

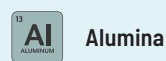


Kate Chaney MP
FEDERAL MEMBER FOR CURTIN

Clean Power: Securing WA's future prosperity



WA's current exports industries



Alumina



Ammonia



Cattle



Fruit & veg



Gold



Grain



Iron ore



Lithium



LNG



Ports



Sheep



Wine



This map shows some of WA's biggest current export industries. It is not comprehensive, and icon placement is for illustrative purposes.

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We acknowledge the Whadjuk Noongar people as the Traditional Custodians of this land and we pay our respects to their Elders past and present.

**Kate
Chaney MP**
FEDERAL MEMBER FOR CURTIN

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Message from Kate

Western Australia is extraordinary. We sit on some of the world's most valuable mineral and energy resources, export to the fastest-growing economies in Asia, and contribute a disproportionate share of Australia's economic activity. Our mining and resources sector is the envy of the world, and rightly so.

But WA's prosperity is not as secure as it looks. Our economy is heavily concentrated in one industry, one export and one market. China is reaching peak steel and starting to source iron ore from elsewhere. Other trading partners are introducing carbon tariffs at the border. The markets for which our exports were built are changing, and our thinking has not kept pace.

Here in WA, our resource wealth isn't reaching everyone. Energy bills are high. Housing is unaffordable. Wages aren't keeping up. Part of that cost-of-living pain is repeated global supply chain shocks that drive inflation. COVID-19. Russia's invasion of Ukraine. The Iran war. We now have direct experience of the risks of depending on imports for economic essentials in a world that feels less stable and secure.

And then there is climate change. WA is the only Australian state with rising emissions. The downstream emissions from our exports dwarf our domestic footprint, making WA a disproportionately large part of the global picture. The physical impacts are already here: more frequent fires, longer droughts, rising insurance costs. Acting now is cheaper than adapting later.

In 2024, I worked with my community to publish Curtin's Pathway to Net Zero, which was a vision of decarbonisation at the local level. This report, Clean Power: Securing WA's future prosperity, is its natural successor, zooming out to look at WA's heavy industry, export economy and energy system.

What we found is exciting. The same advantages that made WA a fossil fuel giant can make us indispensable to the world's clean energy transformation. We have the sun, wind, land and minerals. We have the infrastructure, trade relationships and industrial know-how. Green iron, clean hydrogen, and processed critical minerals are industries WA could build now, serving existing customers and opening new strategic alliances.

Decarbonising and diversifying our economy isn't a sacrifice, it's an opportunity to improve prosperity, security and climate action all at once. It lowers energy costs, creates jobs that stay in WA, reduces dependence on foreign fuel markets, and turns our emissions liability into a global climate contribution.

There will still be some tough choices ahead, and trade-offs that governments will need to manage transparently and fairly. Renewable energy infrastructure and mining still have local environmental impacts which need to be prevented where possible. Regional communities deserve a say in local development and to see economic benefits. Governments don't have unlimited funds to spend, but reforming fossil fuel taxes and tax credits could add billions to the budget.

The window to establish ourselves ahead of foreign competitors is open now, not indefinitely. WA has everything it needs to lead. The question is whether we choose to.

This report draws on consultation with more than 50 industry leaders and energy experts, and survey responses from 2300 Western Australians. I particularly want to thank Claire Gardner in my team, for conceptualising, researching and writing the vast majority of this report.

It makes the case that our best future lies in leading the clean energy transformation, rather than waiting to be disrupted by it.



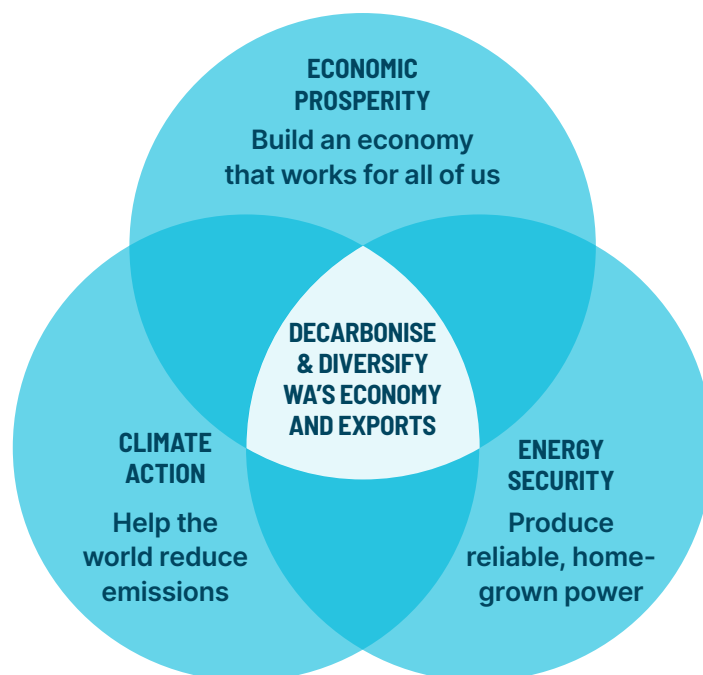
Kate Chaney MP
**Independent Federal Member
for Curtin**



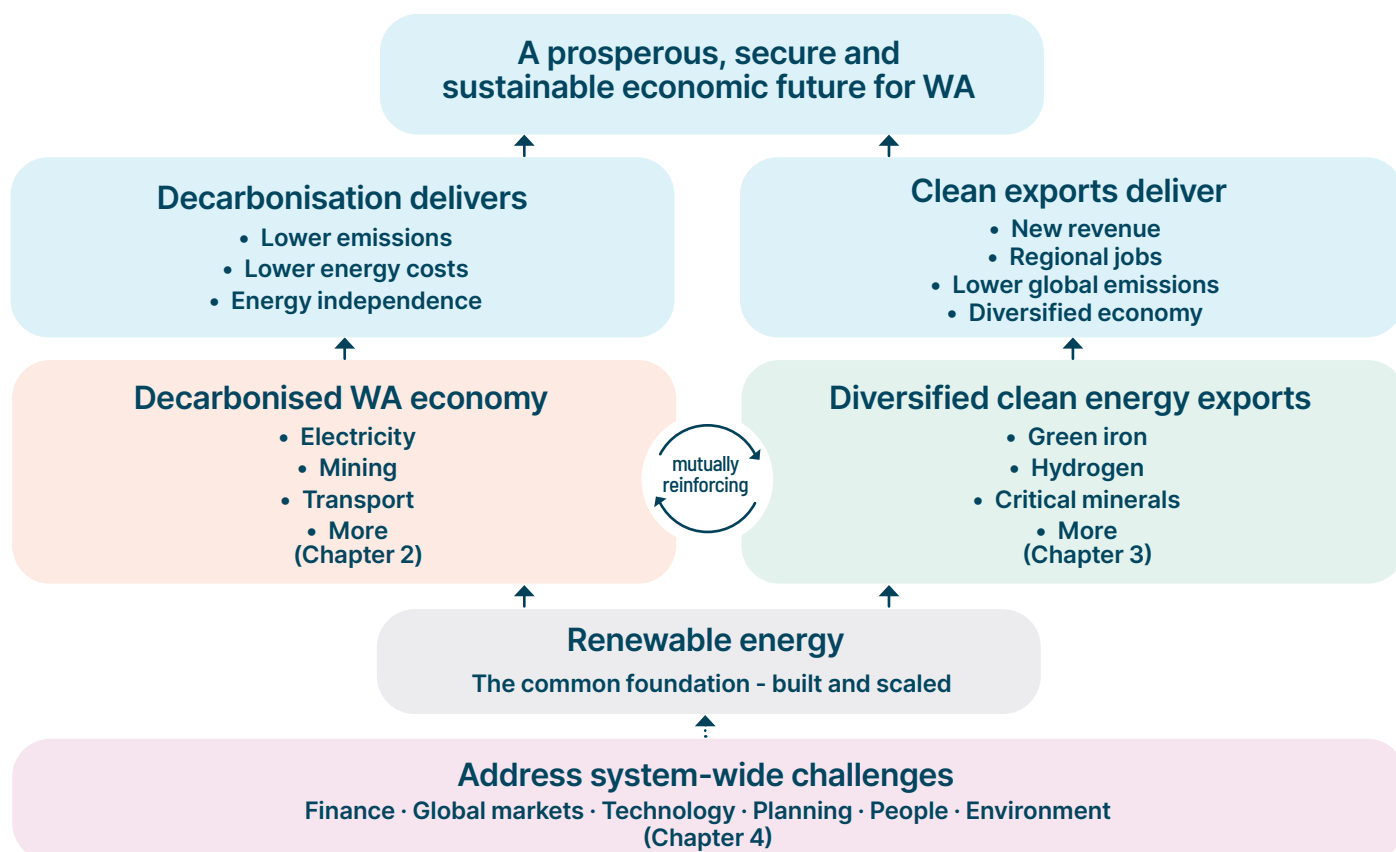
Executive summary

WA is facing three interlinked challenges.

- 1 WA's future economic prosperity is not secure.** The WA economy is dominated by one industry, one export, and one market. When iron ore prices fall or China's demand slows, the whole state feels it. And despite the headline wealth, rising costs show that resources wealth is not reaching everyone.
- 2 WA's energy security depends on imported fuels.** The 2026 Iran War is the latest crisis to trigger a global oil shock. Mining, transport, and agriculture are between 67% and 98% dependent on imported diesel for their energy.
- 3 WA is already feeling the effects of climate change, yet our emissions are still rising.** The downstream emissions from our exports are even larger — roughly 13 times domestic emissions, but also provide the opportunity for WA to influence global emissions through decarbonisation.



Decarbonising and diversifying our economy and exports is the pathway to a prosperous, secure and sustainable economic future for WA.



Decarbonising WA's economy boils down to renewable energy, electrification and sustainable fuels.

90% of WA's energy use and 85% of WA's emissions come from five sectors: electricity generation, fossil fuel extraction, mining, manufacturing and transport.

Agriculture, residential and commercial buildings and waste make up the rest. Fossil fuels are the primary source of energy and emissions for most sectors. To decarbonise, we need to:

- 1 Generate renewable electricity** from solar and wind and store it in batteries.
- 2 Electrify** most fossil fuel technologies (like vehicles, cooktops, and heating).

- 3** Where electrification isn't yet viable, **use sustainable fuels** like clean hydrogen and biofuels. Where possible, produce these fuels domestically.

Emissions that are byproducts of industrial and natural processes, rather than fuel combustion, can be reduced by redesigning industrial processes, adapting agriculture and land management practices and capturing emissions before they enter the atmosphere.

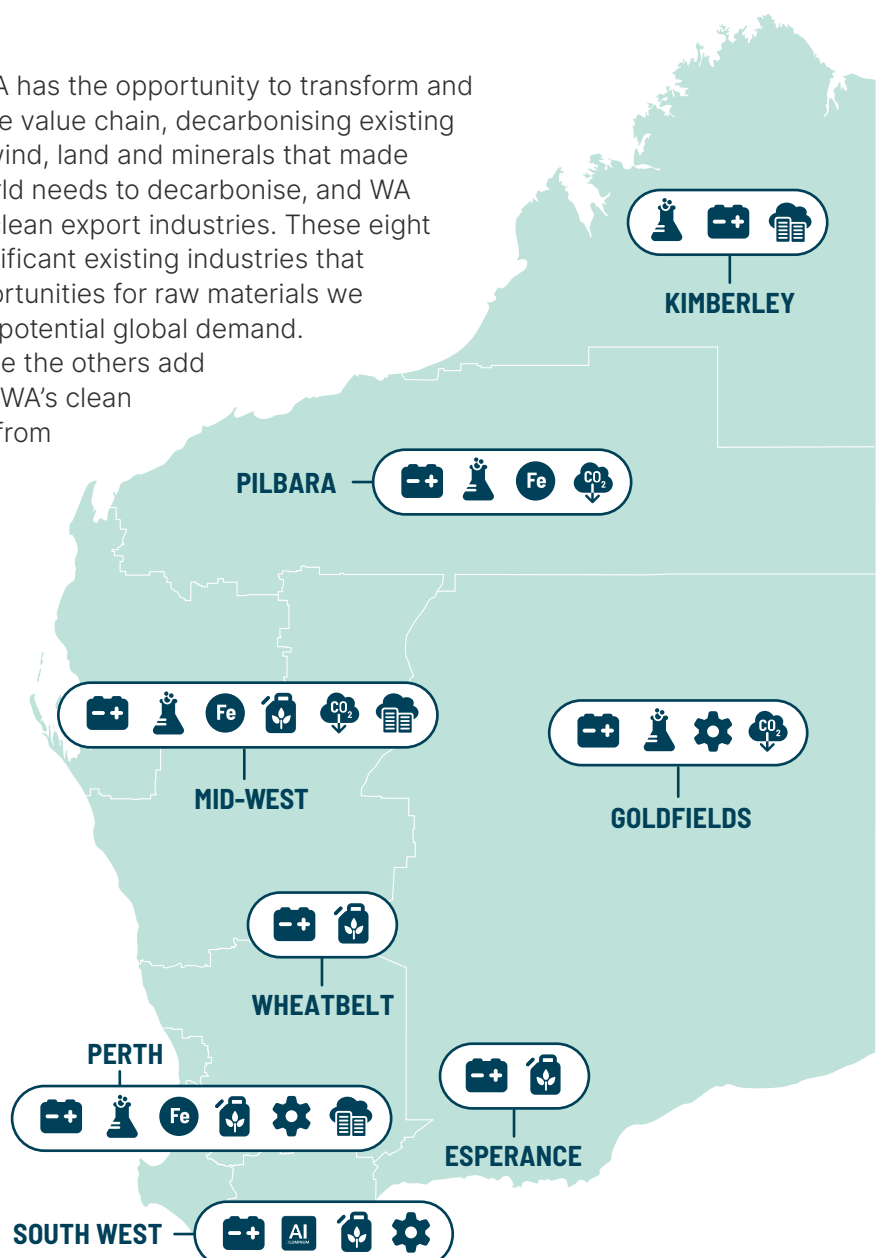
Diversifying into value-added clean energy exports future proofs our prosperity.

As global demand for fossil fuels declines, WA has the opportunity to transform and diversify its export economy by moving up the value chain, decarbonising existing industries, and building new ones. The sun, wind, land and minerals that made us a resources giant are exactly what the world needs to decarbonise, and WA already has projects underway across eight clean export industries. These eight represent different opportunities for WA: significant existing industries that need to decarbonise; new value-adding opportunities for raw materials we currently export and new materials with high potential global demand.

