recovery.pdf>, p 11-14.
15. <https://www.cleanenergyregulator.gov.au/OSR/ANREU/types-of-emissions-units/australian-carbon-credit-units>.
16. <https://www.goldstandard.org/articles/gold-standard-emission-reductions>.
17. [https://verra.org/programs/verified-carbon-standard/verified-carbon-units-vcus/#:~:text=Under%20the%20VCS%20Program%2C%20projects,e\)%20achieved%20by%20a%20project](https://verra.org/programs/verified-carbon-standard/verified-carbon-units-vcus/#:~:text=Under%20the%20VCS%20Program%2C%20projects,e)%20achieved%20by%20a%20project).
18. Edge Environment 'Greenhouse gas emissions analysis of waste tyre recovery: Detailed report' (2022), p 75-76.
19. Ibid.
20. P 75.
21. Ibid.
22. P 76.
23. VERRA 'Methodologies', available at <https://verra.org/methodologies-main/>.
24. For more information see TSA's Greenwashing Brief for Stakeholders, coming early 2023.



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Tyre Stewardship Australia's National Tyre Product Stewardship Scheme has been recognised as best practice product stewardship by the Federal government. The accreditation, under the government's new Recycling and Waste Reduction legislation, provides independent verification of the Scheme's positive environmental and human health outcomes and will help TSA expedite the markets, funding and solutions associated with end-of-life tyres.