

DECARBONISING WESTERN AUSTRALIA AND OUR TRADING PARTNERS

SEPTEMBER 2024

WESTERN AUSTRALIAN
TREASURY CORPORATION

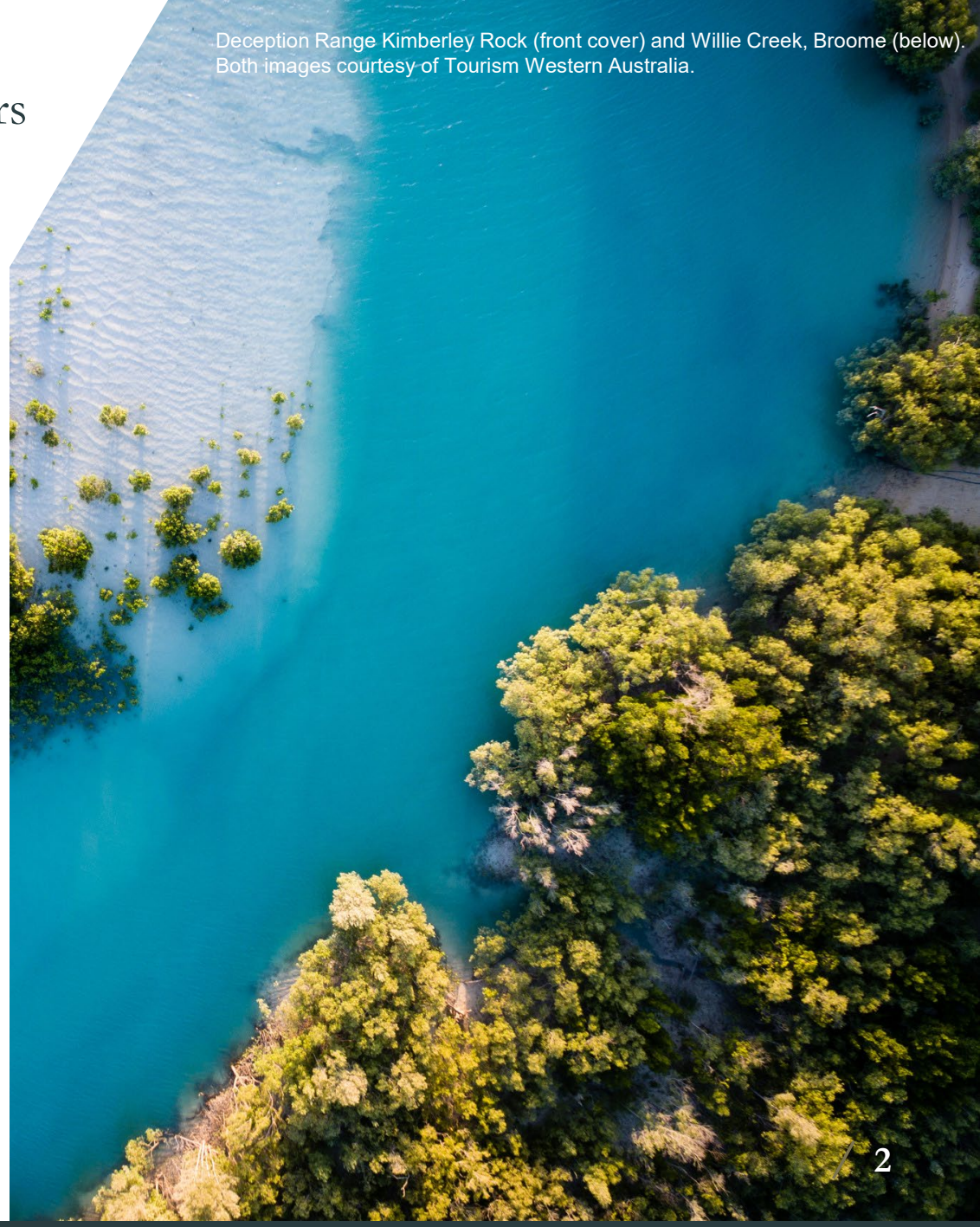
Financial Solutions
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Western Australians

Decarbonising Western Australia and Our Trading Partners

Foreword

This investor focused publication seeks to provide holistic insight on how the Western Australian Government and industry are mobilising to transition the State and our trading partners towards a net-zero future. It seeks to complement the ESG disclosure series Supporting Continuous Improvement in ESG Outcomes for Western Australia and Western Australian Treasury Corporation's Sustainable Finance Program.

For Western Australia, as a large and resource rich jurisdiction, the transition represents a multi-decade investment opportunity to secure a sustainable energy system and foster carbon-competitive industries in a climate-resilient future. Pursuing opportunities that facilitate both global and local emissions reduction, however, means our decarbonisation pathway will be different to that of other jurisdictions.



Deception Range Kimberley Rock (front cover) and Willie Creek, Broome (below). Both images courtesy of Tourism Western Australia.

Data convention: All annual figures for Australian or Western Australian data points relate to the financial year ending 30 June unless otherwise stated.

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4 **Government leadership** and collaboration with Industry that is facilitating Western Australia’s progress towards decarbonisation.

5 **Appendix** detailing the Western Australian Government’s key strategies and supporting actions driving decarbonisation.



Whale Shark, Ningaloo Reef.
Image courtesy of Tourism Western Australia.



Sugarloaf Rock at Leeuwin-Naturaliste National Park.
Image courtesy of Tourism Western Australia.

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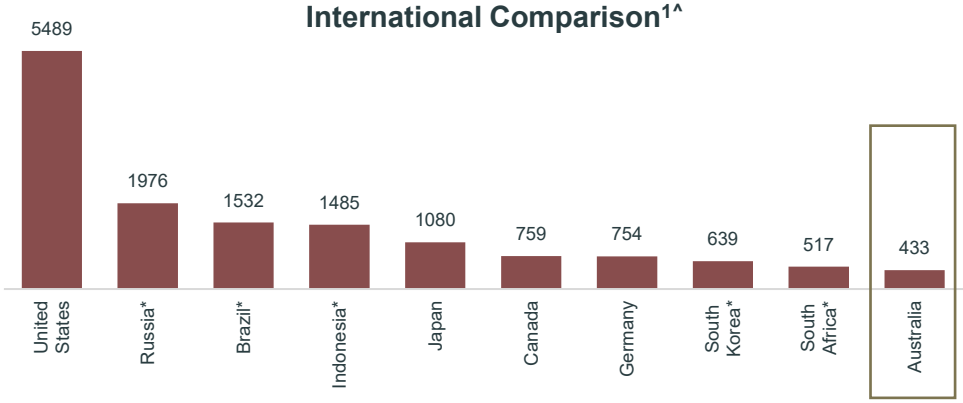
Emissions profile of Western Australia and governance framework to achieve net zero

Western Australia has a unique role in the Australian economy that impacts its existing emissions profile – and is developing a comprehensive legislated governance framework to achieve net zero by 2050.

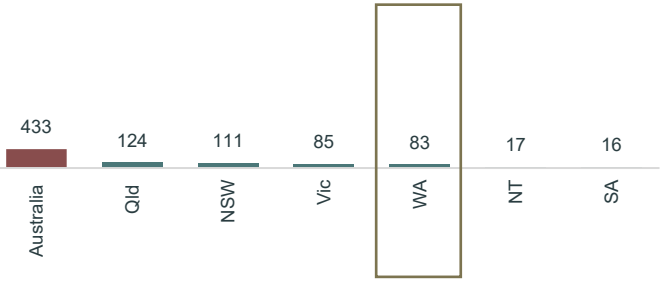
Western Australia's emissions profile compares favourably to other export orientated resource intensive economies

Total Emissions (mt CO_2-e) - 2022

International Comparison[1^]

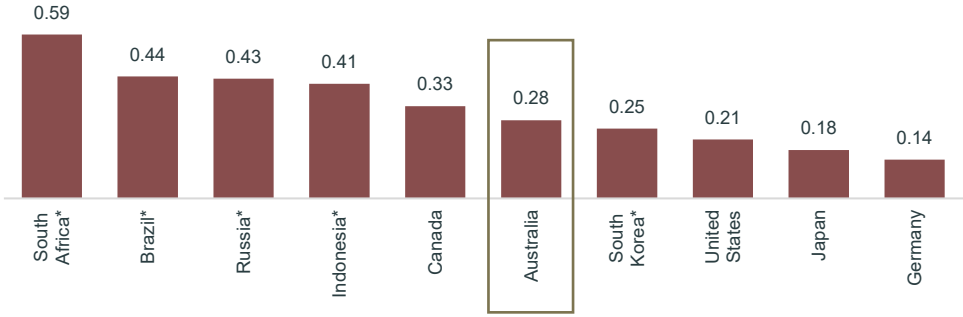


Australia and its States and Territories[2]

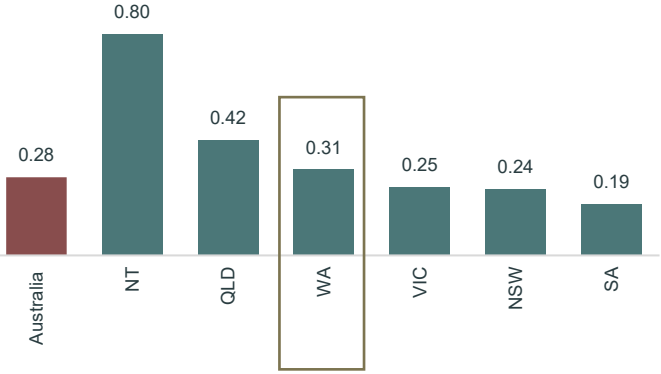


Emissions Intensity (kgCO_2-e / US$ GDP or GSP on a Purchasing Power Parity Adjusted Basis) - 2022

International Comparison[3]



Australia and its States and Territories[3,4]



Western Australia is responsible for 56% of Australia's resources exports but has an emissions intensity close to the Australian average.

Western Australia has a land mass seven times the size of Germany but a sparsely distributed population of only 3 million. As such, emissions intensity based on economic output should be used as a comparative measure across economies, rather than emissions per capita which has limited relevance.

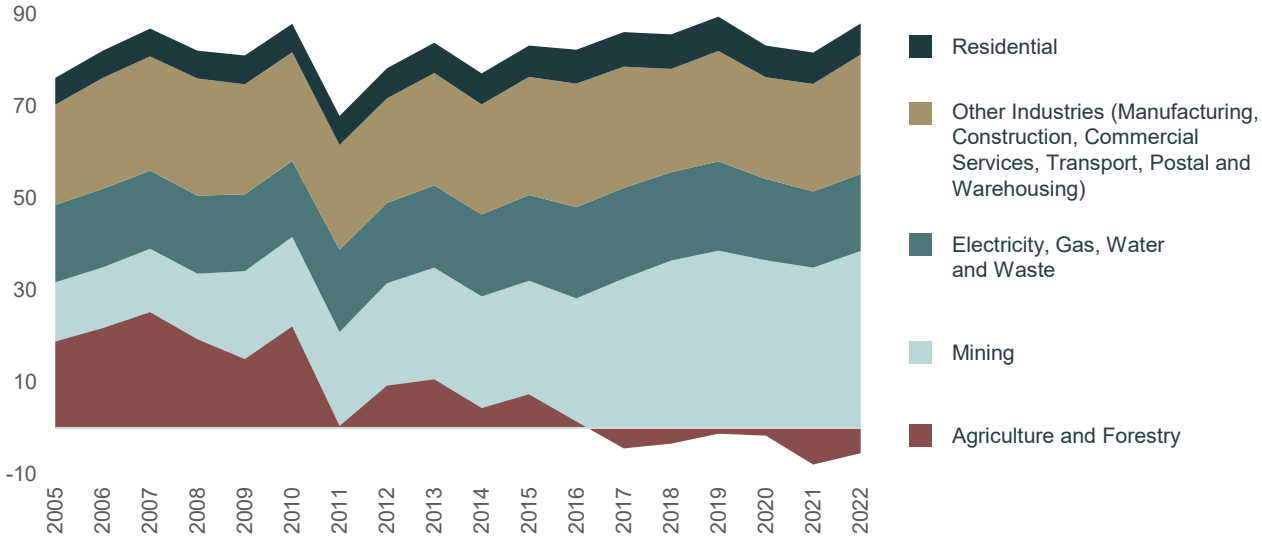
Australia has robust reporting and accounting of emissions and is continually improving estimation methods.

Sources: [1] OECD Greenhouse gas emissions inventories | Total emissions except Russia, Brazil, Indonesia and South Africa from Climate Watch World | Total including LUCF | Greenhouse Gas (GHG) Emissions | Climate Watch (climatewatchdata.org). [2] Australia's National Greenhouse Accounts | Emissions by state and territory. [3] Emissions intensity calculated using IMF estimates of PPP adjusted GDP Report for Selected Countries and Subjects (imf.org). [4] Australia's National Greenhouse Accounts | Emissions per dollar of PPP adjusted GDP/GSP calculated using ABS state accounts.
Notes: * 2021 – latest available from source. ^ comparison country selection guided by RBA research (2013) on comparable resource-exporting countries, OECD countries with significant trade in energy and key Western Australian trade partners.