Green iron is WA's biggest opportunity, while the others add resilience, diversity and sovereign capability. WA's clean industry pipeline has projects and proposals from these eight exports spread across the state.

Legend

-  Critical minerals
-  Clean hydrogen and ammonia
-  Green iron
-  Green alumina
-  Advanced manufacturing
-  Biofuels and biochar
-  Carbon dioxide removal
-  Data centres



System-wide challenges must be addressed to create enabling conditions.

- 1 Finance:** attracting private investment and providing public support to back the industries that will make clean energy cheaper for everyone.
- 2 Global markets:** building trade relationships, understanding what partners will need, and moving before competitors do.
- 3 Technology:** getting emerging processes from pilot to commercial scale, and inventing solutions to unsolved problems.
- 4 Planning:** government as active coordinator and common infrastructure provider for the whole transformation.
- 5 People:** building the necessary workforce and ensuring First Nations and regional communities share in the benefits.
- 6 Environment:** protecting country and water as a design requirement, not an afterthought.

 **Critical minerals:** Lithium, rare earths, nickel and copper processed onshore from WA's globally significant deposits.

 **Clean hydrogen and ammonia:** Hydrogen and ammonia produced from renewable electricity, for use as fuel, fertiliser and industrial feedstock.

 **Green iron:** Iron ore processed into green iron using WA's world-scale ore reserves and cheap renewables. WA's biggest opportunity.

 **Green alumina:** Decarbonising WA's existing world-scale bauxite and alumina industry.

 **Advanced manufacturing:** Battery components and other equipment the clean energy transition needs, made onshore.

 **Biofuels and biochar:** Renewable fuels and biochar made from agricultural and organic waste, improving energy independence.

 **Carbon dioxide removal:** Drawing down CO₂ from the atmosphere and storing it durably, through mineralisation, direct air capture and bio sequestration.

 **Data centres:** Renewable-powered data processing serving Asian markets, leveraging WA's geographic position and cheap clean electricity.

Governments must lead this transformation with clear, consistent, bold policies.

- 1 Supercharge renewables roll-out:** to build out renewables at the speed and scale the energy transformation needs, governments must coordinate strategic transmission investment, streamline planning and approvals, and underwrite large-scale clean energy projects to unlock private capital.
- 2 Reduce dependence on imported fossil fuels:** a long-term strategy to replace imported diesel, petrol and jet fuel with domestic renewable energy, electrification and sustainable fuels, rather than just managing the risk of supply disruption.
- 3 Make sure Australians get a fair share from our resources:** reform royalties and export taxes so that the wealth generated by Australia's fossil fuel and clean energy resources flows back to Australian communities, not just to shareholders.
- 4 Level the playing field for clean Australian industry:** ensure clean domestic producers are not undercut by cheaper high-emissions imports, while positioning WA's clean exports to access premium international markets that increasingly require low-carbon credentials.
- 5 Derisk clean industry investment:** help first-mover clean energy and industrial projects reach Final Investment Decision by sharing early-stage risk and creating demand certainty, so private capital has the confidence to invest at scale.
- 6 Make big polluters accountable for emissions:** in lieu of a price on carbon, strengthen and expand the Safeguard Mechanism so that Australia's largest emitters are incentivised to undertake ambitious, on-site decarbonisation.
- 7 Stop subsidising the wrong fuels:** reform the Diesel Fuel Tax Credit and transition to a road user charge, so government revenue policy stops actively rewarding fossil fuel use at the expense of cleaner alternatives.
- 8 Make sure no business gets left behind:** targeted support for small and medium businesses in manufacturing, transport, agriculture and commercial sectors that sit outside the Safeguard Mechanism and currently have neither the incentive nor the means to decarbonise.

Chapter 1:

Why we need to decarbonise and diversify

WA's 'dig and ship' resources economy has served us well, providing wealth and stability for decades.

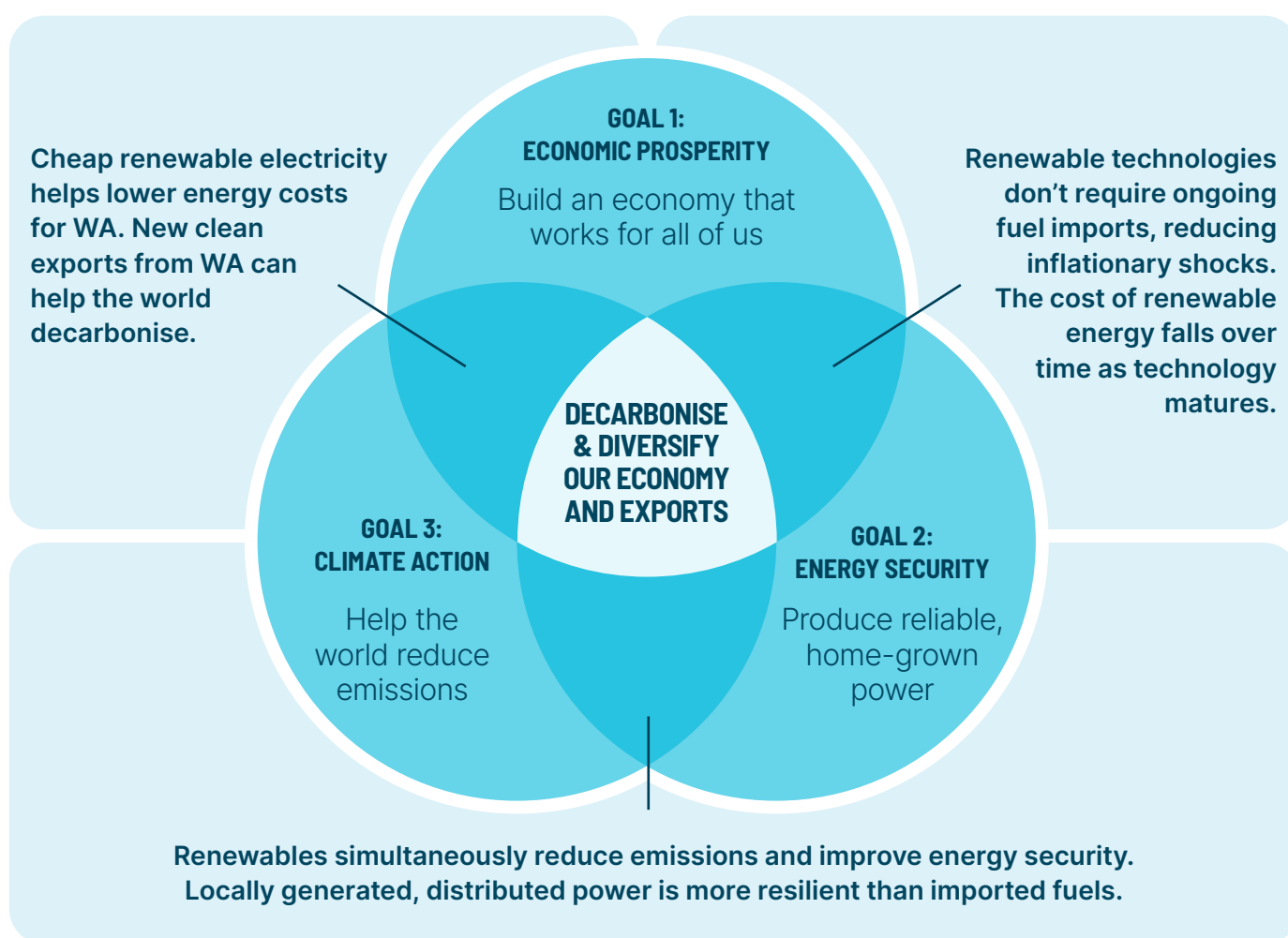
But, it's not future-proof. Climate change and the global energy transformation, rising international conflict, supply chain shocks, changing export markets and declining prosperity at home, mean we cannot expect 'more of the same' to provide future resilience and prosperity.

This trilemma of economic, security and climate challenges can be collectively addressed by **decarbonising** and **diversifying** WA's economy. The suite of decarbonisation and diversification solutions don't solve everything, but can make significant progress through win-win-win solutions.

To **decarbonise** means to transition from fossil fuels to renewable energy systems, reduce greenhouse gas (GHG) emissions to net zero and remove our dependence on global fossil fuel supply chains exposed to international conflict; to replace expensive, ageing fossil fuel infrastructure with cheaper, cleaner technology.

To **diversify** means to build resilience and complexity by making WA's economy less dependent on one or two major sectors, commodities and export partners; to improve supply chain resilience and independence; and, in the process, ensure our economy serves the people of WA for the long-term, with jobs, wages and living standards that benefit all of us.

This chapter outlines the benefits of decarbonising and diversifying; provides an overview of WA's economy, energy, and emissions; and lays out the choice ahead. Responses from a survey of 2300 Western Australians are included throughout.



Economic prosperity: Build an economy that works for all of us

What prosperity could look like:

For households: Affordable cost of living, real wage growth, and wealth and economic opportunity across the state, not just in Perth or the resources sector.

For businesses: A productive, diversified economy with low energy costs, a skilled workforce, access to capital and the ability to compete in global markets.

For government: A sustainable budget that doesn't depend on commodity price windfalls, with the fiscal capacity to invest in services, infrastructure and long-term resilience.

“We need a better return on our natural resources to pay for the energy transition. Middle class people have been going backwards for too long. It's time for billionaires and big corporations to pay.”

Survey respondent

Survey respondents chose 'Australia getting too little back from its gas exports' more often than any other economic, energy or climate issue, including cost of living, bushfires and rising emissions.*

CHALLENGE	HOW DECARBONISING AND DIVERSIFYING HELPS
Rising inflation, cost-of-living pressures, and declining real wages	Renewables are the cheapest form of new electricity and reduce long-term energy costs for households and businesses. Renewable technologies get cheaper over time as they mature and generally don't require ongoing fuel costs. Renewables insulate against oil and gas price shocks that drive inflation across all sectors. Unlike fossil fuels, renewable energy assets can be owned by households, communities and small businesses, sharing the economic benefits.
Our 'dig and ship' economy lacks complexity and doesn't value-add	The success of our resources sector has crowded out other industries, leaving the economy less diverse and more exposed. WA's economy is heavily concentrated in exporting iron ore to China. Clean energy exports, such as green iron and critical mineral processing, would improve diversity and resilience, and buffer against global shocks and concentrated volatility. Clean manufacturing would value-add, create more jobs per dollar, and keep more wealth onshore.
Stagnating productivity and innovation	Green industries create innovation and R&D opportunities. Renewable energy costs fall as technology matures, unlike fossil fuels, which face rising extraction costs as reserves deplete. Clean technology adoption drives productivity improvements across existing industries.
Our exports are not future-ready	China's steel demand is peaking as construction slows down, and new African iron ore projects will create direct competition for WA, at lower cost. Meanwhile, trading partners are pricing carbon and the global clean energy transformation is accelerating. Current fossil fuel export expansion plans risk significant stranded assets as decarbonisation continues and other countries turn to renewables for energy security. Clean energy exports can meet changing market needs, but the opportunity for WA to establish itself is closing, as other countries strive to get there first.
Too little public benefit from our most profitable exports	Changes to export taxes would share the benefit of the resources wealth currently flowing to foreign companies. Removing fossil fuel tax breaks would save the federal government billions of dollars. The clean export industries WA builds next can be structured to capture value onshore from the start. Diversified export industries broaden the tax revenue base, and stable, long-run clean energy industries smooth the boom-bust cycle.
Regional inequality	Decentralised renewables and clean industry create new jobs and opportunity across regional WA. Proactive workforce transition planning protects communities as fossil fuel industries decline.

* Source: Decarbonising WA survey, July 2026 (n=2,300). Respondents chose up to three concerns from eight options.

Energy security: Produce reliable, home-grown power

What security could look like:

Energy security: Cheap, clean, home-grown power that stays on and stays affordable. Reduced vulnerabilities to price spikes, supply disruptions or the decisions of foreign governments.

Supply chain security: Steady access to the fuels, fertilisers and raw materials WA depends on, and to the critical minerals, components and technologies that will power the energy transformation. Essential supply chains that are not controlled by a single nation.

Geopolitical security: Building on WA's strong trade relationships with Asia while diversifying into new markets and deepening economic ties with strategic partners. Reducing vulnerability without abandoning valuable relationships.

“Australia has all the resources to be energy independent - we should be producing all our own fuels/energy.”

Survey respondent

WA's dependence on imported fuel was a greater energy security concern to survey respondents than keeping electricity reliable and affordable.

CHALLENGE	HOW DECARBONISING AND DIVERSIFYING HELPS
Dependence on fuel imports exposes WA to supply and price risks	WA's transport, agriculture, construction and mining sectors run on imported diesel. Global supply shocks drive up prices and increase pressure on domestic gas supply. Electrifying transport and industry permanently reduces oil and gas demand. Once built, renewables provide cheap, clean, home-grown power, immune to global shocks. The more we electrify, the easier it becomes to support the parts of the economy that continue to rely on diesel.
Essential supply chains are controlled by geopolitically unstable or non-allied nations	Fossil fuel supply chains are concentrated near conflict zones including the Middle East and Russia. Critical minerals and clean energy technologies are dominated by China, often at over 90% market share, through state subsidies and deliberate below-cost pricing to undercut competition. Beijing has restricted exports and imposed tariffs for geopolitical purposes. Working with allied middle powers to diversify supply chains increases resilience. Domestic production further reduces import dependence.
Export concentration with China creates economic coercion risk	China accounts for roughly 50% of WA's exports. This is a concentration that can be weaponised. In 2020, Beijing sanctioned Australian barley, rock lobster and other exports in response to Australia's COVID-19 inquiry call. Diversifying export markets and products reduces this vulnerability.
Regional and remote WA depends on imported diesel for power	Distributed renewables and storage provide energy independence for remote communities and businesses. Off-grid and microgrid systems require no ongoing fuel and improve resilience during natural disasters.
Agriculture threatened by fertiliser import dependency	Domestic clean ammonia and fertiliser production would reduce import dependence and reduce emissions. Regenerative agriculture reduces fertiliser needs while improving soil carbon and resilience to climate impacts.
Grid stability and ageing energy infrastructure	Ageing coal-power stations become less reliable as they near their end-of-life, and don't have the flexibility to cope with high uptake of rooftop solar. As more households generate their own cheap power, the electricity grid must modernise to maintain stability.

Climate action: Help the world reduce emissions

What climate action could look like:

Western Australia: Avoiding the worst climate impacts through early action, restoring nature to draw down carbon and strengthen resilience, and building an economy that thrives in a decarbonised world.

Australia: Reducing WA's emissions helps Australia reach its nationally legislated emissions-reduction targets and its international obligations under the Paris Agreement, helping make Australia a credible and influential voice on global climate action.