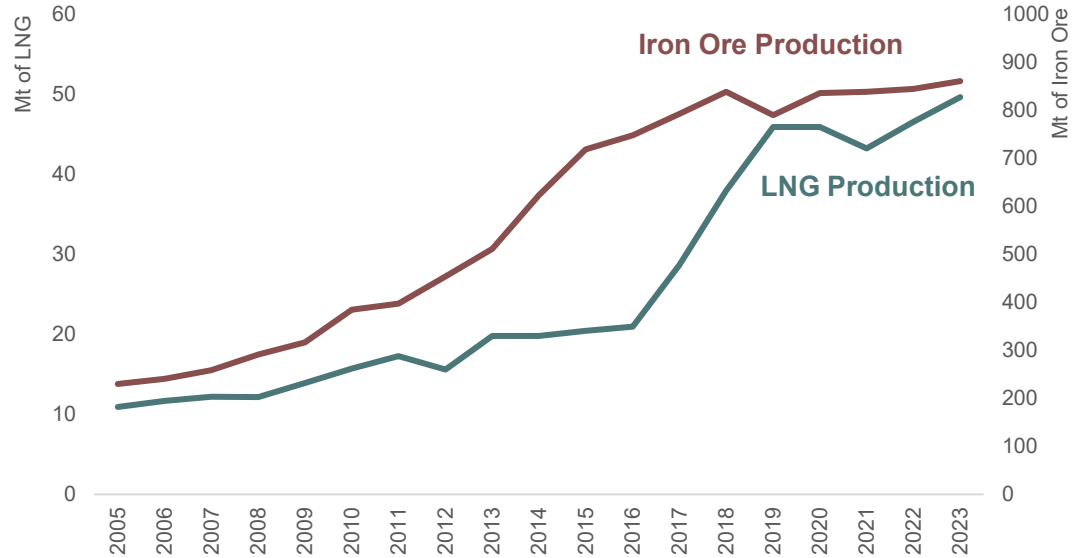
Western Australia's key mining industries have expanded rapidly since 2005 to support our trading partners, this has significantly impacted the level of mining emissions relative to other sectors

Western Australian Emissions by Industry 2005 – 2022 (mt CO_2-e)[1]

Note: Industry categories are individual or grouped by Australia and New Zealand Standard Industry Classification.



Western Australian LNG and Iron Ore Production Volume 2005 – 2023 [2]

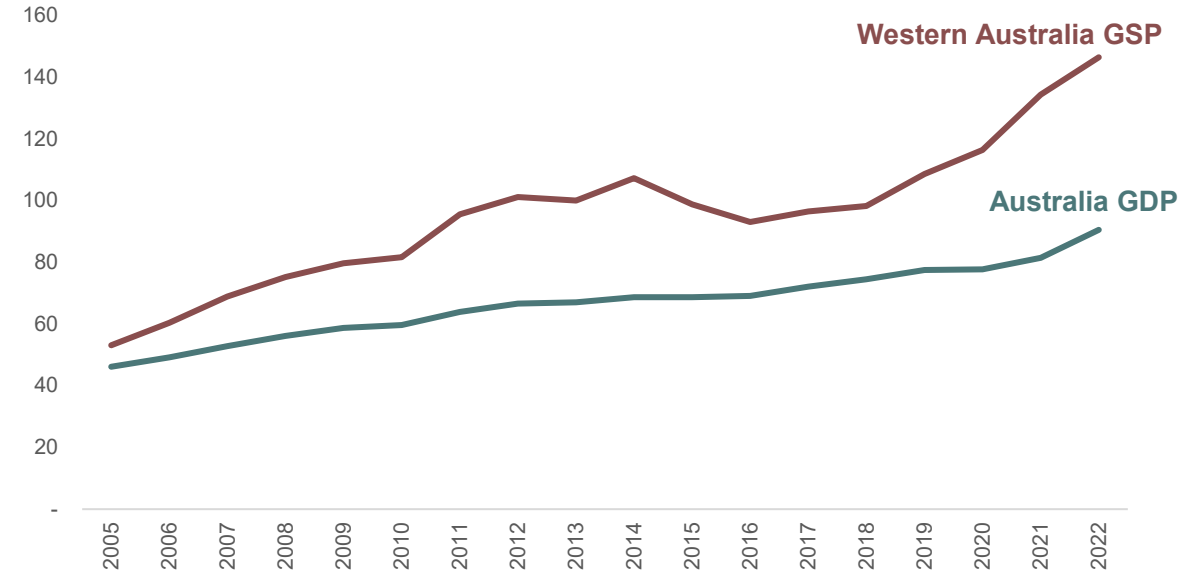


- Western Australia’s volume of production for iron ore and LNG has quadrupled since 2005 to become the world’s largest supplier of iron ore and in the top three of global LNG exporters, critical in supporting infrastructure development and energy security of our trading partners. The mining industry now accounts for 45% of Gross State Product.[1]
- The share of Western Australia’s total emissions attributable to mining industry production has grown from a sixth in 2005 to just under half in 2022. This will significantly impact making meaningful comparison of Western Australian future emission reduction targets relative to other economies where the 2005 baseline is used.[1]
- Since 2016, carbon sequestration associated with land use, land use change and forestry has more than offset emissions produced by the agriculture sector.[1]

Sources: [1] Australia's National Greenhouse Accounts: Emissions inventories by economic sector. [2] Major Commodities Resource Data.

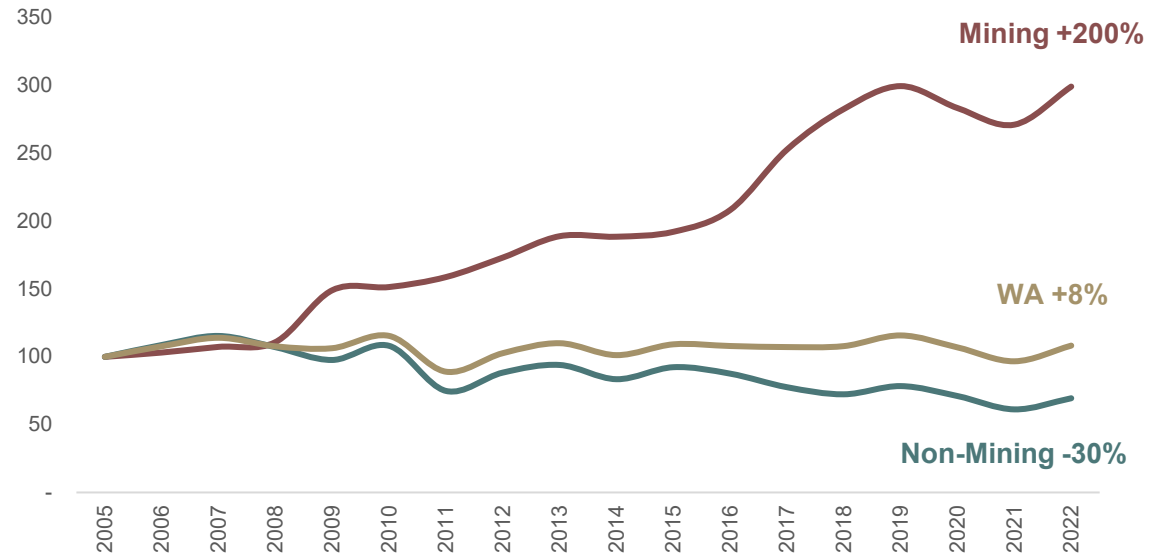
Long-term growth of the resources sector has driven Western Australian total output and emissions whilst progress has been made in reducing non-mining emissions

Gross Domestic (State) Product (GDP / GSP) Per Capita[1]



Change in Western Australian Emissions – Mining vs Non-Mining[2]

Note: rebased to 100 at 2005 level



WA GSP per capita is 60% higher than national GDP per capita primarily due to significant growth in the mining industry over the past 20 years that is primarily responsible for the overall increase in Western Australian total emissions since the 2005 baseline.

WA's emissions aggregated across all other sectors have decreased by 30% since 2005, representing solid progress on decarbonisation consistent with non-resource intensive economies. It is acknowledged that absolute reductions in emissions within WA have primarily come from change in land use.

Sources: [1] ABS Australian National Accounts: State Accounts Table 1. Gross state product per capita current prices. [2] Australia's National Greenhouse Accounts: Emissions inventories by economic sector.

Western Australia is implementing strategic governance structures and policies to drive decarbonisation of its economy and provide certainty to key stakeholders

The State Government introduced the Climate Change Bill 2023 to Parliament in November 2023 to contribute to national and global goals for decarbonisation, provide certainty for businesses, and attract the investment required to transition to a net-zero economy.

Western Australian Climate Change Bill – Decarbonisation Specifics

Western Australian Economy

- **Expectation to set a 2035 emissions reduction target during 2025–26**
- **Net zero 2050**

State Government Direct Emissions

- **80% emissions reduction target between 2020–2030**
- **Net zero 2050**

Overview

- Climate Change Bill expected to be passed through Parliament and legislated as the Climate Change Act by end of 2024.
- Requires interim emission reduction targets to be set for the Western Australian economy as a whole and State Government direct emissions.
- The State Government target will apply to government operations, including government trading enterprises that own and operate energy intensive infrastructure such as electricity generation, public transport and water utilities.
- Requires setting of five-yearly emissions budgets as well as point targets.

Targets

- A net-zero emissions target by 2050 for WA total emissions and State Government direct emissions.
- An interim 2030 target for the State Government.
- Interim targets for 2035, 2040, 2045 and 2050 for WA and the State Government, which will be published as soon as practicable after the Federal Government sets Australia's Nationally Determined Contribution under the Paris Agreement for the target year.
- An emissions budget for WA for each target year and the four preceding years.

Accountabilities

- The Minister for Climate Action to report annually to parliament on WA's net emissions and progress against the emissions reduction targets.
- The legislation will require the State Government to develop an emissions reduction strategy covering all sectors of the economy to support achieving the targets. The inaugural strategy, to support achieving 2030 (State Government only) and 2035 targets, will be required within three years of the legislation passing.
- Ministerial Taskforce on Climate Action has responsibility for overseeing implementation and monitoring progress on the effective delivery of State policies on decarbonisation.



Shark Bay World Heritage Area.
Image courtesy of Tourism Australia.

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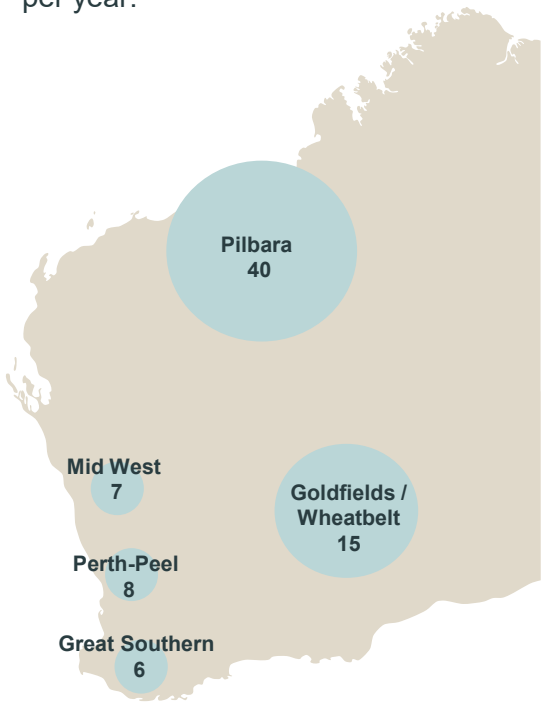
Decarbonisation drivers and engagement with trading partners

Western Australia’s economic activity is already playing a key role in supporting our trading partners' decarbonisation and large investments in renewables will progressively decarbonise domestic production.

The Safeguard Mechanism requires that from 2023 Western Australia's largest emitters, concentrated in mining, reduce their baseline emissions by at least 4.9% p.a.

Safeguard Mechanism[1]

Commencing from 1 July 2023, the Federal Government *Safeguard Mechanism* legislates that Australia's highest greenhouse gas emitting facilities (> 100,000 tCO_2-e per year) must reduce their net emissions baseline by a minimum of 4.9% per year.*



~35% Over one third (76) of Australia's largest emitters are located in WA^

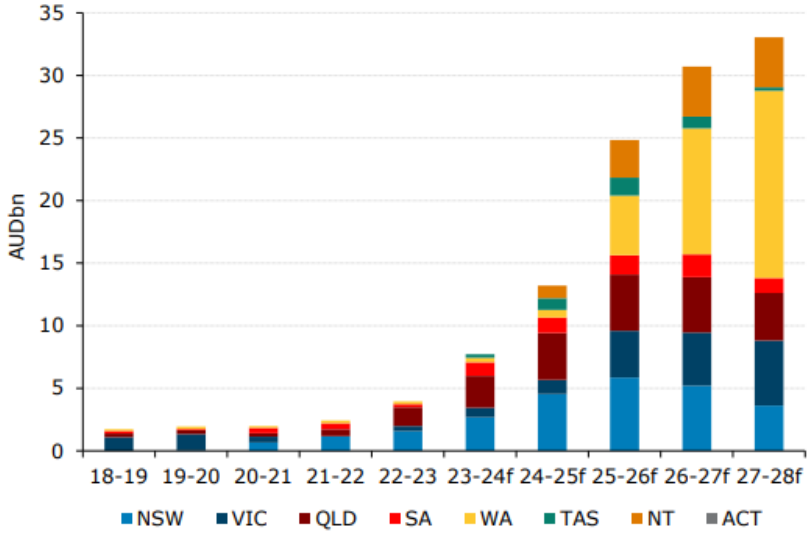
49% of WA's total emissions are from Safeguard Mechanism facilities

85% of WA's emissions from Safeguard facilities are in the Mining sector

Industry Response

- Western Australia's mining industry is well positioned to decarbonise its operations, given its endowment of natural resources, balance sheet strength of its key entities and experience in delivering large scale transition across supply chains and investments.
- Western Australia's top 10 emitters (82% of WA's Safeguard emissions) each have net zero by 2050 commitments, with many including detailed interim targets and extension to scope 3 commitments.[2]
- These commitments are being supported by forecast capital expenditure on decarbonisation initiatives, including direct investment in renewable energy to support mining operations.

Renewables Major Project (>AU$500m) Pipeline by State – WA by far the Largest[3]



Sources: [1] Safeguard Emissions Data 2022–23 – Clean Energy DCCEEW. [2] Safeguard entities websites. [3] ANZ, Australian Major Projects: pipeline to peak in 2025–26, 31 October 2023.
Notes: * 'Baseline' is assuming constant production based on previous year's output, can be complied with by applying eligible carbon offsets.
^Approximate grouped location of Safeguard facilities, noting several are located offshore.

Western Australia produces more than half of Australia's gas – thereby having the primary role in delivering Australia's Future Gas Strategy

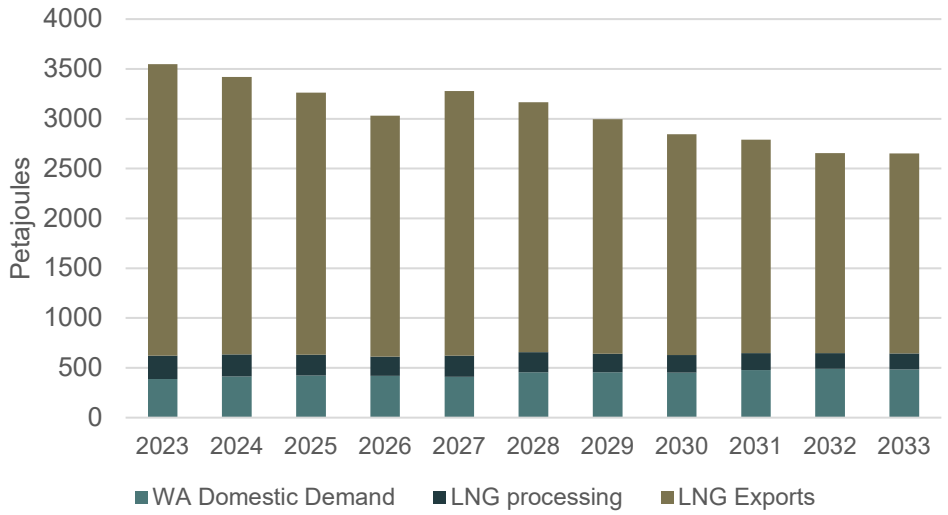
The Role of Western Australia's Gas and Impact on Emissions Profile



The Australian Future Gas Strategy outlines the important ongoing dual-role gas will play in providing energy security for Australia and its trading partners, as well as supporting the transition to net zero.

- 60% of Australia's LNG is exported from WA, where production has quadrupled since 2005. Together with the impact of fugitive emissions and domestic consumption, gas contributes around half of Western Australian emissions.
- These dynamics will materially impact WA's ability, in the medium term, to set emissions reductions targets from the 2005 baseline at the same rate as Australia's commitments under its Nationally Determined Contribution.
- Decarbonising gas production, storage and usage is a key focus of collaboration between the WA Government and industry and will require application and advances in CCUS and electrification, underpinned by the requirements of the Safeguard Mechanism.

Western Australia Total Gas Demand Forecast[1]



Sources: [1] Adapted from AEMO 2023 WA GSOO Data Register - Figures (Expected Case). [2] S&P Global, 12 January 2023.

Impact on Trading Partners

Export demand projections demonstrate WA LNG will play a vital role in providing a reliable supply of electricity and grid stability as renewable power sources become a larger part of the energy mix amongst our trading partners, particularly in Asia.

A reliable supply of LNG can reduce the carbon intensity of our region's energy mix, including by replacing more emissions intensive fuels like coal.

- For example, South Korea, accounting for 13% of WA's LNG exports, will reduce reliance on coal through investment in renewables and nuclear, but also through the switching of 28 coal-fired power plants to LNG by 2036 as part of their *10th Basic Plan for Power Supply.*[2]

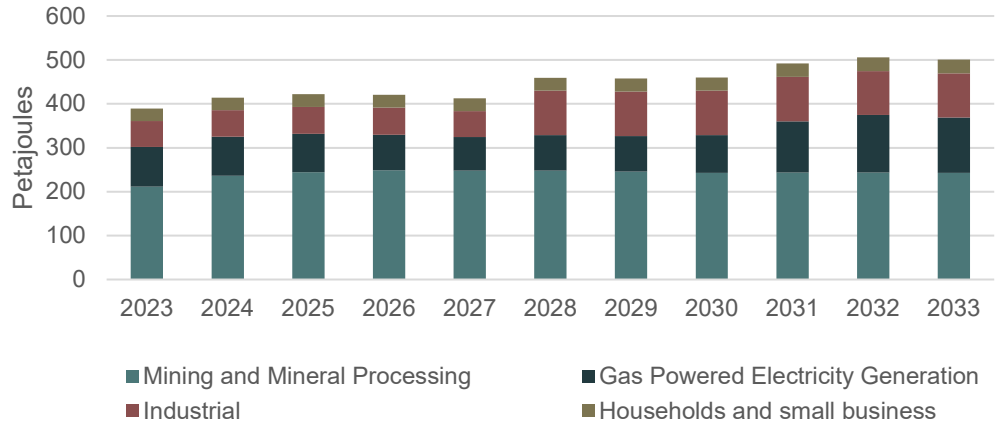
Domestically, gas plays a critical role in supporting mining, minerals processing, industrial use and electricity grid stability for renewables expansion, with each of these key drivers of the WA economy

Key Drivers of Domestic Gas Demand

WA is the largest consumer of gas in Australia (~43%[1]), primarily in support of mining operations, including for critical decarbonisation minerals such as lithium, and industrial processes. Electrification will support decarbonisation, however limited other commercially viable substitute technologies are anticipated to emerge in the short-term, requiring ongoing use of gas in these sectors.

Gas will play an important role as a firm and flexible energy source as WA's electricity systems transition to high levels of renewables to support decarbonisation of industry. Gas firming will facilitate the phased closure of state-owned coal-fired power stations by 2030.

Western Australia Domestic Gas Demand Forecast[2]



Carbon Capture, Utilisation and Storage (CCUS)

CCUS will have an important role to play in supporting the transition to net zero across three key areas:

1. **Decarbonising the gas industry**
2. **Decarbonising hard to abate industrial sectors**
3. **Supporting trading partners through carbon importing**

- WA is already home to the world's largest CCS initiative as part of Chevron's Gorgon LNG Project, which has captured and stored over 9.5 million tonnes of CO_2 to date.
- WA is well positioned to further develop this industry, given its existing technological expertise, geology and infrastructure. A CSIRO and GCCSI study into WA's CCUS potential identified that CCUS hubs have the potential to reduce emissions from gas by up to 27 mt p.a. and support development of hydrogen and ammonia industries.
- The WA Government has passed legislation to support the CCUS industry by enabling the transport and storage of greenhouse gases, as well as enabling exploration for naturally-occurring hydrogen. It has also committed to developing a CCUS Action Plan with associated industry development funding, which aims to:

Accelerate deployment of proven CCUS technology

Support research into new CCUS technology

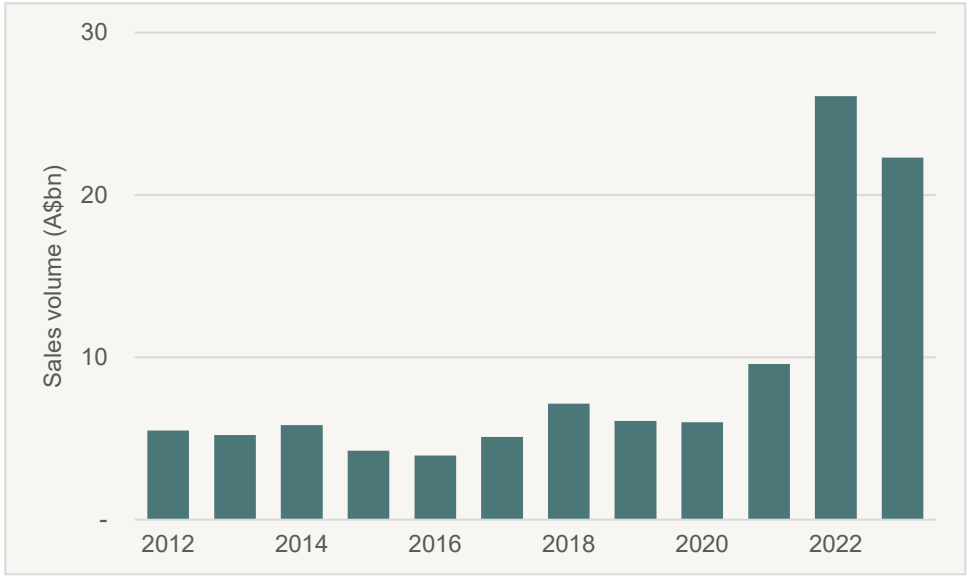
Attract investment in CCUS

Sources: [1] Australian Government, Future Gas Strategy Analytical Report. [2] Adapted from AEMO 2023 WA GSOO Data Register - Figures (Expected Case).

Western Australian critical mineral production is already a major enabler to trading partners' decarbonisation

Critical minerals are fundamental to the energy transition both nationally and globally. WA is uniquely placed to maximise this opportunity as the world's largest lithium supplier and as a leading producer of other critical minerals including cobalt, nickel, manganese and rare earth elements.

Western Australian Battery and Critical Mineral Production[1,2]



Includes sales of lithium, nickel, cobalt, manganese, copper metal and rare earth elements. Note sales data for manganese and rare earth elements was classified as not for publication in some years.

WA Global Ranking	Critical Mineral	WA Market Share (global)
#1	Lithium	52.9%
#2	Alumina	9.9%
#3	Rare earth oxides	9.6%
#3	Zircon	16.0%
#4	Cobalt	3.1%
#5	Nickel	4.7%
#6	Manganese	2.5%

Figures are for 2023. Market share data from WA Mineral and Petroleum Statistics Digest 2022–23.

Renewable Energy and Clean Technology Uses

- Electric vehicles
- Batteries
- Wind turbines
- Solar photovoltaics (PV)
- Hydrogen electrolysers

Recognising the importance of international partnerships in global decarbonisation efforts, the Western Australian Government is working with the Australian Government and its trade and investment offices to foster international partnerships, attract investment, and promote diversified and ethical supply chains.[3]

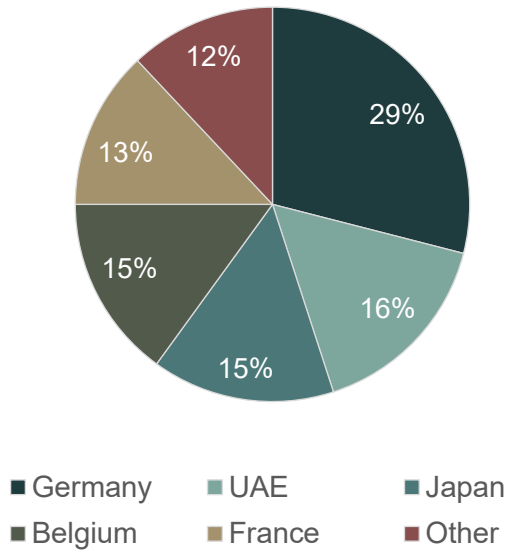
Sources: [1] WA 2023 Major Commodities Resource Data File. [2] WA Mineral and Petroleum Statistics Digest 2022–23. [3] WA Battery and Critical Mineral Strategy 2024–2030.

Western Australian agriculture is supporting decarbonisation of trading partners through the use of canola for producing biodiesel

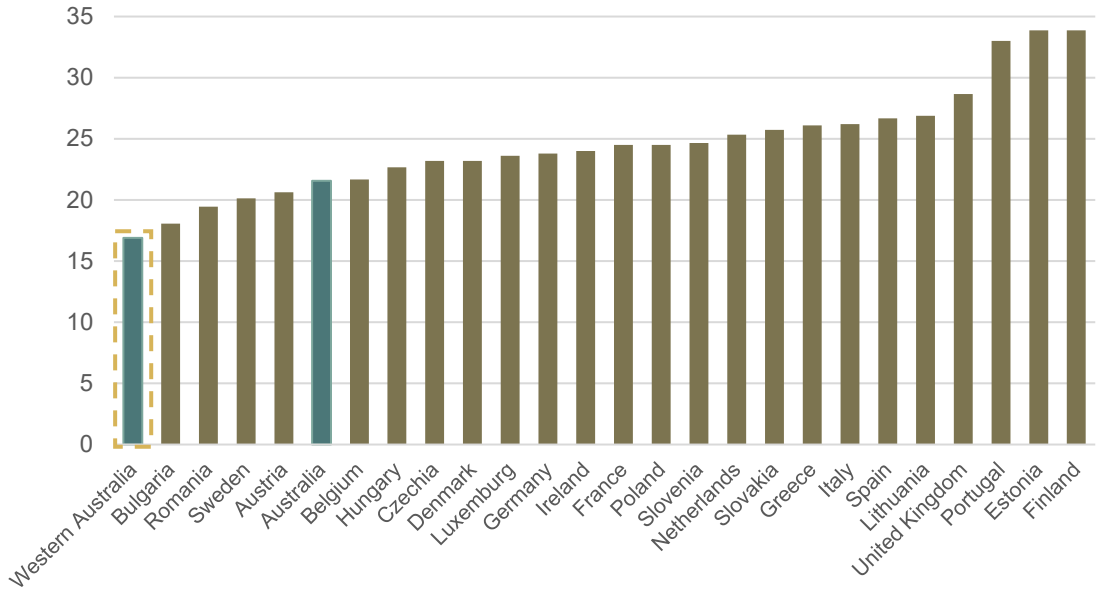
Canola is one of the major crops grown in WA's expanding grains industry that plays a key role in the food security of Australia and its trading partners. The State is also well positioned to play an important role in the biofuels supply chain over the long-term due to rising global demand for canola for use in the production of low emission biofuels.

WA is a major supplier of canola to the European Union biodiesel market, exporting over 1.8 million tonnes to EU countries annually,[1] accounting for approximately 62% of WA's production worth an estimated A$3 billion in 2021–22.[2] The low emissions intensity of WA's canola (16.9gCO_2-e/MJ)[1] positions it favourably in comparison to domestic supply in the European Union.