The world: Through its exports, WA has a material impact on reducing global emissions across key polluting industries, and provides our trading partners with the critical minerals essential to the production of clean energy technologies.

"I'm worried that climate action isn't fast enough. As a rich first-world country, we have a global responsibility to lead the world in this space"

Survey respondent

The most common combination of economic, energy or climate concerns chosen in the survey was bushfires and extreme weather, WA's rising emissions, and getting too little back from our gas exports.

CHALLENGE	HOW DECARBONISING AND DIVERSIFYING HELPS
Catastrophic risks to people and nature from climate change	WA is especially vulnerable to increased heatwaves, bushfires, droughts, and other natural disasters that climate change will bring. Decarbonising our economy and restoring nature reduces emissions and helps avoid the worst climate impacts.
The world is acting to reduce climate change, but not fast enough	The first decade of action under the Paris Agreement reduced the global warming trajectory from approximately 4°C to just under 3°C. ¹ The world is not yet on track to reach the 1.5°- 2°C goal, but current action and commitments will take us halfway there. Rapid and deep emissions cuts are as important to the climate as eventually reaching net zero emissions. ² 83% of the global economy is now covered by a net zero target, but more action is needed in the short-term, including in WA, which does not have any emissions reduction targets, beyond a net zero by 2050 goal.
WA's emissions are growing, making it harder to meet national emissions reduction goals	WA is the only state with rising emissions, ³ at roughly double our population share of national emissions. ⁴ Australia can't reach its emissions reduction targets without WA doing its fair share. Almost half of WA's domestic emissions are attributable to export industries. Decarbonising our economy means decarbonising our exports, making us more competitive on the global stage.
WA's emissions-intensive exports are not keeping up with the global shift to clean energy	WA is one of the world's largest exporters of iron ore, liquified natural gas (LNG) and alumina, which are emissions-intensive industries. The downstream emissions from WA's exports are globally significant; many times larger than WA's or Australia's domestic emissions. Our LNG exports are framed as a transition fuel for Asia, but much of our LNG exports to Japan are on sold for a profit. Some trading partners are introducing carbon tariffs on high-emissions imports, for which our exports are not ready. Diversifying into clean energy exports would decarbonise supply chains, helping trading partners reduce their own emissions.

WA's economy

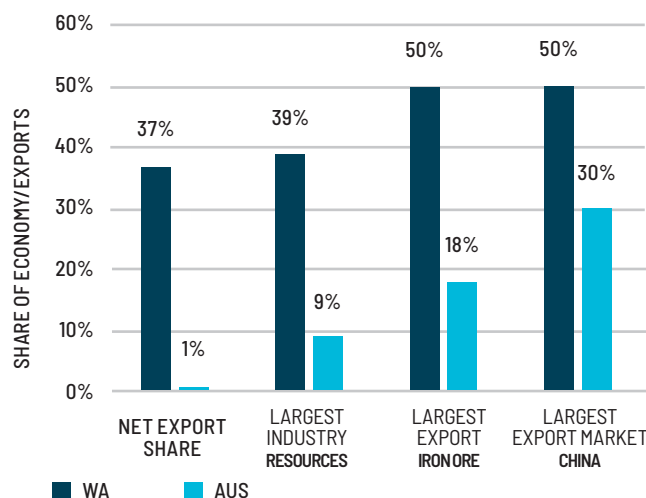
WA's economy is remarkable by any measure.

We generate 16.5% of national GDP despite having only 11% of the population⁵, and we produce almost half of Australia's total export goods.⁶ Net exports of goods and services contribute 37% of WA's economy, compared to 1% nationally, as Australia's imports largely balance out its exports.⁷ That extraordinary productivity comes predominantly from the resources sector (mining and fossil fuel extraction), which makes up 39% of WA's economy — the largest by a long margin. The resources sector has underpinned decades of growth, high wages, and strong public finances and supports a deep network of engineering, services and technology businesses across the state. But that success rests on a narrow base. Iron ore makes up half of WA exports.⁸ China buys roughly half of everything we sell, including 86% of our iron ore alone.⁹

That export dominance has deep roots. WA's wealth has always come from the land, although the resource has changed over time. The 1890s Gold Rush transformed a struggling colonial outpost into a boomtown almost overnight, quadrupling the population in a decade. When gold faded, wheat and wool exports carried the economy through the early twentieth century. Iron ore took over from the 1960s, when export restrictions were lifted and the Pilbara began its transformation into one of the world's great mining regions. LNG joined iron ore as a major export from the 1990s, and together they have dominated ever since. **The pattern of 'dig it up and ship it out' has repeated across every era, except when we were 'riding the sheep's back'. The resource has changed; the model hasn't.**

WA's mineral wealth is extraordinary in its scale and variety. We are the world's largest exporter of iron ore and lithium, and a top-five producer of gold, alumina, nickel, rare earths and mineral sands. The Pilbara holds some of the world's largest iron ore deposits; the Goldfields region has produced gold continuously since the 1890s; and the south-west is home to globally significant lithium and rare earth deposits that every clean energy technology depends on. Our resource endowment is genuinely world-class, and can be the foundation of what the world will need tomorrow.

WA'S ECONOMY DEPENDS ON RESOURCES EXPORTS (2024-25)



Source: WA Economic Profile, June 2026; ABS, 2025; DFAT, 2025. Author's calculations.¹⁰

Resources exports have long been the WA economy's greatest strength, but they have created a vulnerability. In 2021, the WA Government commissioned Harvard University's Growth Lab to assess constraints on WA's economic diversification. Its findings were sobering: **WA ranked last among comparable wealthy regions globally for economic complexity, with fewer of the capabilities, industries and knowledge networks that allow economies to adapt and grow.**¹¹

Economic complexity is not a measure of whether products or industries are technologically complicated, but a broader assessment of the richness of an economy's productive capabilities. WA's mining industry is among the most technologically advanced in the world, but the knowledge, skills, institutions, infrastructure and supplier networks that sophisticated production requires are concentrated in a narrow set of industries rather than spread across the economy. The more economically complex an economy is, the harder it is for other jurisdictions to compete against it.

The impacts ripple out across all levels of WA society:

- **For households:** Without diverse employment opportunities, talent outside mining leaves for interstate and overseas. Regional non-mining communities see little benefit from resource wealth, while mining towns experience boom-bust cycles that leave permanent residents stranded when commodity prices fall. FIFO workforces earn high wages in the Pilbara but spend in Perth, shifting wealth back to the city and widening the divide between metropolitan and regional WA.

- **For businesses:** A 'dig and ship' economy doesn't 'innovate and build'. WA chronically underinvests in R&D, and lacks the professional services, manufacturing and technology sectors that grow up around diverse industrial bases, making the whole economy less resilient to shocks. We export raw materials and import expertise.
- **For government:** State revenue swings dramatically with iron ore royalties through boom-and-bust cycles, creating fiscal volatility. This is exacerbated by borrowing during the boom, then cutting spending during the bust, amplifying the impact of both. Royalties delivered almost \$10 billion in 2024-25, a fifth of all state revenue, with four fifths of that coming from iron ore alone. BCEC modelling finds this base erodes as output shifts towards processed products. Payroll and company tax grow but do not fully replace lost royalty revenue.¹² Current settings will need to adjust to maintain future revenue.

The resources boom has made diversification harder, not easier, by driving up wages and costs in ways that crowded out other industries. When a boom goes bust, as in 2014, there is little to cushion the blow.¹³ Unemployment spiked, wages stagnated and house prices fell. The state had borrowed during the boom rather than saved, leaving no fiscal buffer. Economists call this Dutch Disease. **The boom creates wealth, but quietly hollows out everything else, and when it turns, the whole economy feels it.** But the capabilities built through that boom count for more in a decarbonising world. On a broad measure of all goods, WA ranks 120th globally for economic complexity, but WA ranks 12th globally, the highest of any Australian state, on a measure of 'green' complexity of renewable and decarbonisation technologies.¹⁴

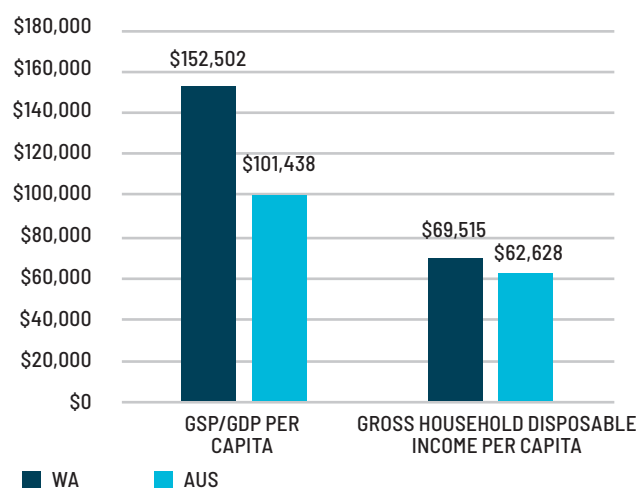
WA's headline wealth masks a more complicated reality. Our Gross State Product (GSP) per capita is 50% higher than the national average, yet household disposable income per capita is only 11% higher.¹⁵ Some of that gap is expected. GSP measures everything produced in the state, including returns to capital and exports that were never going to flow into household budgets. But the size of the gap still indicates that **much of the wealth that WA produces does not end up with Western Australians.**

Mining is a high-productivity industry that generates enormous output with relatively few workers, which is exactly what efficient businesses should do. But an economy built around one such sector means relatively few people share directly in the wages it generates: mining accounts for 39% of our economy but only around 9% of jobs.¹⁶ Beyond employment, most major resource companies have significant interstate and overseas shareholdings, sending

profits out of WA. And despite the onshore resources legally belonging to the people of WA and offshore resources belonging to the Commonwealth, tax settings mean the public's share is modest. This is particularly true for offshore gas. Australians pay more tax on beer than gas companies pay for the offshore gas they export.¹⁷ Each of these is a separate leak in the pipeline between WA's economic output and Western Australians' pockets.

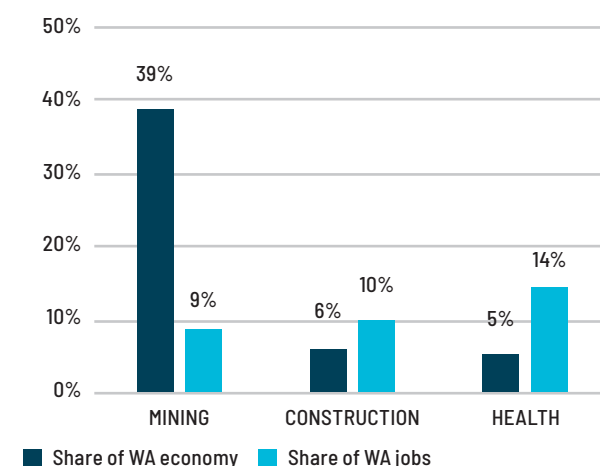
Economic diversification is not about turning our back on resources. It's about building resilience, and building other complementary strengths, so that our economy serves all West Australians, and is ready for whatever the world throws at us next.

MUCH OF WA'S WEALTH DOESN'T REACH HOUSEHOLDS (2024-25)



Source: WA Economic Profile, June 2026¹⁸

HOW DO WA'S THREE BIGGEST SECTORS COMPARE IN 2024-25?



Source: WA Economic Profile, June 2026¹⁹

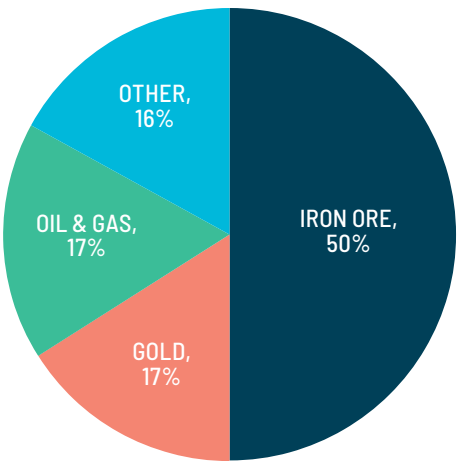
WA's Exports

WA is an export powerhouse. In 2025, WA exported goods worth \$237 billion and imported \$54 billion.²⁰

Our exports are heavily concentrated. Iron ore alone makes up 50% of total export goods (and 47% of export goods and services). China buys 52% of everything we sell, and eight of our top ten markets are in Asia. Our import goods are more diversified across both commodity and market, with China providing only 21% of imports.

Unless otherwise stated, all data about WA's exports, imports and trading partners on pages 14-15 come from the State Government's WA Trade Profile – May 2026, which reports calendar year 2025 figures.²¹