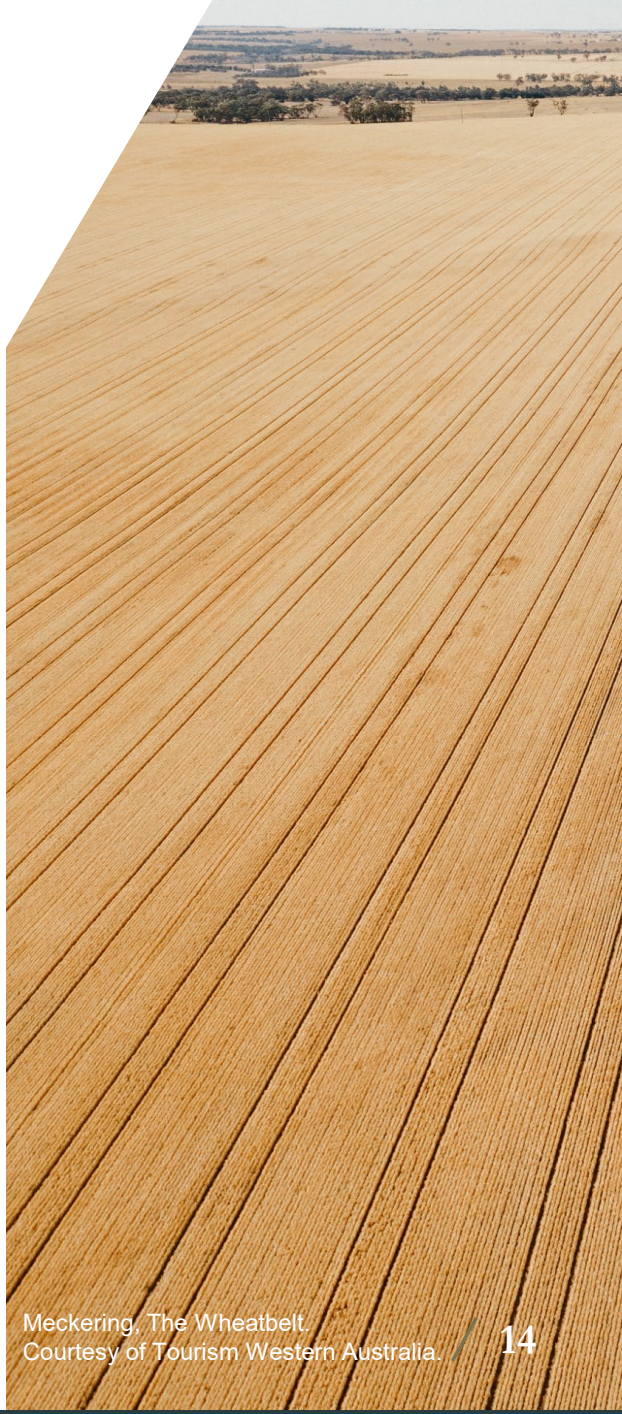
WA Canola Exports by Country (2022)



Emissions Intensity of Canola Production for Biodiesel (gCO_2-e/MJ)



Sources: [1] CSIRO, 25 September 2023. [2] WA Primary Industries 2021–22 Economic Overview.



Meckering, The Wheatbelt.
Courtesy of Tourism Western Australia.

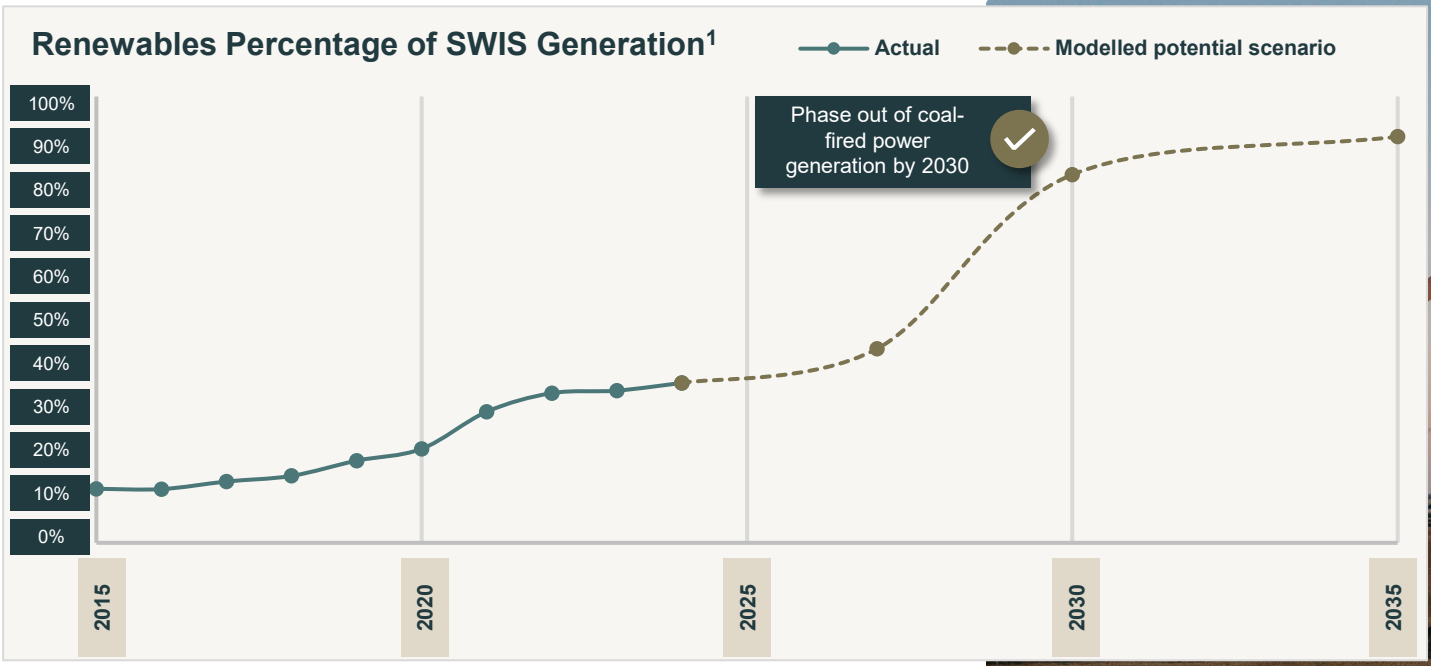
Transition to renewable electricity generation and electrification of industrial processes is the key driver of decarbonisation and investment commitments are mobilising rapidly

South West Interconnected System (SWIS)

The SWIS covers Perth and surrounding populous regions around the cities of Bunbury, Albany, Geraldton and Kalgoorlie, providing electricity to > 85% of Western Australia's resident population.



Renewables Percentage of SWIS Generation[1]



- Commitment to cease State owned coal-fired power generation by 2030 will see significant growth in renewable generation by 2030 – the State Government, currently responsible for approximately 50% of utility-scale SWIS generation, has already committed over $5 billion to commence this.
- Planning for significant increases in renewable generation capacity to support industrial electrification could see renewable generation exceed 90% by 2035 (based on WA Government modelling), supported by a significant expansion of private investment.

Sources: [1] Western Australian Government modelling appended to historical renewable generation data from AEMO.

Wind Farm, Merredin.
Courtesy of Tourism Western Australia.

Mobilisation of private capital for renewable energy expansion: SWIS region case studies

There are numerous industry led renewable projects in the pipeline in the SWIS region which, together with the State Government's investments, will drive the projected increase in renewable energy and facilitate electrification of industrial processes. Key case studies highlighting this significant commitment include:

Collie Battery[1]



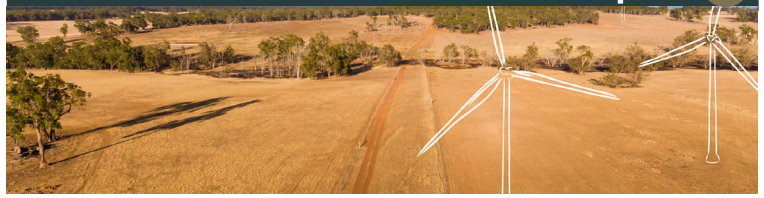
Production	Stage 1: October 2025 Stage 2: October 2026
Status	Construction on stage 2 began in May 2024.
Companies involved	Neoen
Renewable Type	Battery Storage
Indicative Total Investment	A$2 billion [External estimate[2]]
Storage Capacity	Stage 1: 219 MW / 877 MWh Stage 2: 341 MW / 1363 MWh Approved for: 1GW / 4 GWh
Key features	• Able to charge and discharge 20% of the average demand in the SWIS • Neoen's first 4-hour long duration battery and its first major project in WA • Strong engagement with local council

Kondinin Wind and Solar Farm[3]



Production	Expected from 2027
Status	Pre-Final Investment Decision phase, Stage 1 of the wind farm is expected to begin in 2025 (pending Final Investment Decision)
Companies involved*	Shell Energy Foresight Group
Renewable Type	Solar, Wind and Battery
Indicative Investment	A$250 million [External estimate[4]]
Renewable Capacity	Wind: 250 MW Solar: 60 MW
Key features	• The electricity produced will flow directly into the existing Kondinin substation • The project has involved extensive community consultation with the Kondinin community and other stakeholders

Ambrosia Wind Farm - Moodiarrup[5]

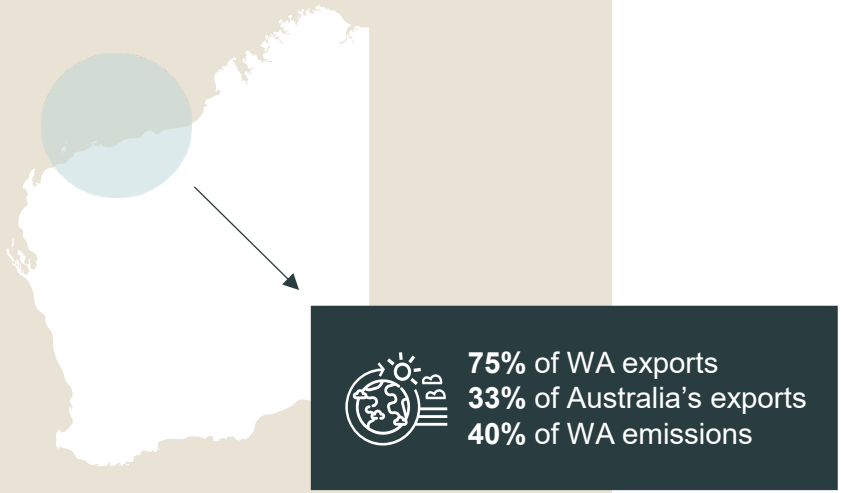


Production	Late 2028
Status	Construction targeted to commence in late 2026
Companies involved	Green Wind Renewables In Partnership with Aula Energy
Renewable Type	Wind
Total Investment	A$1.4 billion
Renewable Capacity	~600 MW
Key features	• ~100 wind turbines • Can supply enough electricity to power ~300,000 WA homes • Expected to offset ~1Mt CO_2 annually. • Will be the biggest wind farm in Western Australia, 3 times the size of any wind farm currently connected to the SWIS

Sources: [1] Collie battery. [2] ABC Energy News: Collie Battery. [3] Kondinin Wind and Solar Project. [4] Energy Magazine, February 2019. [5] Ambrosia Wind Farm.
Note: * Shell Energy and Foresight Group acquired the rights for this project from Lacour Energy and Goldwind in October 2022.
Images of Collie Battery and Ambrosia Wind Farm courtesy of corresponding companies.

Decarbonising the Pilbara region through transition to renewables and its expansion to support electrification of mining processes is an enormous task but work has commenced supported by robust long-term plans and government partnership with industry

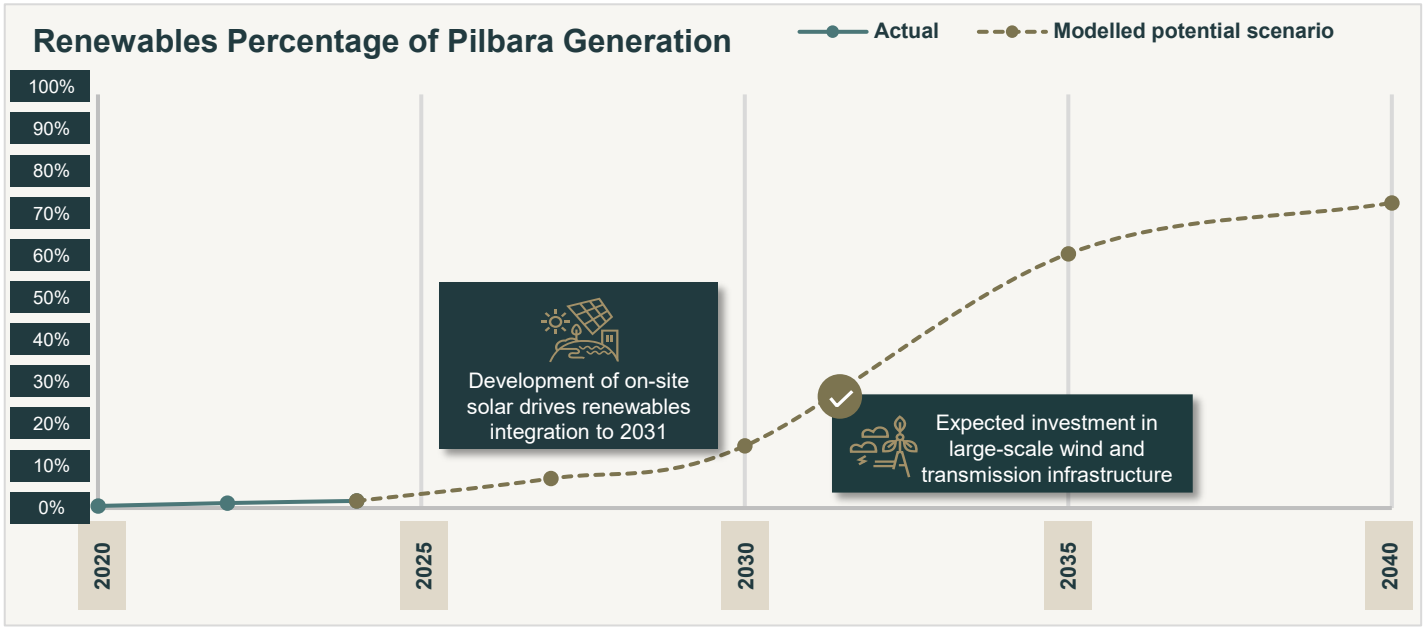
Pilbara Region



75% of WA exports
33% of Australia's exports
40% of WA emissions

Sources: Pilbara Development Commission, Sectoral Emissions Reduction Strategy (WA Government, December 2023).