WA'S EXPORT GOODS (BY VALUE) ARE HIGHLY CONCENTRATED



Source: WA Trade Profile, May 2026²²

OUR TRADING PARTNERS

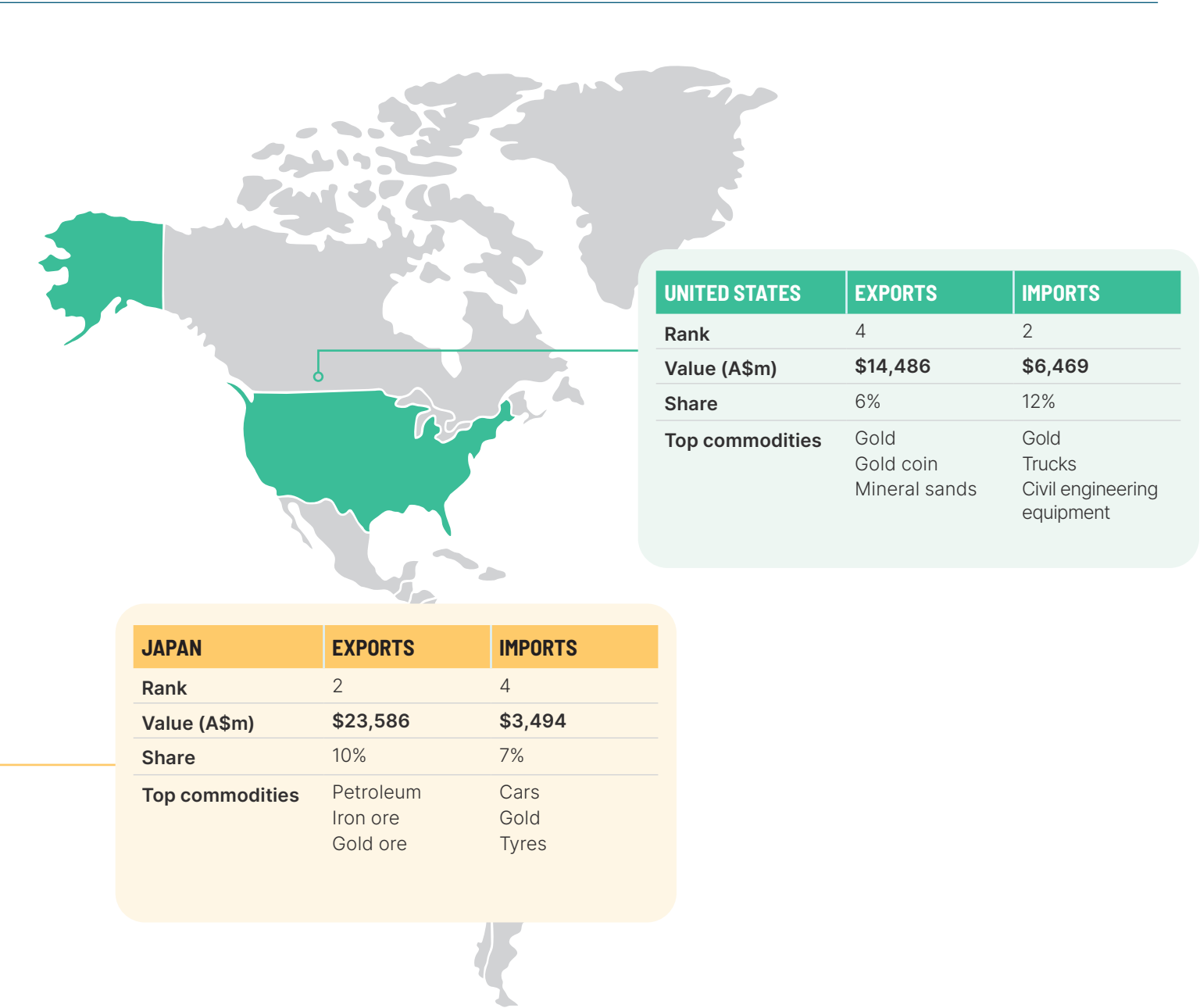
CHINA	EXPORTS	IMPORTS
Rank	1	1
Value (A\$m)	\$124,085	\$11,217
Share	52%	21%
Top commodities	Iron ore Petroleum Lithium concentrate	Cars Refined fuels Electronics

SOUTH KOREA	EXPORTS	IMPORTS
Rank	3	12
Value (A\$m)	\$17,408	\$1,339
Share	7%	3%
Top commodities	Petroleum Iron ore Gold	Cars Chemicals Silver and platinum

SINGAPORE	EXPORTS	IMPORTS
Rank	5	3
Value (A\$m)	\$ 8,371	\$ 3,558
Share	4%	7%
Top commodities	Petroleum Gold Mineral sands	Refined fuels Food Other petroleum products

WA's top commodities are globally significant in terms of total global production, not just trade volumes.

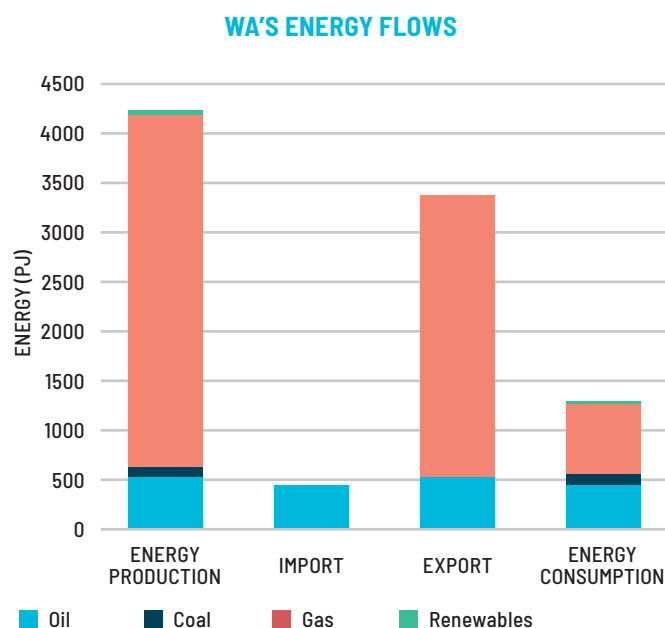
EXPORT	WA'S GLOBAL SIGNIFICANCE
 Iron Ore	World's largest producer.
 Gold	Australia is the world's third largest producer; WA contributes 70% of national production.
 LNG	World's third largest exporter (LNG is a small share of global gas production).
 Agri-food	Australia is the world's fourth largest canola producer and one of the top wheat exporters; WA contributes ~40-50% of both.
 Alumina	World's second largest producer.
 Lithium	World's largest producer.



WA's energy

Like Australia, WA is a huge net energy exporter, producing four times the energy we consume. Yet WA's refined fuel supply is entirely import dependent; a clear security risk that can be addressed by decarbonising and diversifying.

100% of WA's coal and renewable energy are produced and consumed domestically. They are a small share of energy overall. Gas is the vast majority of our energy production, with 80% exported as LNG. Since the closure of BP's Kwinana oil refinery in 2021, WA exports 99% of the oil we produce as unrefined petroleum, and imports 99% of the oil we consume as refined products, including petrol, diesel and jet fuel.



Source: Australian Energy Statistics, 2025.
Author's calculations.²³

The primary energy fallacy

97% of the primary energy WA consumes is from fossil fuels. But a significant proportion of this energy is wasted as heat through inefficient fossil fuel combustion technologies producing electricity and motion. The 'primary energy fallacy' is the idea that we need to replace each joule of fossil fuel energy with a joule of renewable energy; it fundamentally overstates the scale of the decarbonisation challenge.²⁴

Coal-fired power stations convert roughly 40% of the chemical energy in coal into electricity. More efficient gas turbines still only reach around 50-60% efficiency.

Petrol cars convert about 16-25% of the chemical energy in petrol into motion. Electric vehicles convert about 85-90% of the electrical energy stored in their batteries into motion. **While solar panels may only convert 17-24% of the light that hits their surface into electricity, we do not spend any money or do any work to make sunshine arrive. By contrast, every gram of coal, oil or gas we burn has been dug up, processed, transported and paid for.**

A global transition to renewable energy and electrification across industry, buildings and transport could see a 40% reduction in final energy needed to provide the same services.²⁵

The Iran War exposed WA's fuel vulnerability

When the US-Israel war on Iran closed the Strait of Hormuz in late February 2026, the price spike hit WA within weeks. Australia's fuel comes from Asian refineries that source crude from the Middle East, and it stopped flowing. Perth recorded the largest fuel price spike of any Australian capital, nearly 60 cents per litre in three weeks.²⁶ WA uses 25% of Australia's diesel²⁷, and diesel prices barely responded to the Federal Government's fuel excise cut, because unlike weekend driving, our mining, transport and agricultural industries can't stop.

The Federal Government's response was substantial: a halved fuel excise, emergency diplomatic missions to secure additional shipments from LNG export partners, and over \$10 billion in the May budget, including \$3.2 billion for a government-owned onshore reserve and \$7.5 billion to underwrite emergency international procurement.²⁸ It is the largest fuel security investment in Australia's history. WA established its own State diesel reserve which is enough, at full capacity, to last local industry only a matter of days.²⁹ **Every dollar of this response addresses supply. None of it addresses dependency.**

Unless otherwise stated, all data about WA's energy comes from the Australian Energy Statistics 2025.³⁰

WA is the gas state

WA predominantly and disproportionately relies on gas; an energy mix very different to the rest of Australia.

WA’s gas dependence started with the opening of the Pilbara North West Shelf Project in the 1980s. Even with the vast majority of gas being exported as LNG, more than half the energy consumed in WA is from gas. As the graph shows, WA’s LNG exports are a comparatively recent development that dwarf domestic energy consumption across all energy sources. WA’s LNG exports may give Australia negotiating power in the current fuel crisis, but do not provide energy security long term to the sectors dependent on imported fuels.

WA is among the top three LNG exporters in the world (the exact rank varies from year to year). Despite this extraordinary volume of production and export, WA’s domestic gas supply is not secure long-term. **The government projects domestic gas shortfalls by the 2030s, unless domestic supply increases or demand reduces.**³¹

While WA’s domestic-only gas fields are declining, it is the prioritisation of export contracts that is the greater supply threat. The much-touted State Government Domestic Gas Reservation Policy, which

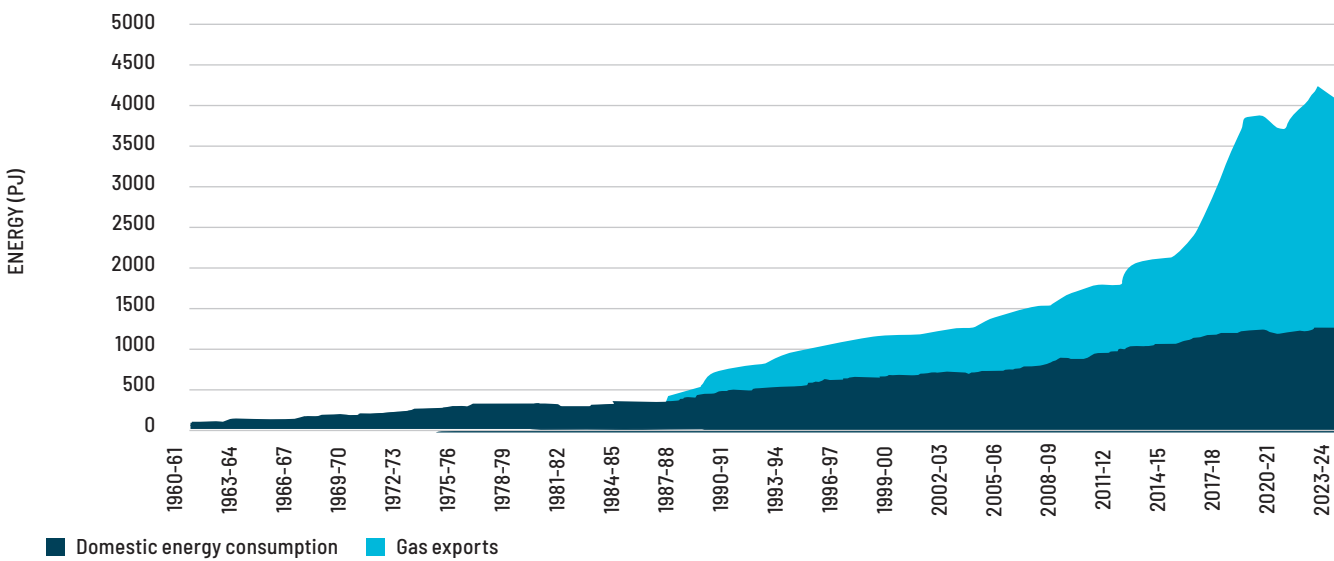
	IN WA, GAS IS:	IN AUS, GAS IS:
Energy production	84%	32%
Energy exports	84%	29%
Energy consumption	53%	25%
Electricity generation	60%	17%

Source: Australian Energy Statistics, 2025³²

promises that 15% of LNG production will be reserved for WA consumers, is not being enforced in practice.³³ That 15% is promised over the lifetime of a project or agreement, and not year-by-year. When export prices are higher than domestic prices, exports win out. In 2023, only 8% of gas production was supplied domestically. A 2024 Parliamentary Inquiry found the policy “no longer fit for purpose.”³⁴ IEEFA analysis found that diverting just 4% of LNG feedgas, well within the existing 15% commitment, would close the shortfall to 2034.³⁵

Domestic gas demand is forecast to peak in 2030 and decline only modestly thereafter with a 19% drop by 2045, as electrification slowly displaces gas across industry and electricity generation. This modest decline reflects current weak policy settings, not the pace of decarbonisation that is technically achievable. **Stronger policy signals could accelerate the transformation, reduce domestic gas demand faster, and ease the supply gap, without needing new gas fields.**

WA’S GAS EXPORTS DWARF DOMESTIC ENERGY CONSUMPTION



Source: Australian Energy Statistics, 2025. Author’s calculations.³⁶

WA's oil exposure

WA cannot achieve energy independence by relying on oil.

Most of the oil WA produces is the wrong product for our needs, our remaining reserves are nearly exhausted, and refining more of it here would not resolve either problem.

We export the wrong hydrocarbon

WA produces very little crude oil. Most of what we produce is condensate, a light liquid that comes up with natural gas, and almost all of it is shipped to refineries in Asia. Diesel is 69% of WA's oil consumption³⁷ and powers the trucks, mining equipment and farm machinery the state runs on. Diesel is primarily made from crude. Condensate is much lighter and mostly yields petrol, producing little of the diesel we need.³⁸ Diesel engines cannot run on petrol, and petrol engines cannot adequately perform the tasks required of large diesel machinery. Every litre of WA's diesel arrives by ship.

Diverting WA's condensate exports to Australian refineries is not an easy fix. Nearly all of WA's condensate is exported to refineries in Asia, physically and contractually locked into LNG production as a co-product.³⁹ Australia's two remaining oil refineries, neither of which is in WA, run primarily on crude oil. Refineries can be built to run on condensate alone, but they produce mainly naphtha, the precursor to petrol, and jet fuel, with only a small proportion of diesel, so we would still not be making enough of the fuel we most need.

Australia's crude oil production is projected to cease within 7 years, and the remaining reserves would supply less than 4 years of national demand.

Our remaining crude oil reserves are nearly exhausted

Australia's crude oil production is falling rapidly and, without new commercial discoveries, Geoscience Australia projects it will cease within seven years.⁴⁰ Proven and probable reserves amount to less than four years of current national demand.⁴¹ Exploration has continued for decades without commercial discoveries, because the lowest-cost fields were developed first and are now depleting.⁴² A new field takes around fifteen years from discovery to first output, longer than the crude oil we have left.⁴³

Unconventional oil is not an answer either. Unconventional resources are those requiring more intensive extraction than drilling a conventional well; hydraulic fracturing (fracking) is the most well-known extraction technique that is also used for unconventional gas. Australia currently has no unconventional oil reserves assessed as viable to extract, and no unconventional oil production.⁴⁴

A new refinery would not change this

In July 2026 the federal and WA governments jointly funded a \$4 million pre-feasibility study into a large-scale refinery in the Pilbara.⁴⁵ It would be the first refinery built in Australia since the 1960s, may cost \$15 billion, and would take ten to fifteen years to build.⁴⁶

But a refinery only delivers fuel security if it runs on Australian oil. Australia's refineries are 83% dependent on imported crude.⁴⁷ Even in 2011, when the country had seven refineries, only 21% of their feedstock was domestic.⁴⁸ A refinery running on imported crude is exposed to the same shipping routes and price shocks as the refined fuel imports we presently rely on.