Renewables Percentage of Pilbara Generation



Notes: * Independent modelling commissioned by the Western Australian Government, informed by views of industry representatives and publicly stated company targets.

At present:

- Highly decentralised (over two thirds of companies self-supplied).
- More than 95% generation from gas.

The future:

- Significant expansion of common user infrastructure from landmark agreement between industry and WA Government leading to the Pilbara Energy Transition Plan.
- Generation capacity to at least double by 2040 from renewables investment.
- Government funding support: up to $3 billion Federal and initial $148 million State.

Industry led renewable electricity generation projects: Pilbara region case studies

There are numerous renewable projects in the pipeline in the Pilbara region which will drive decarbonisation of the energy sources used in the mining industry – the majority of which will connect to an expanded common user network infrastructure.

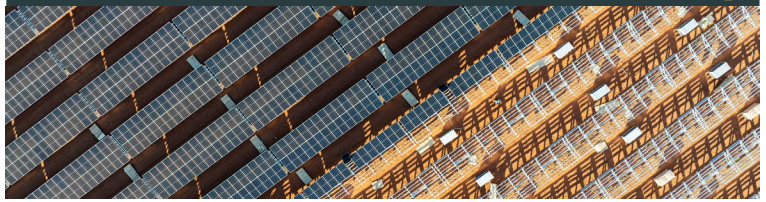
Almost 50% ($83 billion) of an Estimated $177 billion Potential Future Capital Expenditure Across 70 Projects in the Pilbara is for Clean Energy.[1]

Yindjibarndi Renewable Project[2]



Production	First generation expected end 2027
Status	In development
Companies involved	Yindjibarndi Energy Corporation (YEC), a partnership between Yindjibarndi and ACEN Corporation
Renewable Type	Solar, Wind, Battery, related infrastructure (including transmission)
Total Investment	A$1.4 billion (Stage 1)
Renewable Capacity	Stage 1: 375 - 450 MW solar, 250 MW wind Stage 2: 2 - 3 GW (various projects)
Key Features	• YEC represents one of the largest Indigenous-led renewable energy initiatives in Australia. YEC is working to develop, own and operate renewable energy projects on Traditional Owner country located within Yindjibarndi Native Title Determination Areas

Port Hedland Solar and Battery Project[3]



Production	Late 2024
Status	Under construction
Companies involved	APA Group
Renewable Type	Solar Batteries
Total Investment	A$200 million ($1.5 million of Government funding as part of Clean Energy Future Fund)
Renewable Capacity	Solar: 45 MW Battery storage capacity: 36.7 MWh
Key Features	• Being connected to the existing Port Hedland power station • Will supply renewable energy for large mining customers in the Pilbara region

Woodside Solar Facility[4]



Production	50MW (target during 2026)
Status	Subject to Final Investment Decision (FID)
Companies involved	Woodside Energy
Renewable Type	Solar Battery storage (future consideration)
Total Investment	To be determined
Renewable Capacity	Initial phase 50 MW Planning approval for up to 500 MW
Key Features	• 50 MW solar farm to supply renewable energy to Woodside's Pluto LNG facility • Proposed to be connected to the North-West Interconnected System via new common use transmission infrastructure

Sources: [1] Pilbara Development Commission. [2] Yindjibarndi Energy. [3] Port Headland solar and battery project. [4] Woodside: Thriving through the energy transition.
Images of Yindjibarndi Renewable Project, Port Hedland Solar and Battery Project and Woodside Solar Facility courtesy of corresponding companies.



Boranup Karri Forest.
Image courtesy of Tourism Western Australia.

3

Emerging green industries

Western Australia has unique comparative advantages that it is mobilising to play a leading role in the global energy transition.

Expansion of midstream critical mineral processing will further support trading partner decarbonisation

Building upon WA's competitive advantage in critical minerals, WA will look to expand its midstream processing industries to provide low-carbon battery materials and further enhance global decarbonisation efforts.

WA's Midstream Processing - Future Opportunities Aiding Global Decarbonisation

Expansion of the midstream battery and critical minerals processing industry is a key pillar of WA Government's Battery and Critical Minerals Strategy 2024–2030, with key opportunities for decarbonisation including:

- Co-locating mining and minerals processing operations, reducing carbon emissions associated with transporting raw materials.
- Use of renewable energy in processing to potentially displace processing in other jurisdictions reliant on high-emitting electricity generation.

Case Study: Austvolt – Precursor Cathode Active Material (PCAM)[1]



The Austvolt Facility aims to be Australia's first commercial scale PCAM and / or CAM plant, helping to drive Western Australia's advanced manufacturing ambitions.

With an externally estimated investment range of $251–500 million[1] (including $3 million from the WA Government), the facility is currently planning its pilot programme for battery cathodes, with capacity for more than 500,000 EVs per year expected from 2027.

Western Australia's Key Midstream Investments - Approx. $9 billion Since 2015



Sources: [1] WA Investments.
Notes: * Operations temporarily suspended.

Western Australia has the potential to become a major world producer and exporter of renewable hydrogen

WA Comparative Advantage[1]

- 2.5 million km^2 land
- 13,000 km coastline
- Intense wind and solar conditions at prospective locations:
  - e.g. Oakajee (average wind speed ~8m/s and annual Global Horizontal Irradiation of 2,100 kWh/m^2
- Existing export facilities plus committed WA Government support for land and supporting infrastructure
- Extensive resources industry experience that 'make projects happen'

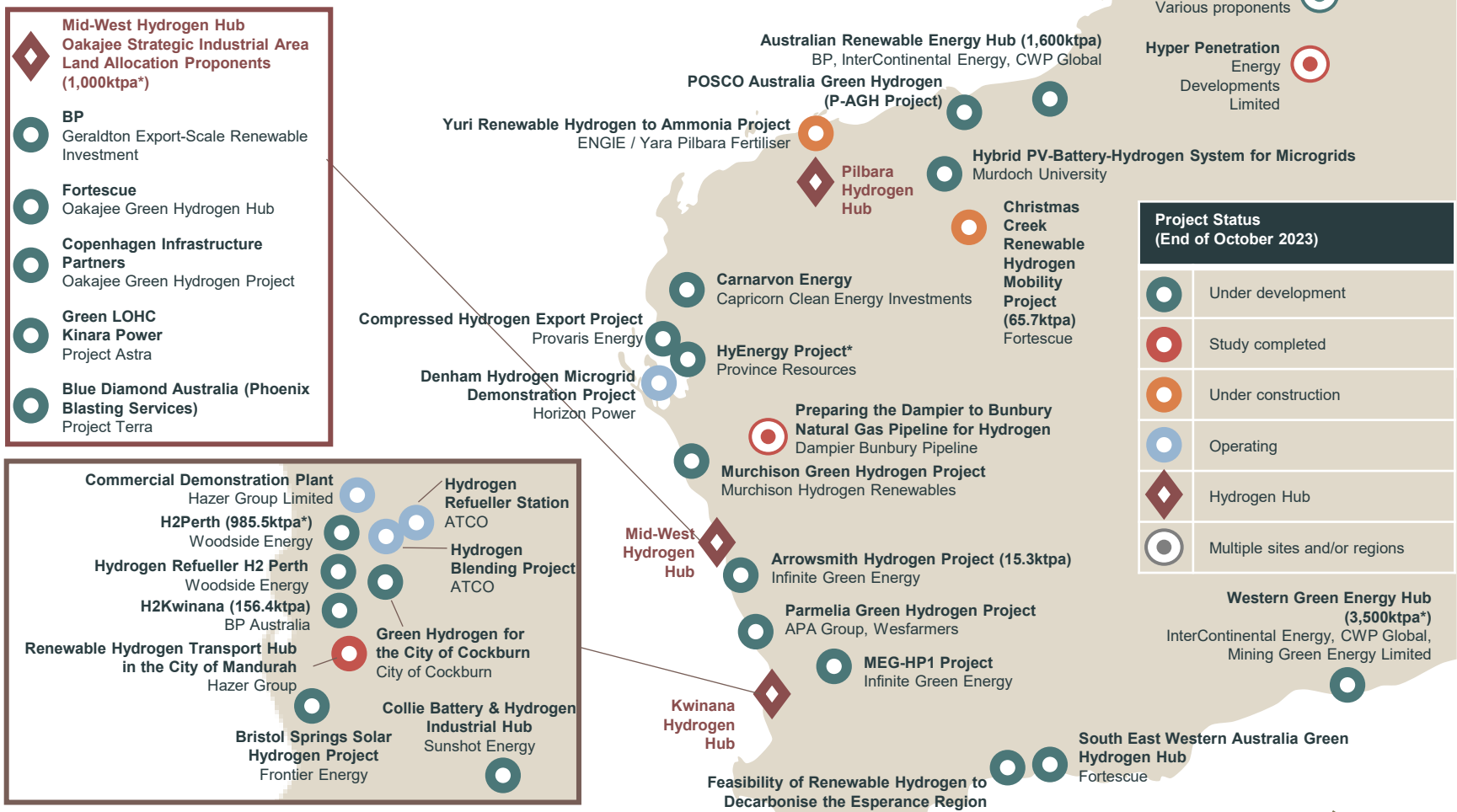
Project Summary[2]

23 Renewable hydrogen production projects (as tracked by CSIRO)

>6,000 ktpa Potential future renewable hydrogen production capacity

14 Projects have received government funding including 8 through WA Government's Renewable Hydrogen Fund

WA Renewable Hydrogen Projects[3]



Sources: [1] Western Australia: An outstanding place for renewable hydrogen investment. [2] CSIRO, HyResource. [3] WA: An outstanding place for renewable hydrogen investment.
Notes: *On hold.

Greening the steelmaking value chain – Western Australia has the potential to realise a unique competitive advantage and materially support global decarbonisation

As the world's leading iron ore producer accounting for around one third of global supply, WA's Green Steel Opportunity positions the State to facilitate decarbonisation of the global steelmaking industry, which is currently estimated to generate more than 7% of global carbon emissions.[1]

WA's green steel value chain opportunities offer the possibility of lowering global emissions, but with at least a medium-term trade-off in increasing WA's domestic emissions.

Opportunities for WA to Decarbonise the Steel Value Chain

Greening iron ore supply
Deploy renewables to replace fossil fuel generated power at mines and use alternative fuels to transport ore.

Decarbonised iron-making
Replace coal blast furnace processing of iron ore feedstock with natural gas or renewable hydrogen shaft furnaces to produce iron in the form of hot-briquetted iron (HBI).

Green steel production
Convert green iron into green steel domestically, leveraging a full suite of renewable energy solutions across the full value chain.

Lower-carbon Iron Production Using Natural Gas

Estimated impact on value chain emissions of replacing iron ore exports with production of HBI using natural gas shaft furnaces in WA:*

Onshore emissions impact (WA)
+0.51 tCO_2-e
per tonne HBI produced

Value chain emissions – net global impact
-1.17 tCO_2-e
per tonne HBI produced

This opportunity will become even greater should it become feasible and economic to replace natural gas with renewable hydrogen, allowing WA to produce **Green HBI**.

Case Study: Christmas Creek Green Metal Project[2]

The Christmas Creek Green Metal Project will use green hydrogen produced at Fortescue's gaseous and liquid hydrogen facility, together with an electric smelting furnace, to produce high-purity green iron metal through a 'green pit to product' supply chain. This will be suitable for use in almost any steel plant globally.



US$50 million
capital expenditure

1,500 tpa
production volume

2025
anticipated first production

Green Steel Opportunity

MIRWA modelling suggests a longer-term opportunity for WA green steel to contribute to global decarbonisation. Replacing just 50MT (~5%) of WA **iron ore exports** with 30MT **green steel exports** could achieve:

-0.14%
reduction in global emissions

Notably, this reduction is approximately equal to WA's overall contribution to global emissions at present.

Sources: [1] MRIWA Green Steel Resources. [2] Fortescue, Christmas Creek Green Metal Project.
Notes: *Assumes use of green iron ore feedstock (Green Pellets), meaning ore has been pelletised using a hydrogen indium furnace.



The Bungle Bungle Range.
Image courtesy of Tourism Western Australia.

4

Government leadership

The Western Australian Government's emissions from its direct activities are significant – but large transformational investments have already been made to rapidly reduce this.

Providing leadership to and collaborating with industry and the Federal Government is equally a key focus.

The Western Australian Government is leading the way by decarbonising State-owned energy intensive infrastructure

State Government

80% emissions reduction target between 2020–2030

9% of total WA emissions (2020)

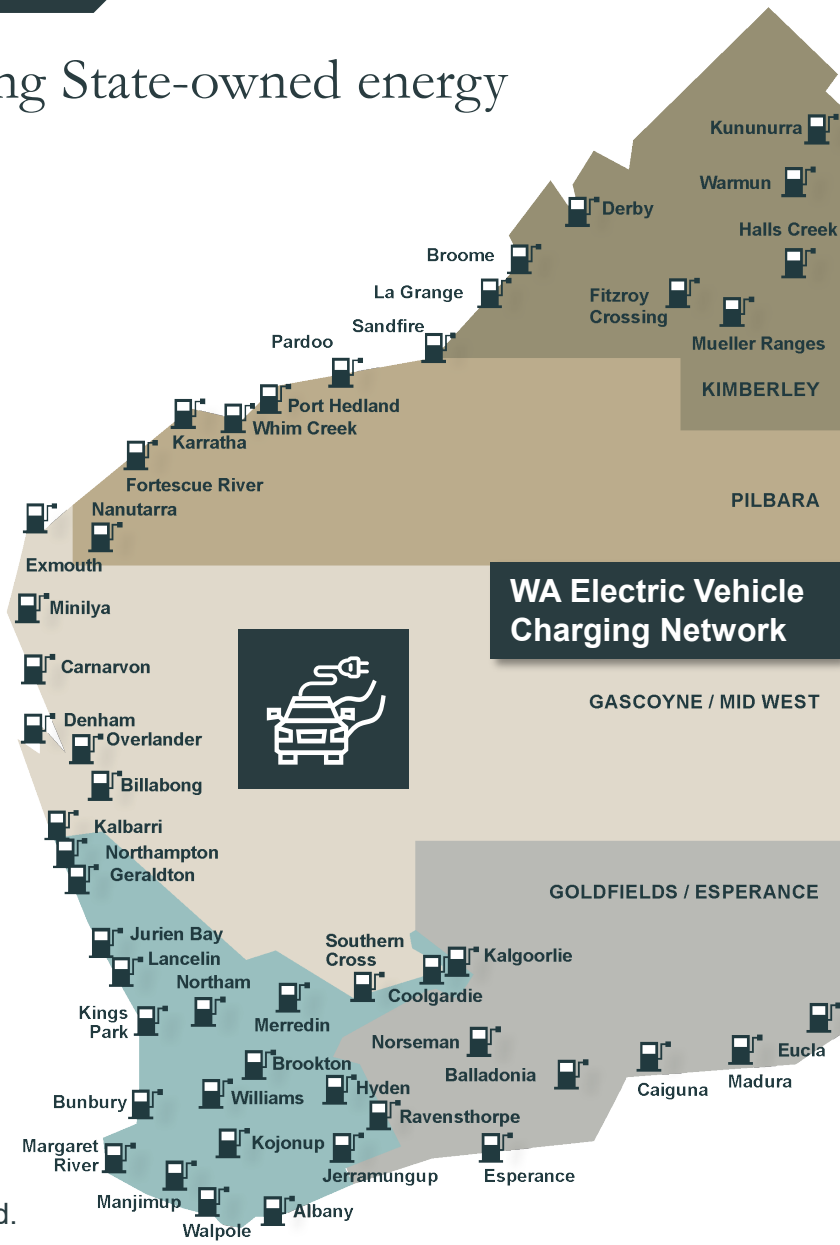
More ambitious than a 2005 baseline when government direct emissions were materially higher

Transformational Infrastructure Investments in Decarbonisation[1]

- METRONET: 40% expansion of metropolitan electrified public rail transport – over $12 billion investment by State and Federal Government.
- Large Scale Batteries: Approximately $2.5 billion committed for 800MW – with a further 400MW intended before 2030 to support phase out coal-fired power generation.
- Transmission investments: $1.2 billion in the South West Interconnected System, including the Clean Energy Link.
- Wind Farms: Approximately $850 million committed to support 350MW – with further 550MW intended before 2030 to support phase out of coal-fired power generation.
- Remote areas renewables: Over $400 million in renewables based stand-alone power systems and solar power for schools.
- 50 GL Renewably Powered Desalination Plant: Approximately $2.8 billion committed – to be operational by 2028.

Incentivising Clean Transport[1,2]

- Statewide EV charging network completed.
- EV purchase rebates for residential consumers.
- Dedicated pedestrian and cycling bridges into CBD.
- Public transport capped at $4.50 irrespective of distance travelled.



Sources: [1] WA State Budget 2024–25; WATC Sustainability Bond Framework, 2023 Annual Report. [2] WA Government EV Charging Map.

Western Australian Treasury Corporation has engaged capital markets to support financing critical decarbonisation investments through the State's inaugural green bond

Inaugural Green Bond Issuance[1]

WATC issued its inaugural A$1.9 billion 10-year Green Bond in June 2023.

Strong investor endorsement drove demand

- 70 bids, 3.2x oversubscribed.
- Pricing revised left of initial guidance.
- 25 new investors including 14 with specific green mandates.

Significant positive press coverage including investor advocates

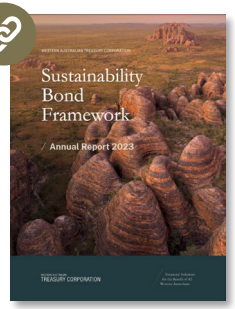
- *"WA were perceived as one of the worst in terms of fossil-fuel mining, but showed credible plans – it is a compelling turnaround story"*- First Sentier June 2023.[2]
- Won KangaNews Award for Australian Sustainability Bond Deal of the Year 2023.

Rapid Reporting

- The six-month turnaround between initial sustainable bond issuance and reporting is the fastest globally amongst labelled bond issuers – delivering on a commitment to transparency and accountability made to investors as part of WATC's global roadshow in May 2023.

Allocation of July 2033 maturity Green Bond Proceeds Issuance to 31 October 2023

	THEME	SDG	Project Names	Bond Proceeds Allocation
1	**Reducing emissions from electricity generation**	7 AFFORDABLE AND CLEAN ENERGY; 9 INDUSTRY, INNOVATION AND INFRASTRUCTURE	• Wind Farms • Standalone Power Systems • Solar Schools Program • Large Scale Batteries • Advanced Metering Infrastructure • LED Streetlights	$975 million
2	**Transport infrastructure to support net-zero transition**	9 INDUSTRY, INNOVATION AND INFRASTRUCTURE; 11 SUSTAINABLE CITIES AND COMMUNITIES	• METRONET • Electric Vehicle Initiatives • Active Infrastructure	$930 million
3	**Enhancing climate change adaptation and resilience**	6 CLEAN WATER AND SANITATION; 9 INDUSTRY, INNOVATION AND INFRASTRUCTURE	• Renewable Desalination Plant	$20 million
Total				**$1,925 million**



WATC has committed to at least 50% of the June 2033 maturity green bond proceeds being allocated towards projects enabling the primary theme of *Reducing emissions from electricity generation.*

Details on future issuance and additions to the Project Pool

Sources: [1] WATC Sustainable Finance Program website. [2] AFR 15/6/23: Bond investors impressed by WA's 'compelling green turnaround'.

The Western Australian Government has developed a framework for private sector collaboration to guide the State to net zero by 2050

Following extensive consultation with businesses and industry, environment scientists and community organisations, the Sectoral Emissions Reduction Strategy (SERS) released in December 2023 identifies the least cost pathways across economic sectors to achieve net zero by 2050.

40 New Actions
Outlined in the SERS report to be implemented that will build on the significant work already underway to decarbonise the economy.

Governance and Tracking SERS Progress
The Ministerial Taskforce on Climate Action will implement and oversee WA's transition to net zero. The Climate Change Bill requires interim targets to 2050, statewide emissions reduction strategies and annual reporting from 2025.

Land Use, Land Use Change and Forestry (LULUCF)

↓ Land use net sequestration is modelled to increase from **8.7MtCO$_2$-e** in 2024 to **12.5MtCO$_2$-e** by 2050 as a result of cultivation of forests and vegetation for the purposes of carbon sequestration – thereby playing a key role to reach net zero.

Sector Emissions MtCO$_2$-e* (modelled scenarios only)		Key Supported Pathways to Decarbonise
Industry	**2024**: 36.0 **2050**: 4.7 **Total** ↓: 87%	• Decarbonise electricity systems in the Pilbara region (common-user infrastructure). • Scale up trials and demonstration of new technologies through Clean Energy Future Fund. • Carbon Capture Utilisation and Storage Action Plan to provide policy certainty for investment.
Electricity	**2021**: 25.0 **2050**: < 5.0 **Total** ↓: ~80%	• Government funding to transform the electricity network, enabling connection of large-scale renewables. • Progress SWIS Demand Assessment recommendations and establish PoweringWA to coordinate investment. • Facilitate timely approvals of priority projects with new Green Energy Approvals Initiative. • Reform the Wholesale Electricity Market to incentivise investment in firmed renewables.
Transport	**2024**: 15.8 **2050**: 4.2 **Total** ↓: 73%	• Statewide strategy for electric road transport charging infrastructure. • Road freight decarbonisation strategy for south-west WA in consultation with sector. • Increase Government fleet EV target to at least 50 per cent of all new eligible purchases.
Buildings and Waste	**2024**: < 10% **2050**: close to 0 **Total** ↓: ~90%	• Implement an emissions reporting system to measure emissions from government buildings. • Encourage all-electric design for non-residential government new-builds and upgrades. • Develop a strategy for a sustainable and climate-resilient health system.
Agriculture	**2024**: 9.0 **2050**: 7.3 **Total** ↓: 19%	• Work with industry to improve verification of methane emissions reduction methods. • Identify approaches to reduce emissions in intensive livestock and horticulture enterprises. • Collaborate to improve data collection and accuracy of carbon sequestration measurement.

Sources: Sectoral Emissions Reduction Strategy (SERS).
Notes: ** Least cost pathway modelling by sector to net zero by 2050 from 2024 expected levels - Electricity is 2021 actual.*

The State Government is supporting industry decarbonisation projects and innovation through seed funding programs that will leverage significant private investment

Initiative	Number of Projects Supported*	Seed Funding Provided	Estimated Potential Investment
Renewable Hydrogen Fund	15	$10,548,000	$70,867,850
Climate Action Fund and Investment Attraction Fund (Hydrogen Projects only)	5	$22,945,000	$294,855,600
Clean Energy Future Fund	8	$11,940,000	$230,000,000
Carbon Innovation Grants Program	9	$4,241,674	$26,000,000
Carbon Farming and Land Restoration Program	11	$3,626,341	$7,888,718
Total	**48**	**$53,301,015**	**$629,612,168**

First round applications are being considered for the new Lower Carbon Grants Program and Investment Attraction Fund – New Energies Industries Funding Stream.

Agreements with Major Trading Partners

The WA Government is being proactive in establishing agreements with major trading partners that focus on hydrogen, ammonia, low emissions technology and other decarbonisation initiatives.

Some notable examples include:

- **Japan Bank for International Cooperation (JBIC)**: Signed a new Memorandum of Understanding (MoU) which encourages financial investments by JBIC in new energy projects in WA.
- **Japan Organisation for Metals and Energy Security:** Two MoU's signed with WA Government – Feb 2020 for collaboration on development of critical minerals and Dec 2020 for cooperation on emerging energy and low emission technologies (e.g. hydrogen, ammonia, CCS and CCUS).
- **Republic of Korea's Ministry of Trade, Industry and Energy (MOTIE)**: Signed a Letter of Intent supporting exploring collaboration, research and information sharing on energy and resources to deliver mutually beneficial outcomes – potential to be upgraded to an MoU later in 2024.

Sources: Example agreements summary provided by Invest & Trade Western Australia.
Notes: *As at 30 June 2024.

Federal Government decarbonisation initiatives benefiting Western Australia

Coordination between the Federal and WA Government will further support industry innovation and decarbonisation infrastructure investment.



July 2012

Australian Renewable Energy Agency (ARENA)

ARENA was established to support development of the renewable energy industry across Australia and has provided joint funding to a wide range of projects in Western Australia. For example, $1.7 million in December 2023 to the Aboriginal Clean Energy Partnership towards a feasibility study to develop a large-scale hydrogen production facility in the remote north of WA.

Oct 2022

National Reconstruction Fund

A $15 billion fund to diversify and transform Australia's industries and economy across multiple sectors including renewables and low emission technologies. The fund aligns with WA Government policy priorities for diversification and decarbonisation.

Oct 2022

Rewiring the Nation

Up to A$3 billion has been committed by the Federal Government to modernise electricity networks in WA to be targeted towards expanding common user networks in the Pilbara.

Oct 2022

Australian Sustainable Finance Taxonomy

WA Government is closely monitoring development and will look to use the taxonomy as far as practicable in guiding future inclusion of green projects in the WATC Sustainability Bond Framework.

Jan 2023

Powering the Regions Fund

A $1.9 billion fund to be delivered across multiple streams to support the decarbonisation of existing industries, those essential to global energy transition, and creation of new clean energy industries. First WA project supported in April 2024 – $32.9 million for CSBP to reduce emissions at their chemical manufacturing plant in Kwinana.

April 2023

Sovereign Green Bond Program

WA Government has collaborated closely in its development, particularly relevant for reporting on joint funded projects such as Metronet.

May 2023

Hydrogen Head Start

A $4 billion program to provide revenue support for large-scale renewable hydrogen projects. An additional $4 million will be provided to help First Nations communities engage with hydrogen project developers. Two Western Australian Projects have been shortlisted including H2Kwinana led by BP Australia and the Murchison Hydrogen Renewables Project.

Nov 2023

Capacity Investment Scheme

A $67 billion scheme to underwrite revenue on new renewable generation and storage projects. The scheme will underwrite up to 1,100MW of storage and 2.3GW of renewable generation by 2027 across eligible projects in WA – for which the first tender is now open.

Dec 2023

Market Supervision, Enforcement & Reporting

ASIC has the critical role in supervising and enforcing governance and disclosure standards to avoid greenwashing. This supports investor confidence that the WA mining industry will deliver on its stated decarbonisation ambitions, reinforced by mandatory climate reporting in accordance with TCFD that commences from 1 Jan 2025.

June 2024

Future Made in Australia

The Future Made in Australia plan will invest $22.7 billion over 10 years through attracting investment in the net-zero global economy and associated supply chains. This will provide significant opportunities for WA through having access to abundant critical mineral deposits and superior renewable energy resources.

June 2024

Australian Future Gas Strategy

Reaffirms importance of the WA gas industry to Australia and our trading partners. Decarbonising gas production is a high priority for WA and is underpinned by the safeguard mechanism – but as the largest producer (60%) it presents near term challenges for the relative speed of WA emissions reductions.

Ensuring a Just Transition for Western Australians impacted most by the transition

Planning for a Just Transition is central to Western Australia's decarbonisation journey. Key priorities are to establish thriving new industries in regional communities and fund initiatives to facilitate self-determination and empowerment of Aboriginal people.

Key Western Australian Government Initiatives Supporting a Just Transition

Collie Just Transition Plan

A$547.4 million
Collie Transition Package Dec 2023

>A$115 million
Funding 2017–23



The Collie Just Transition Plan aims to develop a strong and sustainable future for Collie ahead of the retirement of its coal-fired power stations by 2029. Funding is focused on worker support and job creation through industry attraction and economic diversification, supported by being the location for large scale battery storage supporting renewables.