For WA and Australia to be energy independent, and protected from future oil shocks, both must shift away from petroleum fuels, as domestic production of the required fuels at the required scale is impossible.

Energy use by sector

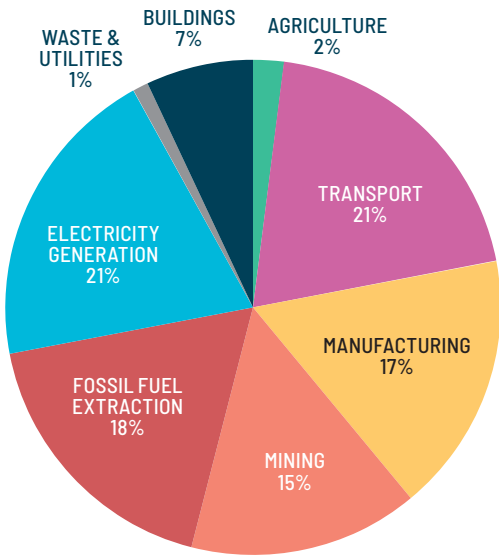
90% of WA's energy is used by five sectors: electricity generation, fossil fuel extraction, mineral and ore mining, manufacturing, and transport.⁴⁹

Residential and commercial buildings use another 7%, while agriculture is 2% and waste, utilities and construction are 1% collectively.

Sectors vary widely in their use of coal, oil and gas, and their dependence on imported fuels. Coal is only used in electricity, manufacturing and mining. Gas is the dominant energy source in electricity generation, fossil fuel extraction, and manufacturing. 99% of oil used is imported refined fuels, with diesel being 69%, petrol 17%, and jet fuel 8%.

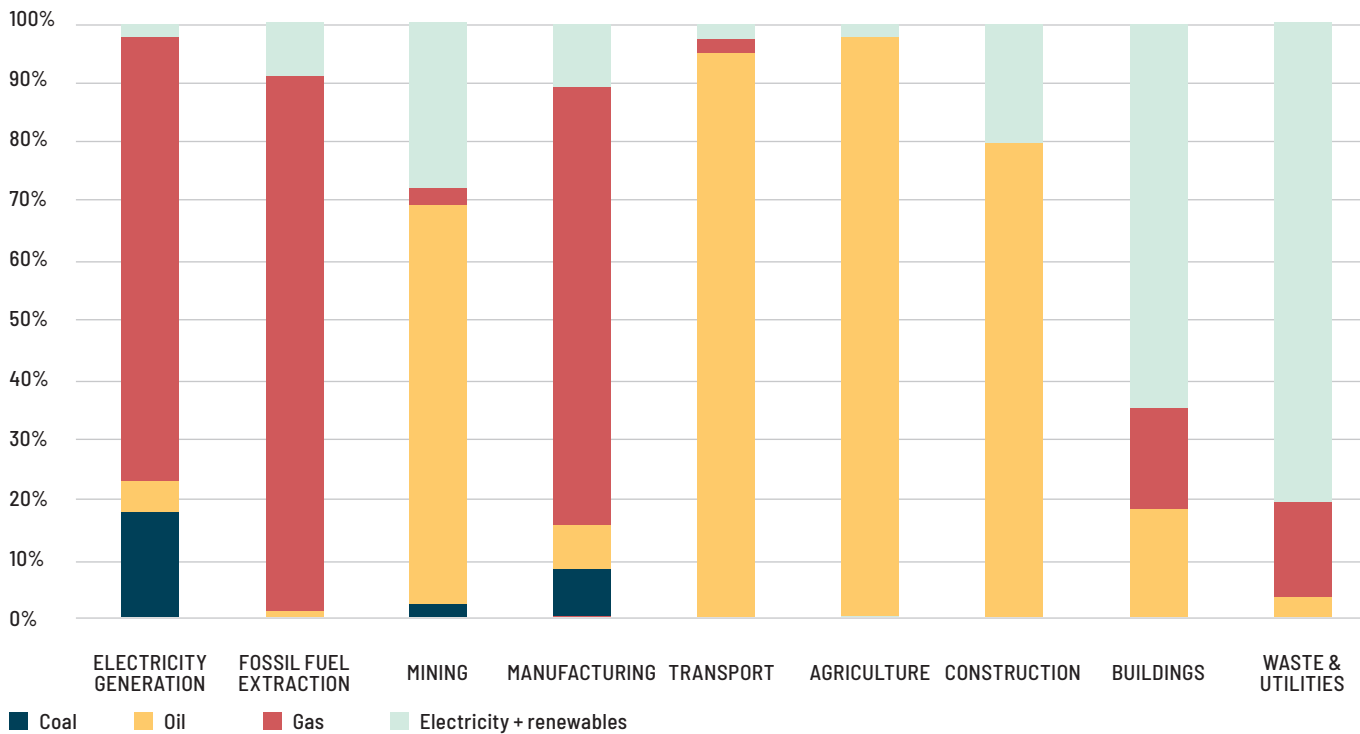
Despite oil imports being only 35% of WA's total energy needs, **mining, agriculture, transport and construction are critically exposed to diesel import risk.** Current fuel security for agriculture and construction could be assured by diverting only a tiny amount of WA's diesel from mining and transport.

WA ENERGY USE BY SECTOR (2024)⁵⁰



Source: Australian Energy Statistics, 2025. Author's calculations. Percentages may not add up to 100% due to rounding.

FOSSIL FUEL DEPENDENCE BY SECTOR



Source: Australian Energy Statistics, 2025. Author's calculations.⁵¹

Note: Electricity + renewables includes electricity generated from fossil fuels and renewables, and energy from other renewables such as wood, solar water heating and renewable fuels. The electricity generation sector shows the energy consumed in producing electricity, not the final generation mix by source. All sectors show energy consumption by primary energy source, which includes all the energy lost through inefficiency from fossil fuel combustion. The proportions of usable final energy by source are unknown. Outside of the transport sector, all oil use is imported diesel.

WA's emissions*

Reaching net zero means the greenhouse gas emissions we produce must equal the emissions we remove from the atmosphere.⁵²

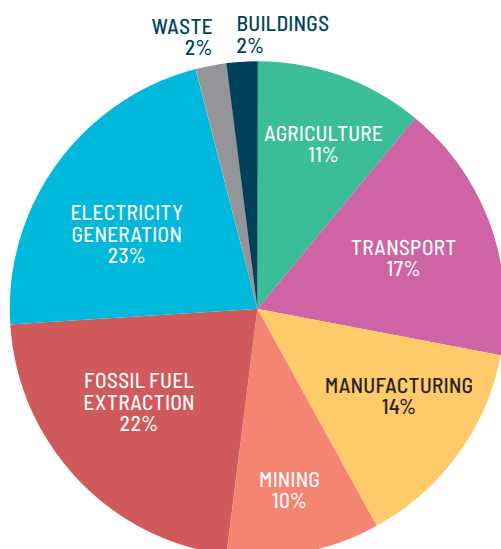
WA's greenhouse gas emissions mostly come from burning fossil fuels to produce electricity, transport or heat for industrial processes. Greenhouse gases are also produced as industrial byproducts, and from organic processes in agriculture, land management and waste decomposition.⁵³

WA is the only Australian state to have increased total emissions since 1990.⁵⁴

WA's only current net carbon 'sink' is land management (officially called 'land use, land use change and forestry'), driven by reductions in land clearing and native forest logging.⁵⁵ Unfortunately, this reduction masks emissions growth elsewhere. When land management emissions are excluded, WA's emissions growth is far more pronounced.

Six sectors produce 96% of WA's emissions: electricity, fossil fuel extraction, mining, manufacturing, transport and agriculture.⁵⁶

WA EMISSIONS BY SECTOR (2024)



Source: Australian National Greenhouse Accounts, 2025. Author's calculations.⁵⁷ Percentages may not add up to 100% due to rounding.

*Note: Mining and construction emissions are not reported separately in Australia's National Greenhouse Accounts, making the precise mining figure unavailable. Given construction's comparatively minor energy use, the combined figure of approximately 9.5 Mt CO₂-e (2023) is treated here as broadly representative of mining emissions.

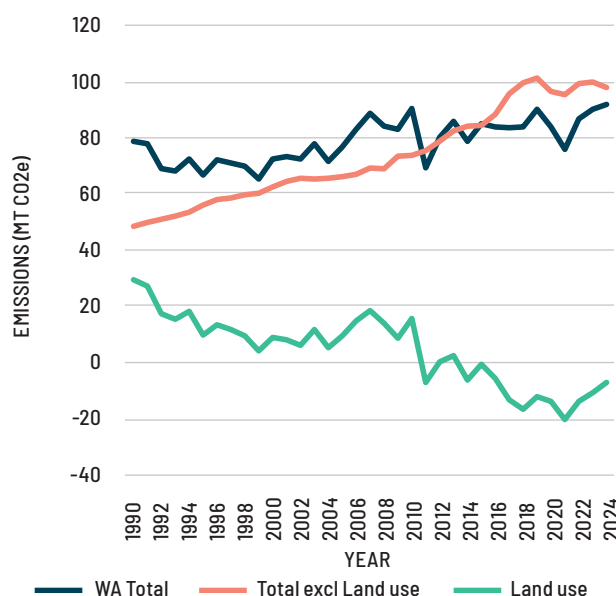
A broader note about data: Australia protects commercially sensitive data when only a small number of companies dominate a sector, by making it confidential. This is found throughout emissions, energy and economic statistics, so this report works backwards and estimates attributions.

Emissions produced
97 Mt CO₂e

Emissions removed
6 Mt CO₂e

Net emissions
91 Mt CO₂e

WA'S EMISSIONS TRAJECTORY⁵⁸

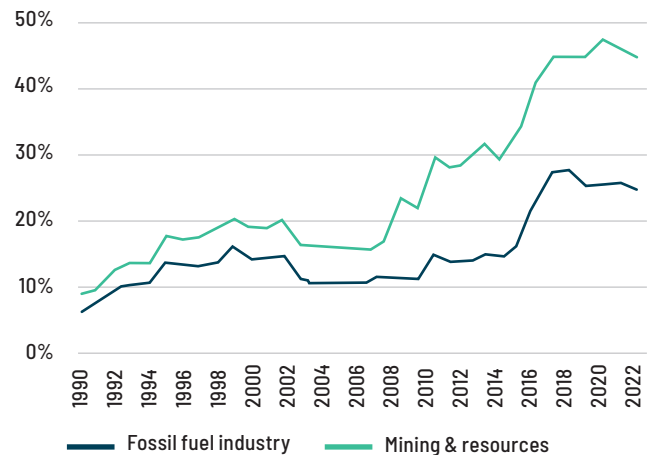


Source: Australian National Greenhouse Accounts, 2025. Author's calculations.

The resources sector is driving emissions growth

Since 2008, WA’s emissions from the mining and resources sector have increased significantly, due to the iron ore boom and growing LNG exports.⁵⁹

RESOURCES SHARE OF EMISSIONS HAS INCREASED FIVEFOLD⁶⁰



Source: Australian National Greenhouse Accounts, 2025.
Author’s calculations.

WA’s share of national emissions
1990 = 13% | 2023 = 20%

In 2023, the resources sector (both mining and fossil fuel extraction) contributed 45% of WA’s total emissions, compared to 37% nationally.⁶¹ This 45% may also include early stage mineral refining that falls under manufacturing. For clarity, this report will address fossil fuel extraction and mining separately.

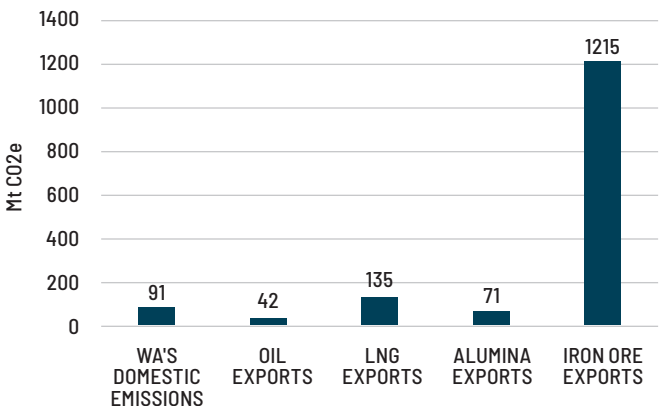
Exported emissions (Scope 3)

To avoid double counting, international convention asks each country to account for emissions produced within its borders, and not upstream or downstream emissions that occur elsewhere (called “Scope 3 emissions”). WA’s emissions figures only reflect emissions that enter the atmosphere in WA. This means that emissions from extracting and refining LNG are included but emissions from burning LNG overseas are not.⁶² On the flip side, WA is responsible for the emissions from the petrol and diesel we burn, instead of the countries that extract or refine the petroleum.

There is no single published figure for the total downstream emissions from all of WA’s exports. However, Parliamentary Library estimates⁶³ of the Scope 3 emissions from just four of our major export commodities tell a striking story: in FY2024, WA’s four largest export commodities alone generated Scope 3 emissions 16 times greater than our entire domestic footprint, or roughly 2.6% of global emissions, and that’s before accounting for gold, lithium, agriculture and other exports.

Scope 3 emissions from LNG exports alone are 1.5 times WA’s total domestic footprint. Iron ore is 13 times, because steel production is one of the most emissions-intensive industries in the world, and WA is its single largest raw material supplier. Reducing the emissions intensity of these exports, through green iron, green alumina and LNG electrification, is WA’s greatest potential contribution to global decarbonisation, and the economic opportunity at the heart of this report.

WA’S EXPORTED (SCOPE 3) EMISSIONS FY24⁶⁴



Source: Parliamentary Library, 2026.

WA must choose between two diverging paths

One path continues WA's fossil fuel dependency and 'dig and ship' exports. The other decarbonises, diversifies, and adds value to our economy and our exports.

Neither happens by accident. Both require active, ongoing decisions for new approvals, new infrastructure, and new investment. WA is trying to walk both paths at the same time, but at some point, we must choose where to focus.

WA's economy runs on exports, and its industries run on imported fuel, so global energy trends shape our choices. International conflict and political instability will affect the speed of transformation and reshape trade relationships and supply chain dependencies but the underlying trajectory away from fossil fuels is clear because the economics of electricity generation have permanently changed.

Path 1: The petrostate - locked in, dug up, shipped out

On this path, households, businesses and governments continue to make decisions locking in fossil fuels. New gas generation under construction. New homes with gas appliances. New petrol and diesel vehicles with years of built-in fuel costs. A green light for LNG exports out to 2070. Billions of taxpayer dollars each year in diesel tax credits for industry.

Fossil fuel returns are real and significant. They are also narrowing, increasingly captured offshore, and exposed to structural decline. The question is not whether this economy has served WA – it has – but whether it can continue to do so.

EXPENDITURE

- **\$190 bn** spent building WA's LNG infrastructure⁶⁵
- **\$48.7 bn** total project cost for Browse LNG to proceed, up 78% since 2019⁶⁶
- **\$133-199 / MWh** new gas baseload generation, excluding fuel costs (2024)⁶⁷
- **~\$40 bn / yr** spent on oil imports (AUS)⁶⁸
- **\$10.2 b** Diesel Fuel Tax Credits (AUS, FY24-25)⁶⁹

CURRENT RETURNS

- **\$116 bn** iron ore exports, falling to a forecast \$103bn by 2026-27⁷⁰
- **\$65 bn** LNG exports, falling to a forecast \$47bn by 2026-27 (AUS, 2024-25, Dec 25 projection)⁷¹
- **\$9.9 bn** iron ore royalties (WA, 2024)⁷²
- **\$1.5 bn** domestic gas royalties, falling to a forecast \$258m by 2027-28 (WA, 2022-23)⁷³
- **\$1.5 bn** tax from LNG exports (AUS)⁷⁴
- **~8,000** direct petroleum and LNG jobs (WA, 2024)⁷⁵

RISKS

- **60%** fall in global oil and gas company valuations under the IEA 1.5°C scenario⁷⁶
- **US\$101 to US\$72 / tonne** forecast iron ore price fall as China reduces demand and new African supply enters the market⁷⁷
- **Asian trading partners** introducing emissions trading schemes⁷⁸
- **\$150 bn** cost to Australia of climate damage over the next 10 years without action⁷⁹

OPPORTUNITIES

- **\$147 bn** projected WA economic value from Browse LNG over project life⁸⁰

Depends on:

- Asian LNG demand holding well beyond 2040
- Carbon tariffs not materialising
- Gas demand peaking later than the IEA projects in all scenarios, including business as usual

The figures in these tables are examples based on existing forecasts of a world continuing to decarbonise. No comprehensive economic modelling of both paths currently exists for WA.

The risks of not taking each path are not the same. If WA picks the clean energy future, but the world is slow to transition, we might see delayed returns on our future-facing export opportunities, but domestic industry, small businesses and energy consumers will reap the massive benefits from cheaper and more secure domestic clean energy.

If WA stays on the fossil fuel path and the world moves faster than expected, the consequences are structural and compounding: stranded assets that can't be repurposed, export markets that dry up, a domestic economy still paying for imported fuel, and an early-mover window in clean exports that has closed. The opportunity cost of maintaining the status quo is robbing future generations of a resilient economy. **And the further we travel down the fossil fuel path, the harder and more expensive it is to change course.**

These two paths are a deliberate simplification, at two ends of a spectrum, but they are a useful way to conceptualise the choices ahead. In practice, the transformation will be messier than either, and the timing and scale of the risks on both sides are uncertain. But uncertainty is an argument for resilience and complexity, which we build with a broader economic base, more industries, and more markets. It is not something we get by keeping one foot on each path.

Path 2: The electrostate – diversified, independent, indispensable

On this path, households, businesses and governments make decisions to switch to clean energy.

Electricity from solar, wind and batteries with minimal gas backup. All-electric homes and vehicles with no energy import dependency. No new fossil fuel projects and timelines to wind down existing ones. New clean energy projects start and new clean exports grow. Manufacturing and processing powered by clean energy adds value to current exports.

Clean energy investment is front-loaded. Returns compound over time and costs decline as technology matures. Unlike fossil fuels, the sun and wind are free and available right here.

EXPENDITURE

- **\$74.3 bn** domestic WA renewable energy investment to 2050⁸¹
- **~\$55 bn** proposed Australian Renewable Energy Hub, Pilbara⁸²
- **\$37.5 bn** green iron buildout to 4.5Mt/yr by 2030⁸³
- **\$81-91 / MWh** lowest-cost renewable electricity system, including transmission (AUS, 2024)⁸⁴

CURRENT RETURNS

- **\$8 bn** WA lithium and critical mineral sales (2025)⁸⁵
- **~25,000** clean energy workers nationally⁸⁶

These industries are early stage. Returns are currently modest; the opportunity scale is below.

RISKS

- **Early-mover competition:** the Middle East, Canada and Scandinavia are all developing green iron; the window is real but not permanent⁸⁷

OPPORTUNITIES

- **28,000** WA jobs in battery mineral mining and processing by 2030⁸⁸
- **19,600** additional ongoing direct jobs in WA green iron by 2050⁸⁹
- **\$74 bn** WA green iron economic value by 2050⁹⁰
- **\$386 bn/yr** Australia green iron exports by 2060, against about \$120 bn for iron ore today⁹¹
- **26 GW renewables + 1.6 Mt/yr green hydrogen** Australian Renewable Energy Hub at full scale⁹²
- **\$680 bn** added to the Australian economy by acting on climate⁹³

Where is WA heading?

Governments are straddling a growing divide, attempting to pursue a fossil fuel and clean energy future at the same time.

Both Federal and State Governments have embraced the language of a clean energy future. Strategic Industrial Areas, Future Made in Australia, green hydrogen precincts; the intent is clear. But clean energy export industries require a foundation of cheap, abundant, reliable renewable electricity, a decarbonised domestic industrial base, and a policy environment that sends clear signals to investors.

That foundation is being built with one hand while the other hand approves new fossil fuel projects, extends gas extraction to 2070, and effectively waives domestic gas reservation requirements. Clean energy exports and expanded fossil fuel extraction are not complementary strategies. They compete for the same land, labour, capital, and political bandwidth.

The consequence is that our responses to economic diversification, energy security and climate change are fragmented, inadequate, and often pointed in the wrong direction. Across all three challenges the pattern is the same: policy manages the symptoms of WA's fossil fuel dependence without reducing it. Both governments are still planning for a future in which fossil fuels remain central to WA's economy and energy system, yet that future is neither secure nor profitable.

At some point, governments must choose which future they are actually building; the petrostate or the electrostate. The window to make that choice profitably is open now but not indefinitely. Being clear about the direction of travel does not mean turning fossil fuels off overnight. It means not making new decisions to lock in fossil fuels for longer than necessary.

41%

of survey respondents said WA is heading in the wrong direction on its economy, energy and emissions.

30%

said the direction is right but not fast enough.

15%

think WA is broadly on track.

You can't ride both horses in a two-horse race

The car industry has already made this choice.⁹⁴

China committed early and paid upfront. It set an electric vehicle strategy in 2000 and put serious public money behind it from 2009, backing battery makers like BYD to move into cars, and moving at the same time to control the refining of lithium, cobalt, manganese and graphite. The motive was not climate. It was that dependence on imported oil left China captive to foreign powers. That commitment took two decades to pay off and looked expensive for most of them. China now makes around 90% of the world's batteries and more than three quarters of its electric vehicles.

Japan and Europe hedged, and it proved the most expensive option. The first mass-market electric cars were Japanese, but Japan gave away its lead because its manufacturers kept backing combustion engines, hybrids and hydrogen, protecting the technologies they were already winning on while treating electrification as something to arrive at slowly. Toyota's vice-chairman told suppliers in March 2026 that "unless things change, we will not survive". Japanese and European makers are now scrambling. Many of their new electric models are built on Chinese components or rebadged from Chinese cars. Volkswagen has flagged up to 100,000 job losses. Hedging did not avoid the cost of transition. It meant paying it late, and to a competitor.

The United States defended the old industry outright and shut itself out. Removing tax credits and emissions standards and raising tariffs protected margins and delivered real returns for domestic manufacturers. It also walled them off from the fastest-growing part of the market. Ford, Jeep, Nissan and others scrapped electric models and wrote down close to US\$50 billion. America now builds less than 5% of the world's electric vehicles.

	PATH 1: THE PETROSTATE	PATH 2: THE ELECTROSTATE
Examples of current Federal policy	• No national price on carbon • Industrial emissions regulation (the Safeguard Mechanism) provides easy access to offsets instead of encouraging onsite abatement • New fossil fuel extraction projects receiving approvals out to 2070; projects' Scope 3 emissions not counted in project approvals • A new \$10 billion fuel security package in response to the Iran War that focuses entirely on increasing supply, not removing dependency • \$4 million pre-feasibility study for a new oil refinery in WA, jointly funded by the WA Government	• Legislated targets of 43% emissions reduction by 2030, net zero by 2050, and 82% renewable electricity by 2030 • The Safeguard Mechanism requires large industrial emitters to reduce emissions in line with net zero by 2050 • The \$22.7 billion Future Made in Australia package to attract clean energy investment includes production tax credits for green hydrogen and critical minerals, and dedicated funds for green iron, green aluminium and clean energy manufacturing • Rebates for rooftop solar and household batteries resulting in world-leading uptake
Examples of current State policy	• No legislated state emissions target or renewable energy target • No legislated requirement for emissions reduction for WA's biggest polluters or industries • Continued approval of significant new gas export projects, including Browse and Valhalla • A new state diesel reserve established in response to the Iran War	• The Diversify WA strategy that identifies priority growth sectors, with a 2023 acceleration strategy targeting clean energy investment • The \$1.4 billion Clean Energy Fund to support clean energy projects, including transmission upgrades • Commitments to exit state-owned coal by 2030 and reduce government emissions by 80% by 2030 • A proposed Green Energy Powerhouse Bill to legislate targets for renewable generation, carbon capture and green exports

“The lost years of doing nothing and actively obstructing progress worried me significantly. I think we are moving in the right direction but we need to articulate what we are actually doing and why.”

Survey respondent

“There’s no clear articulated vision, no leadership; just lots of things, but not denting a hole in the issue really. She’ll be right, mate, attitude, as always.”

Survey respondent

“We don’t have a detailed and reliable plan for future energy. It’s all just aspirations and words. We also don’t have plans for adaptation to climate change. There are people in the Curtin community that could pull together the strategies and plans to secure our future. We have everything we need, let’s just get on with it.”

Survey respondent

The transformation to a clean energy export economy

How big is the challenge ahead?

Several groups, including the State Government, have modelled what WA’s transition would take. Their answers vary enormously because they ask different questions and make different assumptions. Between them they offer the rough shape of a road ahead, not a prediction.

The scale of renewable energy needed to reduce emissions and provide energy security is smaller than what is needed to support new export industries, though by no means small. WA could reduce our domestic emissions by 90% by 2050 by building renewables and electrifying transport, industry and agriculture.⁹⁵ Australia currently meets just 17% of its liquid fuel needs from secure supply (stockpiles and domestic production) while WA is completely dependent on imported fuels. Electrification and sustainable fuels could lift national fuel security to 87% by 2040.⁹⁶ These changes would give us clean, secure energy supply, but would not diversify or future-proof what we sell to the world.

The export opportunity is a different order of magnitude. The State’s own modelling assumes only modest hydrogen production and concedes that

more ambitious assumptions would push renewable energy requirements substantially higher again.⁹⁷ Modelling by Net Zero Australia suggests **WA’s export transformation is around four times the size of its domestic challenge.**⁹⁸ A safe climate matters enormously, but it is abstract and shared with the world. New industries, skilled jobs and export revenue are concrete, local and ours. The economic opportunity is what makes this future exciting rather than merely necessary, and it plays to WA’s strengths. The size of the challenge depends on how much of that opportunity we choose to pursue, and that is a political decision as much as a technical one. Modelling can tell us what each choice would require. It cannot make the choice for us.

Uncertainty is not a reason to move slowly. It is a reason to build the resilience and economic complexity which provides the capabilities that let an economy absorb a shock and keep going. What the models do agree on is the shape: the build is very large; the export task dwarfs the domestic one; and the hardest part comes first. The policy settings and renewable energy infrastructure must be in place for sectors to decarbonise and new exports to develop.

What the modelling says

Four studies, four different boundaries. None is a forecast.

CHALLENGE	WHAT IT COVERS	WHAT IT TAKES
WA Government (SERS, 2023) ⁹⁹	Electrification of transport, mining, gas liquefaction and chemicals, plus early hydrogen and ammonia.	Demand up more than fivefold; ~60 GW new generation and storage in the SWIS, ~50 GW in the Pilbara, ~7,000 km of transmission.
Springmount / Greenpeace (2025) ¹⁰⁰	90% emissions reduction by 2050 across four main sectors. Clean exports excluded.	25 GW large-scale renewables, 10 GW rooftop solar, 10 GW storage; \$74.3 billion.
CCIWA (SERS, 2023) ¹⁰¹	Whole energy system, including carbon capture and clean fuels. Limited diversification.	90–101 GW; \$216–225 billion.
Net Zero Australia (2024) ¹⁰²	Domestic and export transitions modelled separately.	WA’s export transition ~4× its domestic challenge.

WA’s main grid runs on about 6 GW today.

How fast can change happen?

Transformations do not arrive in a straight line. They build slowly, then move very quickly, and they consistently outrun the forecasts made about them. Successful new technologies follow an S-curve; adopted gradually, then suddenly, once they cross a critical tipping point (~5-10% of market share). Australian rooftop solar took more than nine years, from 2001 to late 2010, to reach 2.5% of Australian homes. Fifteen years later it is on about 40% of them, with 4.3 million installations, and 28.3 GW of capacity, supplying 14.2% of the nation's electricity.¹⁰³

The pattern is repeating, faster each time. When the Commonwealth launched its home battery rebate in July 2025, it expected a million installations by 2030. Half a million were installed in the first thirteen months.¹⁰⁴ In its first year the scheme added as much household battery storage as the entire national electricity market added in grid-scale batteries over the same period.¹⁰⁵ Electric vehicles have moved faster still: battery electric cars were 7.6% of new vehicle sales in June 2025 and 23.4% a year later. The Tesla Model Y is now Australia's best-selling vehicle of any type.¹⁰⁶ This is not just an Australian phenomenon. **Globally, wind, solar and battery dispatch have scaled faster than any electricity technology before them.**¹⁰⁷ Forecasts hold today's costs and policies steady; in reality falling costs drive uptake, which drives costs down further.