Native Forestry Transition Plan

A$80 million
Native Forestry Transition Plan



The Native Forestry Transition Plan aims to support the transition of workers, businesses and regional communities impacted by the WA Government's commitment to end native forest harvesting from January 2024.

Pilbara Traditional Owner Participation Support Fund

Up to A$100,000
Per Grant



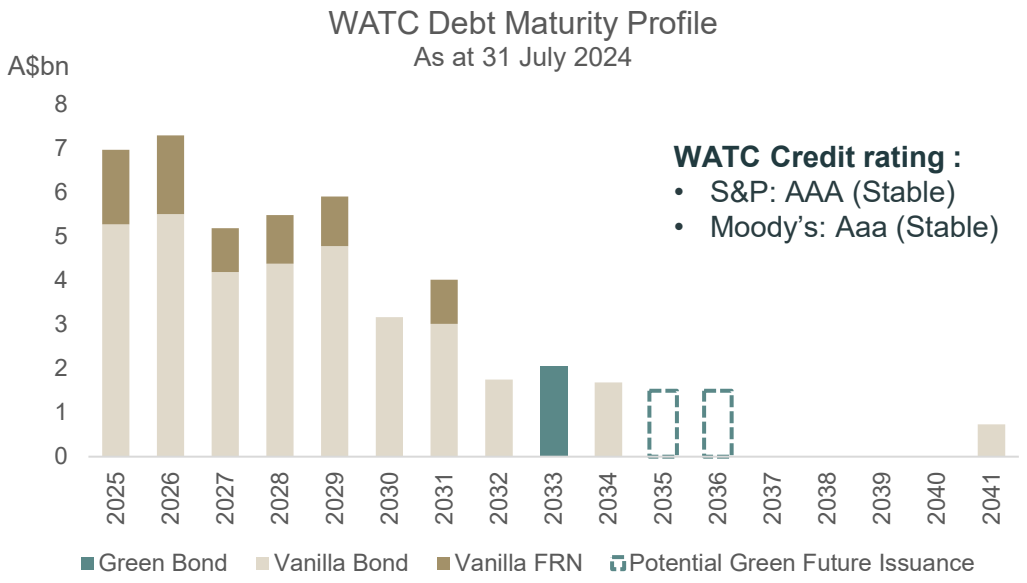
The Pilbara Traditional Owner Participation Support Fund provides funding to support Traditional Owners in the Pilbara Energy Transition and progress clean energy projects on Country.

The WA Government's objectives for a Just Transition are supported by similar objectives of the Federal Government, currently delivered through the Net Zero Economy Agency.

Images: Collie Miners' Statue (left), Aerial View of El Questro Wilderness Park, Gibb River Road (centre) and Kingfisher Tours, Purnululu National Park (right). Images courtesy of Department of the Premier and Cabinet and Tourism WA.

Future issuance under WATC's Sustainable Bond Program will continue to focus on *additionality* – transformational investments to address key environmental and social challenges

Future Issuance



WATC is intending to issue a second labelled bond of benchmark size in the latter part of FY 2025 with either a 2035 or 2036 maturity.

- Investor feedback on preference for green or sustainability format is welcomed – with projects under consideration detailed on the right under 'Future Project Pool Considerations'.

Future Project Pool Considerations

Materially Contributing to Emissions Reduction Targets
Projects within existing green bond environmental themes contribute materially to meeting State Government direct emissions reduction target of 80% below 2020 levels by 2030.

Eligible Project Pool to Reach $12 billion
The existing green bond project pool eligible expenditures is expected to reach approximately $12 billion, which is more than sufficient to support another green bond issuance.

Potential New Additions to Project Pool within Existing Environmental Themes
Significant recent investment commitments through the State budget within the same environmental themes could be added, notably:

- $250 million joint program with Federal Government to establish an electric bus fleet.
- >$1 billion to commence expansion of the South West and Pilbara electricity grids to support connection of future (predominantly private) renewable energy projects.

Potential New Themes: Biodiversity and Key Social Challenges

Consideration could be given to:

- Including a biodiversity theme – related to significant expansion of the State's conservation estate.
- Including significant investment commitments for advancing key social challenges, such as addressing homelessness, improving mental health outcomes, prevention of family and domestic violence and improving outcomes for Aboriginal people.
  - Detail on these initiatives are included in the August 2024 update to Supporting Continuous Improvement in ESG Outcomes for Western Australia.



Kunanurra Landscape, East Kimberley (left).
Image courtesy of Tourism Western Australia.

5

Appendix: Western Australian Government's key strategies and supporting actions driving decarbonisation

Table 1: Key Overarching Western Australian Government strategies driving decarbonisation

Table 2: Key actions in progress by the Western Australian Government delivering on its decarbonisation strategies within categories of:

1	Industry Development
2	Infrastructure
3	Sequestration
4	Research and Development
5	Just Transition

Table 1: Key Western Australian Government Strategies Driving Decarbonisation

Strategy Name	Purpose
Climate Change Bill	The Climate Change Bill 2023 introduced to the Western Australian parliament in November 2023 aims to contribute to national and global decarbonisation goals, provide business certainty, and attract investment for transitioning to net-zero greenhouse gas emissions. It formalises a long-term target of achieving net-zero emissions by 2050 and sets requirements for interim emission reduction targets.
Electric Vehicle Strategy	The Electric Vehicle (EV) Strategy supports Western Australia's transition to low and zero-emission electric vehicles. It aims to maximise benefits for the State by investing in initiatives such as rebates for EV buyers, the 7,000 km EV Charging Network and the electric bus deployment.
Energy Transformation Strategy	The Energy Transformation Strategy is the Western Australia Government's blueprint to ensure the delivery of secure, reliable, sustainable, and affordable electricity to Western Australians. It addresses the transition to renewable energy sources, including wind and solar, while maintaining system security and affordability.
Forest Management Plan	The Forest Management Plan 2024–2033 is a statutory framework for managing approximately 2.5 million hectares of land and waters vested in the Conservation and Parks Commission in Western Australia's South West. It focuses on biodiversity conservation, forest health, climate resilience, social and economic opportunities, and notably, it commits to ending commercial timber harvesting of native South West forests.
Battery and Critical Minerals Strategy	Strategy to support the growth of the battery and critical minerals industry in Western Australia. The State Government is actively promoting investment, developing advanced processing capabilities, and ensuring a stable investment environment.
Renewable Hydrogen Strategy	The Western Australian Renewable Hydrogen Strategy outlines the State Government's strategic focus areas for developing the hydrogen industry, leveraging WA's renewable energy resources and export potential. The accompanying Renewable Hydrogen Prospectus details opportunities and support for private investment aimed at realising this vision and supporting the growth of a renewable hydrogen industry in WA.
Sectoral Emissions Reduction Strategy	The Sectoral Emissions Reduction Strategy for Western Australia outlines robust and credible pathways to reduce emissions across key economic sectors. Developed through extensive consultation with businesses, industry, environmental scientists and community organisations, it includes 40 new actions aimed at supporting the transition to net-zero emissions by 2050.
Sustainability Bond Framework	The Sustainability Bond Framework outlines the Western Australian Government's approach for issuing International Capital Market Association aligned green, social or sustainability bonds, where the proceeds will finance eligible green and social projects with the broad-based objective to support continuous improvement in environmental, social and governance outcomes in Western Australia.
WA Climate Change Policy	The Western Australian Climate Change Policy outlines the State Government's commitment to a climate-resilient community and a low-carbon future. It focuses on supporting the transition to net-zero greenhouse gas emissions by 2050 through actions such as clean manufacturing, energy transformation, carbon storage, and resilient cities and regions.

Table 2: Key Western Australian Government Actions Delivering Decarbonisation Strategies

Action Name	Description	Key Strategy Alignment
Industry Development		
Carbon Innovation Grants Program	The Carbon Innovation Grants Program is part of the Government of Western Australia's $1.25 billion Climate Action Fund. It aims to build the capacity of heavy industry sectors to transition to net-zero emissions by 2050 through funding feasibility studies and trials for innovative carbon abatement and sequestration technologies.	Climate Change Bill
CCUS Action Plan	The State Government has committed to develop an Action Plan with the intention of establishing a world-leading CCUS industry in WA to capitalise on the State's potential as a hub for carbon storage.	Sectoral Emissions Reduction Strategy
Clean Energy Future Fund	The Clean Energy Future Fund supports the development of innovative clean energy projects in Western Australia, aiming for significant reductions in greenhouse gas emissions below projected levels.	Sectoral Emissions Reduction Strategy
Electric Bus Program	The Western Australian Government is expanding its electric bus fleet supported by a $250 million joint funding agreement with the Federal Government. This investment will deliver 130 new locally built electric buses and charging infrastructure, building upon the existing electric bus trial in Perth's northern suburbs.	Electric Vehicle Strategy
Investment Attraction Fund	The Investment Attraction Fund encourages new investment across various industries to diversify the economy and create local jobs. Specifically, the New Energies Industries Funding Stream supports economic development by focusing on battery and critical minerals processing, renewable hydrogen, and advanced manufacturing in wind and solar components.	Sectoral Emissions Reduction Strategy
Petroleum Legislation Amendment Bill	The Petroleum Amendment Bill 2023 aims to strengthen the State's petroleum legislation and support the industrial and resources sectors' transition to net-zero emissions. It provides for onshore transportation and storage of CO_2 to help manage fugitive emissions and planning for the phasing out of petroleum extraction in favour of renewable energies.	Sectoral Emissions Reduction Strategy

Table 2: Key Western Australian Government Actions Delivering Decarbonisation Strategies

Action Name	Description	Key Strategy Alignment
Industry Development		
Pilbara Energy Transition Plan	The Pilbara Energy Transition Plan focuses on decarbonising energy supply for the mining industry in the Pilbara region in Western Australia. It builds on commitments made between industry participants and the Western Australian Government as part of the Pilbara Roundtable with the key driver being an agreed expansion of common user infrastructure to support shared use of transmission infrastructure to enable development of a large integrated network in the region connecting to new renewable energy sources.	Energy Transformation Strategy
Renewable Hydrogen Fund	The Western Australian Renewable Hydrogen Fund aims to support the growth of the renewable hydrogen industry in WA. It provides grants for feasibility studies and capital works projects across four strategic focus areas, with an investment of up to $117.5 million to attract Australian Government funding for Pilbara and Mid-West-based renewable hydrogen hubs.	Renewable Hydrogen Strategy
Renewable Hydrogen Hubs	Renewable Hydrogen Hubs (Pilbara and Mid-West) aim to generate green hydrogen at scale, which can then be used for various applications, including fuel cells, industrial processes, and transportation.	Renewable Hydrogen Strategy
New Energies Industries Funding Stream	The New Energies Industries Funding Stream is a program launched in Western Australia as part of the Investment Attraction Fund. Its primary goal is to accelerate innovation, scale up commercial potential, and expand local manufacturing capacity in various energy-related sectors. These sectors include battery and critical minerals, renewable hydrogen, solar, wind, and carbon capture industries. The program invites applications from businesses operating within Western Australia and those looking to expand into these sectors internationally.	Sectoral Emissions Reduction Strategy
Lower Carbon Grants Program - Gorgon Fund	The Lower Carbon Grants Program - Gorgon Fund was established in 2024 by the Western Australian Government as part of a $40 million funding agreement with the Chevron-operated Gorgon Project. It aims to support green energy and green tech projects in Western Australia, fostering practical and effective decarbonisation solutions across various industries and technology platforms.	Climate Change Bill
BurnWise Program	The BurnWise program in Western Australia encourages efficient operation of domestic wood heaters to minimise smoke emissions. It supports local governments in managing wood smoke by promoting compliant wood heaters and responsible usage, ensuring emissions are reduced.	Climate Change Bill

Table 2: Key Western Australian Government Actions Delivering Decarbonisation Strategies

Action Name	Description	Key Strategy Alignment
	Infrastructure	
Aboriginal Communities Embedded Networks	Aboriginal Community Embedded Networks are electrical infrastructure upgrades in 13 remote Aboriginal communities in Western Australia. These upgrades ensure reliable power supply, standard operations, and maintenance, benefiting residents regardless of their location.	Energy Transformation Strategy
Advanced Metering Infrastructure	Advanced Metering Infrastructure involves digital meters with communication cards that remotely monitor energy flows, allowing for more efficient grid management, fault detection, and support for emerging technologies like community batteries, microgrids and electric vehicles.	Energy Transformation Strategy
Clean Energy Link Program	The Clean Energy Link Program aims to prepare the metropolitan electricity network in WA for a clean energy future. It focuses on expanding the State's main electricity network to enable more renewable energy connections and supporting industry growth and electrification of processes to aid transitioning to net-zero emissions by 2050.	Energy Transformation Strategy
Collie Battery Energy Storage System	The Collie Battery Energy Storage System is one of the world's largest battery energy storage systems. It will provide around 500 Megawatts / 2000 Megawatt hours (MWh) of power when fully charged, supporting WA's transition to renewable energy and enhancing system security and grid stability.	Energy Transformation Strategy
Electric Vehicle Action Plan	The Electric Vehicle (EV) Action Plan in Western Australia aims to integrate EVs into a safe, reliable, and efficient electricity system while accelerating the transition to a low-carbon future. It emphasises coordinated action to maximise benefits and minimise costs for consumers.	Electric Vehicle Strategy
Electric Vehicle Charging Infrastructure Network	The WA EV Network is a significant initiative aiming to create Australia's longest EV charging network. It will feature 98 EV charging stations across 49 locations. To be completed during 2024, the network will span 7,000 kilometres from Kununurra in the north to Esperance in the south, and eastward to Kalgoorlie and Eucla.	Sectoral Emissions Reduction Strategy
Energy Storage in Regional Towns	Energy Storage in Regional Towns is an initiative that involves adding Battery Energy Storage Systems to seven regional towns in Western Australia. By increasing hosting capacity, this project enables more customers to install rooftop solar systems and benefit from cleaner energy.	Energy Transformation Strategy

Table 2: Key Western Australian Government Actions Delivering Decarbonisation Strategies

Action Name	Description	Key Strategy Alignment
Infrastructure		
Green Energy Approvals Initiative	The Green Energy Approvals Initiative in Western Australia aims to accelerate environmental approvals for renewable energy projects while safeguarding biodiversity. It involves a dedicated assessment team and facilitates investment in wind and solar power, renewable hydrogen, lithium mining, critical minerals processing, and green energy product manufacturing.	Energy Transformation Strategy
Improving Access to the Electricity Network	The Improving Access to the South West Interconnected System (SWIS) initiative aims to enhance generator access to the SWIS - Western Australia's main electricity grid. By adopting a framework of constrained access, it seeks to provide more equitable access for generators, optimise grid use, and facilitate entry for new low-cost and renewable generation technologies.	Energy Transformation Strategy
Large Scale Batteries	Development of large-scale battery energy storage systems are a key element of the State Government's Energy Transformation Strategy. As at June 2024 three large scale batteries with a total capacity of 800 MW / 3000 MWh are in operation or construction, with the objective to facilitate increased penetration of renewable energy sources connected to the South West Interconnected System – the electricity grid that services > 85% of Western Australia's resident population.	Energy Transformation Strategy
PowerBank Community Battery Storage Trial	The PowerBank community battery storage project integrates bulk solar battery storage into the existing electricity grid. Eligible customers can virtually store up to 6kWh or 8kWh of excess solar energy in the shared battery, providing a cost-effective solution that benefits both customers and the grid.	Energy Transformation Strategy
PoweringWA	PoweringWA is a newly established entity in Western Australia responsible for coordinating the delivery of electricity infrastructure needed to decarbonise the South West Interconnected System. Its mission is to streamline transmission, renewable electricity generation, and battery storage projects, supporting the State's transition toward net-zero emissions by 2050.	Energy Transformation Strategy
Renewable Energy Precinct at Peel Business Park	The Peel Business Park in Nambeelup features an innovative renewable energy industrial microgrid. This microgrid, which began operating in December 2020, harnesses solar energy and utilises battery storage to power the first stage of business connections within the park.	Energy Transformation Strategy

Table 2: Key Western Australian Government Actions Delivering Decarbonisation Strategies

Action Name	Description	Key Strategy Alignment
Infrastructure		
Renewable Hydrogen Precinct at Oakajee Strategic Industrial Area	The Oakajee Strategic Industrial Area (SIA) is a designated greenfield strategic industrial zone, covering 6,400 hectares. It has significant potential to support existing and future industries, including renewable hydrogen production, magnetite iron ore and downstream processing. The State Government's Industrial Lands Panel has approved land allocation for the Oakajee SIA, aiming to create a globally competitive, multi-product renewable hydrogen industrial precinct.	Renewable Hydrogen Strategy
Renewably-Powered Desalination Plant	The Alkimos Seawater Desalination Plant, proposed for land near Alkimos Beach, will be Western Australia's next major water source powered solely by renewable energy. At completion of stage 1, it will supply up to 50 billion litres of clean, safe drinking water annually, with further investment and construction planned to increase capacity to 100 billion litres per year.	WA Climate Adaptation Strategy
Schools Clean Energy Technology Fund	The Schools Clean Energy Technology Fund will support the installation of new energy technologies in public schools, including rooftop solar systems, while providing STEM learning opportunities for students and teachers.	Energy Transformation Strategy
Schools Virtual Power Plants	Project to incorporate within a selection of Western Australian schools smart and flexible Virtual Power Plants to optimise renewable energy sources helping schools to manage their electricity consumption and costs, as well as playing a role in making the local energy grid more reliable.	Energy Transformation Strategy
Smart Connect Solar	Smart Connect Solar enhances grid stability and enables broader rooftop solar adoption throughout regional Western Australia. The program enables efficient energy management that will result in consumer savings and support WA's regions contributing to the net-zero emissions goal.	Energy Transformation Strategy
Solar Schools Program	The Solar Schools Program involves installing rooftop solar systems in regional Western Australian schools, which will reduce greenhouse gas emissions and slash energy expenditure by approximately one quarter. The Solar Schools Program extends its impact to education by offering STEM learning resources to students.	Energy Transformation Strategy

Table 2: Key Western Australian Government Actions Delivering Decarbonisation Strategies

Action Name	Description	Key Strategy Alignment
	Infrastructure	
Solar, Energy Storage and LED Streetlights for Regional Hospital and Town	This project helps Derby Hospital and the Shire of Derby slash energy bills and greenhouse gas emissions by installing solar PV systems, battery storage systems, and smart LED streetlights. The project aims to improve town infrastructure, enhance safety, and reduce environmental impact in Derby, Western Australia.	Energy Transformation Strategy
Standalone Power Systems	Western Australia has one of the largest isolated electricity networks in the world which presents challenges for providing customers with reliable and safe power, while also bringing more renewables onto the grid. To address this, renewable energy based Standalone Power Systems (SPS) have redefined power delivery in regional and remote areas of Western Australia, with the ambition to deploy up to 4000 SPS during the current decade.	WA Climate Change Policy
State Fleet Electric Vehicle Target	The Western Australia Government has set a minimum 25% electric vehicle (EV) acquisition target for its State Fleet by 2025-26 whilst also delivering on an ongoing obligation to offset all emissions from the State Fleet's operations.	Sectoral Emissions Reduction Strategy
SWIS Network Upgrades	The SWIS Transmission Planning Update outlines potential transmission investments to support Western Australia's future energy needs. It identifies areas for expansion in the central, southern, and northern sections of the South West Interconnected System to accommodate renewable generation demand.	Energy Transformation Strategy
WA Bicycle Network Grants Program	The WA Bicycle Network Grants Program is an initiative that provides funding to local governments for active transport infrastructure. It supports walking, cycling, and wheeling as part of everyday journeys. The program matches local government expenditure dollar-for-dollar, with eligibility criteria focusing on projects near new METRONET stations and regional cycling strategies.	WA Climate Change Policy
Wind Farms	Wind Farms are playing an increasingly important role for electricity generation in State's main electricity grid owned and managed by the Western Australian Government. A number of directly funded wind generation projects are in progress, together with joint ventures with private partners and power purchasing agreements for privately owned projects. Collectively these contribute significantly to reducing greenhouse gas emissions and play a crucial role in WA's renewable energy future.	Energy Transformation Strategy

Table 2: Key Western Australian Government Actions Delivering Decarbonisation Strategies

Action Name	Description	Key Strategy Alignment
	Sequestration	
Carbon Farming and Land Restoration Program	The Western Australian Carbon Farming and Land Restoration Program is a key initiative of the Western Australian Climate Change Policy. It aims to realise agriculture's potential to sequester carbon across the landscape, generate WA-sourced carbon credits, and support the growth of the carbon farming industry by providing education, outreach and financial assistance.	WA Climate Change Policy
Carbon for Conservation Initiative	Initiative that enables private sector to propose carbon farming concepts and solutions for Western Australia's national parks and reserves.	WA Climate Change Policy
Perth and Peel Urban Green Strategy Development	The development of the Perth and Peel Urban Greening Strategy aims to make Western Australia's Perth and Peel regions greener, cooler, and more liveable. The strategy focuses on enhancing the tree canopy, creating green spaces, and mitigating urban heat effects.	WA Climate Change Policy
Plan for Our Parks	The Plan for Our Parks initiative aims to create five million hectares of new national and marine parks and conservation reserves across Western Australia.	WA Climate Change Policy
Softwood Plantation Estate	In 2021, the Western Australian Government announced a $350 million investment to expand the state's softwood plantation timber estate. Over the next decade, the Forest Products Commission (FPC) will acquire suitable land in the South West to develop pine plantations, ensuring a secure future for WA's softwood industry and supporting climate change response.	WA Climate Change Policy
Urban Canopy Grants Program	The Urban Canopy Grant Program supports existing tree-planting initiatives in local governments. Grants of $5,000 to $100,000 are available to increase urban tree canopy cover and improve biodiversity in local communities.	Climate Change Bill

Table 2: Key Western Australian Government Actions Delivering Decarbonisation Strategies

Action Name	Description	Key Strategy Alignment
Research and Development		
Carbon Capture Utilisation and Storage	A study commissioned by the Western Australian LNG Jobs Taskforce found that WA has the potential to become a global player in Carbon Capture Utilisation and Storage (CCUS). The study identified that CCUS hubs could support cross-sector collaboration, attract overseas investment and generate jobs, positioning WA as a hub for carbon storage.	Sectoral Emissions Reduction Strategy
Carbon Life Cycle Analysis for WA Sheep Industry	The Carbon Life Cycle Analysis for the Western Australian sheep industry assesses greenhouse gas emissions associated with sheep production. Having a clear picture of the sheep industry's impacts on and from climate change will allow industry to make informed decisions about implementing climate-positive strategies.	Sectoral Emissions Reduction Strategy
CleanRun Roadside Emissions Monitoring Program	The CleanRun roadside emissions monitoring program in Perth assesses the health of the vehicle fleet. Using an Accuscan 4600 remote sensing device, it measures emissions of carbon monoxide, nitrogen oxide, hydrocarbons, and smoke as vehicles pass by. A smart sign provides immediate feedback to drivers, helping them understand their vehicle's performance and promoting awareness of emissions.	WA Climate Change Policy
Climate Science Initiative	The Climate Science Initiative aims to produce detailed climate change projections extending 75 years into the future. These projections will help non-specialists understand and apply the information, enabling better responses to climate change impacts across communities, businesses and government.	WA Climate Change Policy

Table 2: Key Western Australian Government Actions Delivering Decarbonisation Strategies

Action Name	Description	Key Strategy Alignment
Research and Development		
Denham Hydrogen Project	The Denham Hydrogen Demonstration Plant is a state-of-the-art facility that combines solar and hydrogen technology. It aims to test hydrogen's potential as a baseload power source in remote microgrids, contributing to cleaner energy solutions and reducing reliance on diesel-generated power.	Renewable Hydrogen Strategy
Green Steel Value Chain Assessment	Aims to analyse opportunities and obstacles in transitioning from traditional iron ore mining to renewable energy-powered production. It focuses on understanding capital requirements, costs and emissions associated with this shift across the steel making value chain identifying opportunities to support decarbonisation from associated upstream, mid-stream and downstream processes.	WA Climate Change Policy
Katanning Research Facility as a Carbon Neutral 2030 Demonstration Farm	The Katanning Research Facility aims to serve as a demonstration site for testing carbon-neutral farming options, supporting Western Australian broadacre farmers in their sustainability efforts.	Sectoral Emissions Reduction Strategy
Project Symphony	Project Symphony is an innovative pilot in Western Australia where eligible Distributed Energy Resources (DER) like rooftop solar, batteries, and household appliances are orchestrated as a Virtual Power Plant. By aggregating these DER assets, Project Symphony aims to generate and store electricity at a local level, helping manage supply and demand fluctuations.	Energy Transformation Strategy
SWIS Demand Assessment	The SWIS Demand Assessment, released by the Western Australian Government in May 2023, analyses industry data to understand potential changes in electricity demand over the next 20 years for the State's main electricity grid. It demonstrates that expansion in renewable energy generation represents the least cost pathway for the significant increase expected in electricity demand as industrial users seek to decarbonise their production processes through increased electrification.	Energy Transformation Strategy

Table 2: Key Western Australian Government Actions Delivering Decarbonisation Strategies

Action Name	Description	Key Strategy Alignment
	Just Transition	
Native Forestry Transition Plan	The $80 million Native Forestry Transition Plan aims to support the transition of workers, businesses and regional communities impacted by the Western Australian Government's commitment to end native forest logging from January 2024.	Forest Management Plan
Collie Just Transition	The Collie Just Transition is aimed at diversifying Collie's economy away from coal dependence. It involves investing in major projects, new industries, and local skills training to support workers and communities during the shift away from carbon-intensive industries. A funding package exceeding $650 million will enable economic diversification and job creation, supported by being the location for large scale battery storage supporting renewables.	WA Climate Change Policy
Distributed Energy Buyback Scheme	The Distributed Energy Buyback Scheme (DEBS) in Western Australia offers eligible customers payments for electricity exported to the grid from solar panels, batteries, and electric vehicles. DEBS encourages using or storing solar energy during peak hours and installing west-facing panels to generate more renewable energy later in the day.	Energy Transformation Strategy
Energy Efficiency Rebates	The Household Energy Efficiency Scheme is a four-year, $13 million program. It aims to reduce energy costs for 10,000 households experiencing hardship by identifying energy-saving opportunities and improving household energy literacy.	Energy Transformation Strategy
Train Fare Price Cap / Every Sunday Free	The Western Australian Government has introduced a two-zone capped fare policy for the metropolitan public transport system, providing savings of up to 60% by enabling passengers to travel from around 10 km to more than 130 km at the same fare delivering more affordable public transport to all passengers, regardless of geographical location or socio-economic circumstances. The fares cap encourages sustainable mobility choices reducing car dependency thereby contributing to decarbonisation.	WA Climate Change Policy
Pilbara Traditional Owner Participation Support Fund	The Pilbara Traditional Owner Participation Support Fund provides funding to support Traditional Owners in the Pilbara Energy Transition and progress clean energy projects on Country. It provides up to $100,000 in grant funding for advice and support relating to renewable energy projects.	Energy Transformation Strategy
Zero Emission Vehicle Rebate	The Zero Emission Vehicle (ZEV) Rebate Scheme in Western Australia encourages the purchase of zero emission vehicles. Vehicles eligible for a $3,500 rebate include those fully powered by batteries or hydrogen fuel cells, with a maximum dutiable value of $70,000 or less.	Electric Vehicle Strategy
Renew the Regions Program	Aims to support regional towns access to green energy and associated job creation with opportunities for Aboriginal people. As part of the program, two community batteries were installed in Broome in 2022, freeing up more than 1,400kW of hosting capacity so that more rooftop solar could be installed.	Energy Transformation Strategy



Oxer Lookout, Karijini National Park. Image courtesy of Tourism Western Australia.

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