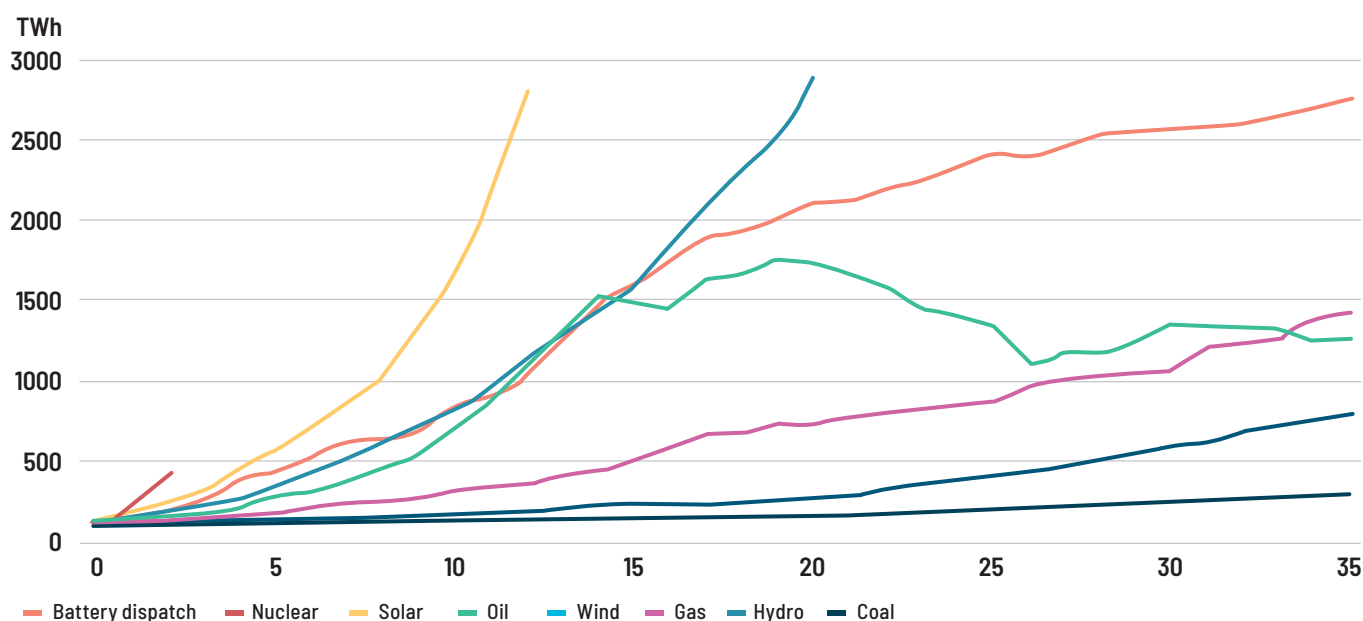
The infrastructure underneath does not move the same way. S-curves are steepest for things that come off a production line, like millions of identical

panels, batteries and cars, where each unit makes the next one cheaper. Transmission lines, ports and industrial precincts get built when governments plan, fund and approve them. WA must build them faster than we currently do.

Households are leading this change, and the grid has to keep up with them. Even if WA cared only about cutting emissions and securing our own energy, we would still need to build out a grid that can handle more rooftop solar and support more EVs. Diversifying WA's export industries requires additional shared infrastructure, including transmission, port capacity and water. During consultation, clean industry projects frequently reported the lack of commitment around common-user facilities as a key reason they have not yet reached a final investment decision. Governments need to commit to this infrastructure before the projects that depend on it can proceed.

The speed of this change should give us confidence, not comfort. Researchers who study past transformations describe the shift from a fragile state, where new industries need constant support to survive, to a self-sustaining one, where momentum carries them. Getting from one to the other is not automatic.¹⁰⁸ It happens when technology, firms, consumers, governments and public opinion start reinforcing each other rather than waiting on each other, and sustained policy is essential to getting there. The effort is not required indefinitely, and it builds new clean industries that can stand on their own.

WORLD ELECTRICITY GENERATION BY SOURCE, AND BATTERY DISPATCH, FROM YEAR ZERO EXCEEDING 100 TWh



Data: @OurWorldInData; @VisualizeEnergy and battery dispatch on @BloombergNEF @BenchmarkMin Chart @FSS_Au @ProfRayWillis 21Apr2026

What comes next

Everything that follows rests on one foundation. Decarbonising WA's economy and building clean export industries are different tasks with different timelines, but both need renewable electricity, built at scale.

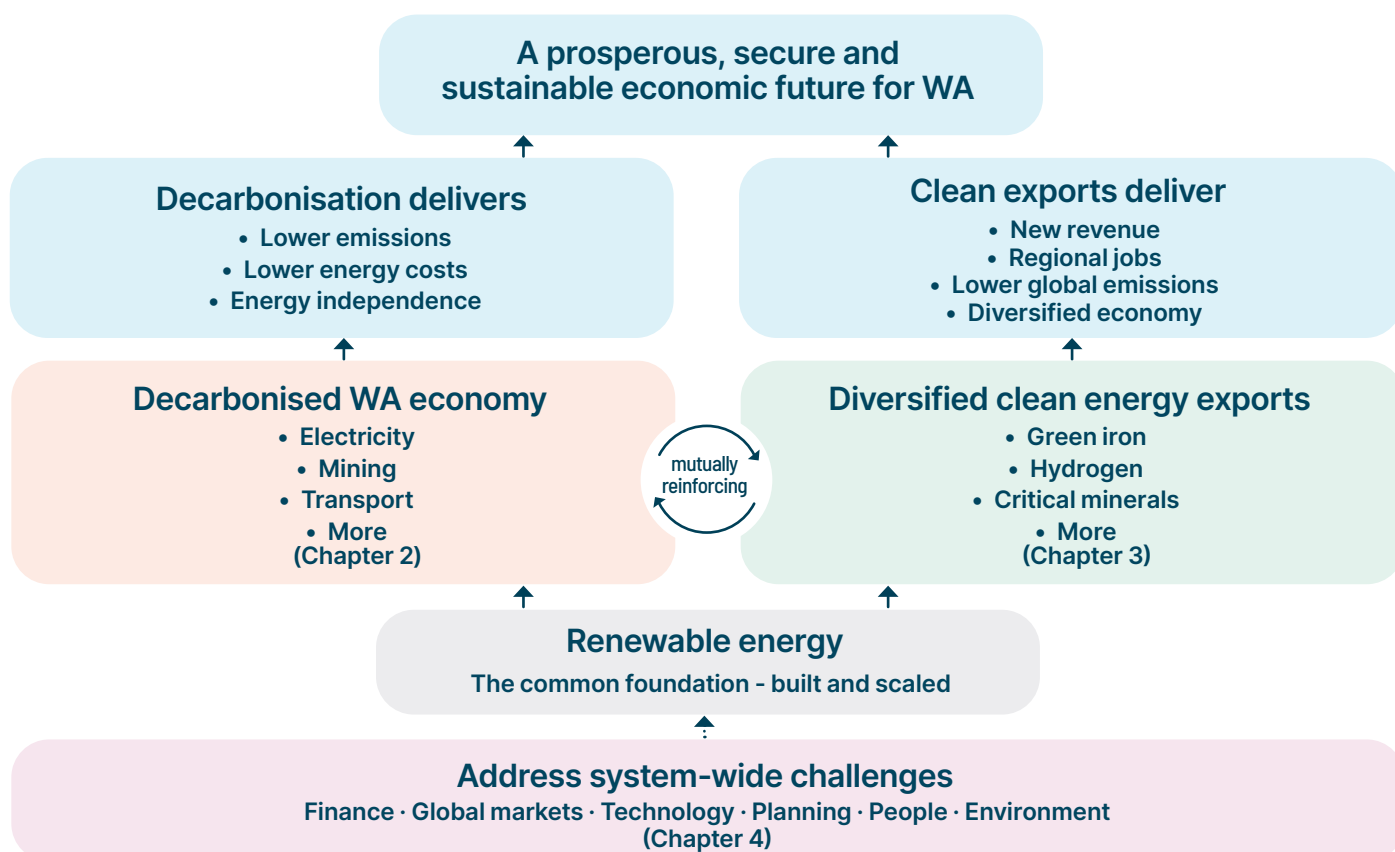
Chapter 2: Decarbonising WA's economy covers the sectors that define WA's current economic and energy landscape, and what it would take to transform each. Decarbonising these sectors reduces emissions, lowers energy costs and builds the renewable energy foundation that everything else depends on.

Chapter 3: Diversifying into clean energy exports explores what WA could build on that foundation; the industries that secure our economic future as global demand for fossil fuels declines.

Chapter 4: Addressing system-wide challenges examines the enabling conditions that will determine whether WA captures this opportunity or watches it go elsewhere.

Chapter 5: Policy priorities bring together the specific actions that federal and state governments need to take now.

Each of the sectors in Chapter 2 and the exports in Chapter 3 have been assessed against the six challenges in Chapter 4. The same rating scale, of major, moderate and minor challenges, is used. See Appendix B (p. 97) for more detail.



Chapter 2:

Decarbonising WA's economy

Decarbonising WA's domestic economy reduces emissions, cuts energy costs, and builds the foundation that clean exports depend on.

Fossil fuels are the primary source of energy and emissions. To decarbonise, we need to:

- 1 **Generate renewable electricity** from solar and wind and store it in batteries.
- 2 **Electrify** most fossil fuel technologies (like vehicles, cooktops, and heating).
- 3 Where electrification isn't yet viable, **use sustainable fuels** like green hydrogen and biofuels. Where possible, produce these fuels domestically.

Emissions that are byproducts of industrial and natural processes, rather than fuel combustion, can be reduced by redesigning industrial processes, adapting agriculture and land management practices and capturing emissions before they enter the atmosphere.

Electricity is the backbone of everything else: decarbonising other sectors and building clean export industries requires cheap abundant renewable electricity. It's not moving fast enough.

Fossil fuel extraction is the one sector that needs a managed decline, not growth. Production emissions can be cut now but the long-term trajectory is an industry that shrinks as global demand falls.

Mining is the backbone of WA's current and future economy, and the state's biggest user of diesel. Current policy is propping up diesel dependency instead of enabling electrification.

Transport runs almost entirely on imported oil. Electric vehicles are the clear solution for most road transport, but fragmented policy has not kept pace with technological change.

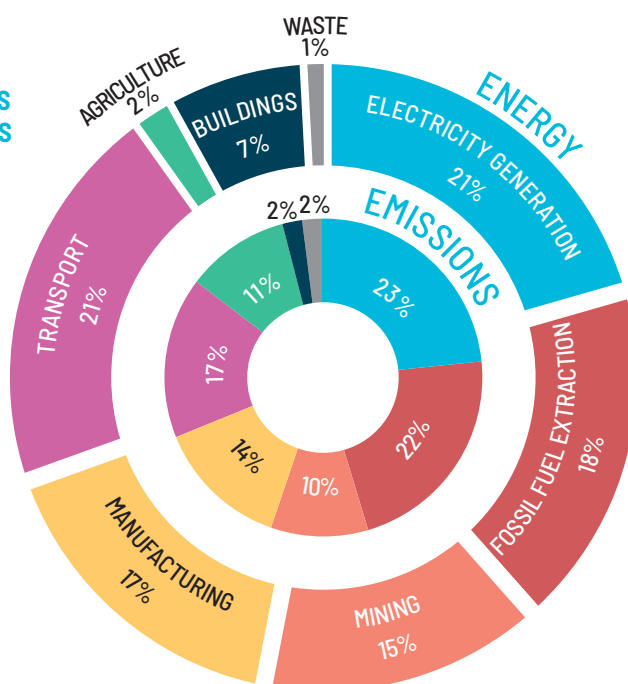
Manufacturing ranges from large refineries to food processors and fabricators, each with their own pathway to decarbonisation.

Agriculture and land use must address diesel and fertiliser supply risks, exposed sharply by the Iran War, and emissions from farming practices. Regenerative agriculture can help.

Residential and commercial buildings have the clearest decarbonisation pathway. Electrification is already saving households thousands of dollars annually, but the transition needs planning.

Waste is a largely untapped opportunity. Diverting organic waste from landfill could produce biogas, compost and agricultural nutrients that can help other sectors decarbonise.

WA'S ENERGY USE AND EMISSIONS ARE DOMINATED BY FIVE SECTORS



Electricity

Decarbonising electricity is the cornerstone of emissions reduction and energy security.

Decarbonising other sectors, and any future clean energy exports, generally requires replacing direct fossil fuel combustion (such as petrol cars or gas heating) with electrified technologies. This additional demand will need a much larger electricity grid to supply it, and presents us with two distinct, simultaneous challenges:

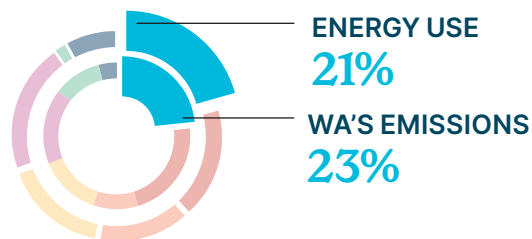
- 1 To replace existing fossil fuel electricity generation capacity with renewables to meet current demand, while upgrading and restructuring the network to cope with greater, more distributed and variable generation.
- 2 To massively expand electricity generation capacity, through renewables, to support electrification of other sectors and future clean energy exports.

Modelling suggests that decarbonising WA's existing electricity supply, and growing capacity to meet electrification of existing industries, buildings and transport, could require somewhere around 110 GW of new generation and storage capacity across WA by 2050.¹⁰⁹ Reaching our full clean energy export potential could require four times as much new energy capacity as the domestic energy transition.¹¹⁰

To support the viability of industries as they electrify and maintain public support for transition, electricity supply must remain as stable, reliable and affordable as possible.

Renewables are now the cheapest source of new electricity generation in Australia, even with transmission and storage costs factored in.¹¹¹ But building out a 100% renewables electricity system requires significant overbuild of capacity to counterbalance the variability of solar and wind generation, increasing total system costs and electricity prices. Modelling predicts that the cheapest energy system for WA is an energy mix target of roughly 90% renewables, with 10% flexible gas for backup when renewables are not available.

Real-time data from electricity networks in the last year shows that battery storage is already smoothing out the daytime solar peak and reducing the evening peak previously met largely by gas peakers.¹¹² Peaking and back-up will be needed less frequently over time as the renewable energy generation and storage roll out continues. Longer-term, other long duration energy storage technologies will evolve, as well as drop-in fossil fuel replacements such as biomethane.



Nuclear is assessed by CSIRO's annual GenCost report as among the most expensive new electricity generation available in Australia. In 2030, large-scale nuclear costs an estimated \$187–312 / MWh and small modular reactors \$336–546 / MWh, against \$113–191 for new black coal, \$64–107 for onshore wind and \$29–76 for solar.¹¹³ If nuclear costs fall significantly, WA and Australia should reconsider the role of nuclear energy in supporting the decarbonisation of our electricity system.

Much of WA's electricity infrastructure will need to be replaced by 2050. Renewable transition is inevitable through end-of-life replacement, but coordination and timing will impact stability and cost. Early, planned investment is cheaper and smoother than ad-hoc, reactive transition. Achieving the additional build-out to support new export industries must be planned, or those industries will fail to eventuate.

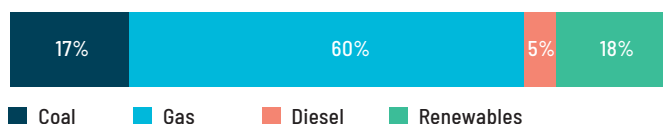
China's dominance of renewable supply chains represents a short-term risk. Once built, renewable energy is immune to the supply chain disruptions that affect fossil fuels. A solar panel or wind turbine already installed keeps generating regardless of what happens to shipping routes or conflict zones. One-off Chinese renewable technology imports are still more energy secure than ongoing fuel imports. Some of WA's off-grid towns and mining operations are almost entirely dependent on imported diesel. Renewables would provide far greater energy security.

In 2024, renewables provided only 18% of WA's electricity generation,¹¹⁴ and the total installed capacity for the state is not publicly available.

The resources sector is a significant contributor to WA's electricity generation.

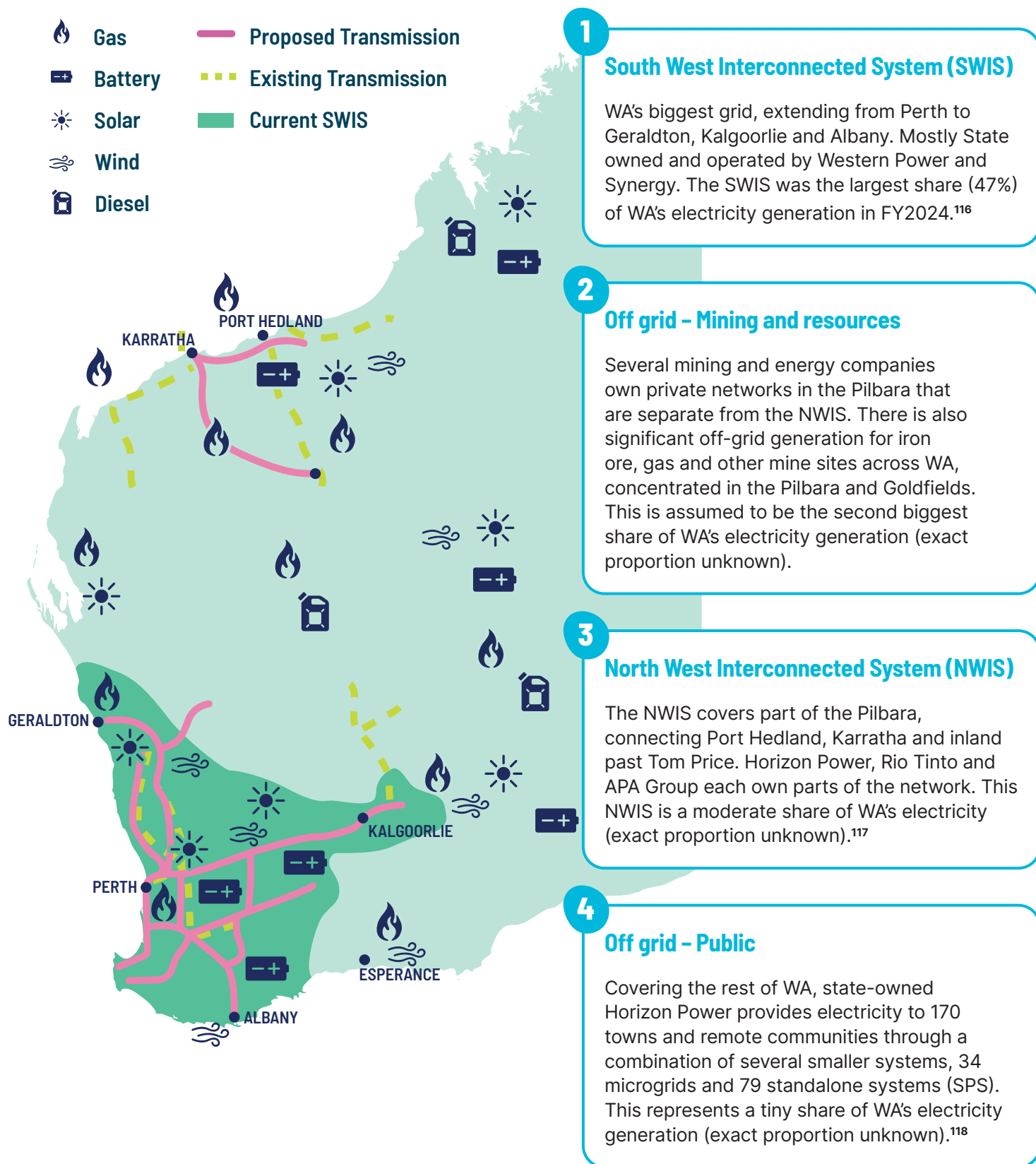
Resource sector's share of electricity generation¹¹⁵
WA = 36% | AUS = 9%

ELECTRICITY GENERATION IN WA (2024)



WA's electricity decarbonisation challenge is unique because it has four distinct electricity systems, with very different profiles.

This map is for illustrative purposes only. Off-grid generation is spread all across the State.



How do WA's electricity systems compare?

WA's electricity generation mix on p30, from the Australian Energy Statistics, is the only publicly available statewide data on electricity generation. There is no publicly available information about the exact contribution of each of the four electricity systems to the state total or about each system independently. Up to date, comprehensive data on existing generation are only available for the SWIS. Without a clear picture of WA's current or projected electricity systems, planning and evaluating action is challenging. This table highlights the inconsistency in the publicly available data.

	1. SWIS	2. OFF GRID - MINING AND RESOURCES	3. NWIS	4. OFF GRID - PUBLIC
Current size	FY24 5859 MW capacity ¹¹⁹ 21416 GWh generation In 2024, 47% of WA.	Generation capacity and share of WA unknown. Assumed to be majority outside SWIS.	2025 2200 MW capacity ¹²⁰ Share of WA unknown, but moderate.	FY25 1182 GWh generation ¹²¹ Share of WA unknown, assumed very small.
Current generation	FY24-25 average: ¹²² Coal: 28% Gas: 32% Renewables: 40% Renewables peak: 91% in Dec 25 Diesel only for backup.	No comprehensive list of facilities or generation mix available. Some mine sites assumed to be entirely diesel dependent. ¹²³	2025: 98% gas ¹²⁴ 2% renewables Very low to no diesel use.	No comprehensive list of facilities or generation mix available. Several towns and communities are entirely diesel dependent. ¹²⁵
Future projections	To reach 96% renewables by 2042: ¹²⁶ • Demand increase ~5x • Total Generation >50 GW • New/upgraded Transmission ~4,000 km	Combined off grid to reach net zero by 2050: ¹²⁷ • Demand increase 1.6-6x • Total generation 3 to >20 GW • Transmission: N/A	Net zero by 2050 for future Pilbara grid: ¹²⁸ • Demand increase 2-5x • Total generation 25 to >50 GW • New/upgraded Transmission ~3,000 km	Combined off grid to reach net zero by 2050: ¹²⁹ • Demand increase 1.6-6x • Total generation 3 to >20 GW • Transmission: N/A

Progress towards decarbonisation

The **SWIS** is the furthest progressed in policy, planning and implementation, but current efforts revolve almost entirely around facilitating the planned exit of state-owned coal power by 2030.¹³⁰ The government is providing financial support to private coal to continue operating until 2031.¹³¹ Some transmission upgrades are underway, with further expansions being planned.¹³² Several utility-scale batteries were switched on from 2024 - 2026, significantly increasing the SWIS' storage capacity, and making WA home to Australia's two biggest batteries.¹³³ In 2025 and 2026 the State Government signed offtake agreements with five new wind projects, timed against the coal exit, but only two have commenced construction.¹³⁴ There are also several new gas power plants in development.¹³⁵ The electricity market operator's assessment is that supply will be secure for the next few years, but more capacity is needed by 2030.¹³⁶ There is no long-term

plan for how the SWIS will achieve the expansion previously forecast by the State Government. The SWIS is covered by the Federal Safeguard Mechanism through its electricity sector baseline, which is set intentionally high so as not to constrain emissions from electricity.

Horizon Power's has set enforceable renewable targets for five Kimberley towns, including 80% for Broome and Derby.¹³⁷ It is delivering standalone solar and battery systems to 13 remote communities, with eight more in planning.¹³⁸ Beyond these, and other individual town projects, there are no published targets or timeline for transitioning Horizon's remaining systems.

The **NWIS** Pilbara Energy Transition Plan identifies four priority open-access transmission corridors, and has identified proponents for each, including the First Nations-owned Yindjibarndi Energy Corporation.¹³⁹ Proponents receive state facilitation and a recommendation to negotiate for federal

concessional funding (of which \$3 billion has been set aside), but not a commitment to fund or construct. Major private renewable generation and storage projects are proposed but require support to reach a final investment decision.

Large **off-grid mining** generation (facilities over 100,000 tCO₂e) are covered by the Safeguard Mechanism, which sets declining baselines for

emissions. Mining facilities below the 100,000 tCO₂e threshold have no requirement to reduce emissions. Transition progress depends on individual company decisions. A number of mine sites in the Goldfields have installed significant hybrid systems combining renewables with fossil fuel backup. These commitments indicate that the economics of renewable energy increasingly stack up for off-grid operations.¹⁴⁰

Challenges facing electricity decarbonisation

● major ● moderate ○ minor

Finance ● | Global markets ○ | Technology ○ | Planning ● | People ● | Environment ●

WA is not building renewables at the speed or scale required to support broader decarbonisation, and there are no long-term plans. Unlike the eastern states, in WA there is no public disclosure of project pipelines or grid connection queues. Utility-scale projects struggle to reach financial close without offtake support or government underwriting. The Federal Capacity Investment Scheme will wind up in 2027, and its proposed replacement may only apply to the Eastern States' National Electricity Market, not WA. Grid connections on the SWIS take around two and a half years and major new transmission for the Pilbara has not yet been committed. Additional challenges include a shortage of electricians, and regional social licence and land access.

Federal policy asks

- 1 In lieu of an economy-wide price on carbon, extend the Safeguard Mechanism to individual grid-connected electricity generation facilities with a declining trajectory consistent with Australia's emissions reduction targets. Apply the extension to all on the SWIS and NWIS, not just the eastern states grid.
- 2 Require emissions disclosure and renewable transition planning for off-grid mining and industrial operations below the Safeguard threshold, regardless of size.
- 3 Allocate the \$3 billion earmarked for WA under Rewiring the Nation, with concessional finance available for building transmission capacity ahead of committed demand.
- 4 Once the Capacity Investment Scheme retires in 2027, provide government underwriting for large renewable projects in the SWIS, NWIS and off-grid.

State policy asks

- 1 Introduce a renewable energy target for WA as a whole, and an 82% by 2030 renewable energy target for the SWIS. Develop plans for the SWIS, NWIS and Horizon Power transitions past 2030 that include how future clean export industries will be supported.
- 2 Commit financial support to the Pilbara priority transmission corridors, through early development funding, government equity or underwriting, so they reach final investment decision, and fund capacity beyond current committed load so corridors are built for the demand growth WA is planning for.
- 3 Require Western Power and Horizon Power to publish network capacity data and establish two-way planning with major industrial energy users.

Fossil fuel extraction

Coal, oil and gas extraction and processing produces significant onshore emissions for WA. 89% of energy consumed in fossil fuel extraction is from gas, 9% electricity and 2% diesel.

These emissions are split roughly fifty-fifty between fuel combustion for power and fugitive emissions (unintended atmospheric leakage).¹⁴¹

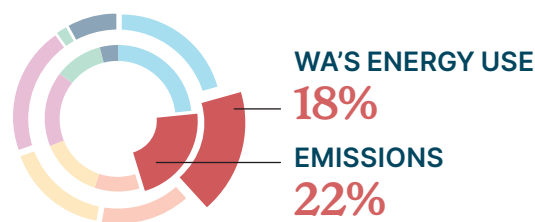
Overseas emissions from WA's LNG exports dwarf domestic fossil fuel extraction emissions, but carbon accounting mechanisms make trading partners responsible for them. Surprisingly, Australia's environment laws have no requirement to consider the downstream emissions impact of fossil fuel project approvals. Fixing this is the most direct mechanism for ensuring our economy is compatible with a decarbonising world. Stricter requirements to reduce emissions from gas production offer the most meaningful domestic emissions reduction in the interim.

WA's exit from coal mining is underway

The imminent reduction in WA's demand for coal means that WA could see its two coal mines wind down production in the coming years. All of WA's coal is mined and used near Collie with 75% used by three power plants to generate electricity for the SWIS.¹⁴²

The WA Government has committed to close its two ageing state-owned coal power stations by 2030.¹⁴³ Chinese-owned Premier Coal, which supplies them, proposed in April 2026 to lay off 20% of its workforce due to reduced demand.¹⁴⁴ A further decline in operations can be expected. Collie's other coal mine, Indian-owned Griffin Coal, supplies Japanese-owned Bluewaters Power Station, which is expected to be needed for grid stability until 2030, and has not announced closure plans.¹⁴⁵ Griffin Coal has been in receivership since 2021 and has been handed more than \$300 million by the WA Government to continue supplying coal to Bluewaters.¹⁴⁶ A more proactive approach by the WA Government to transitioning the SWIS to renewables is required to smooth the transition.

The remaining 25% of WA's coal use is by a handful of mining companies for mineral processing, including alumina refining. As WA's coal mining output declines, these companies will experience increasing pressure to decarbonise their industrial processes.



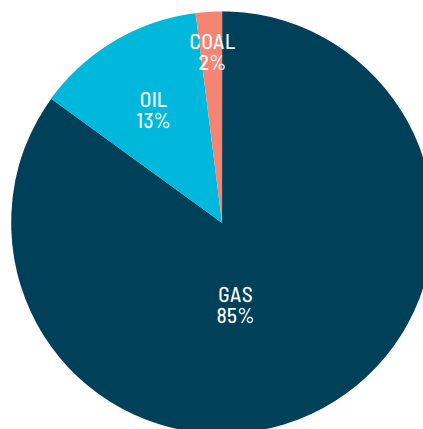
Collie's coal exit is a testing ground for a just transition that supports workers and communities through the change.

Crude oil is on the decline

Crude oil extraction is a very small and declining industry in WA. Woodside operates the two remaining facilities off the coast of Exmouth, which are both expected to naturally cease production in the mid-2030s.¹⁴⁷ No new crude oil projects are imminent, as conventional reserves are almost depleted.

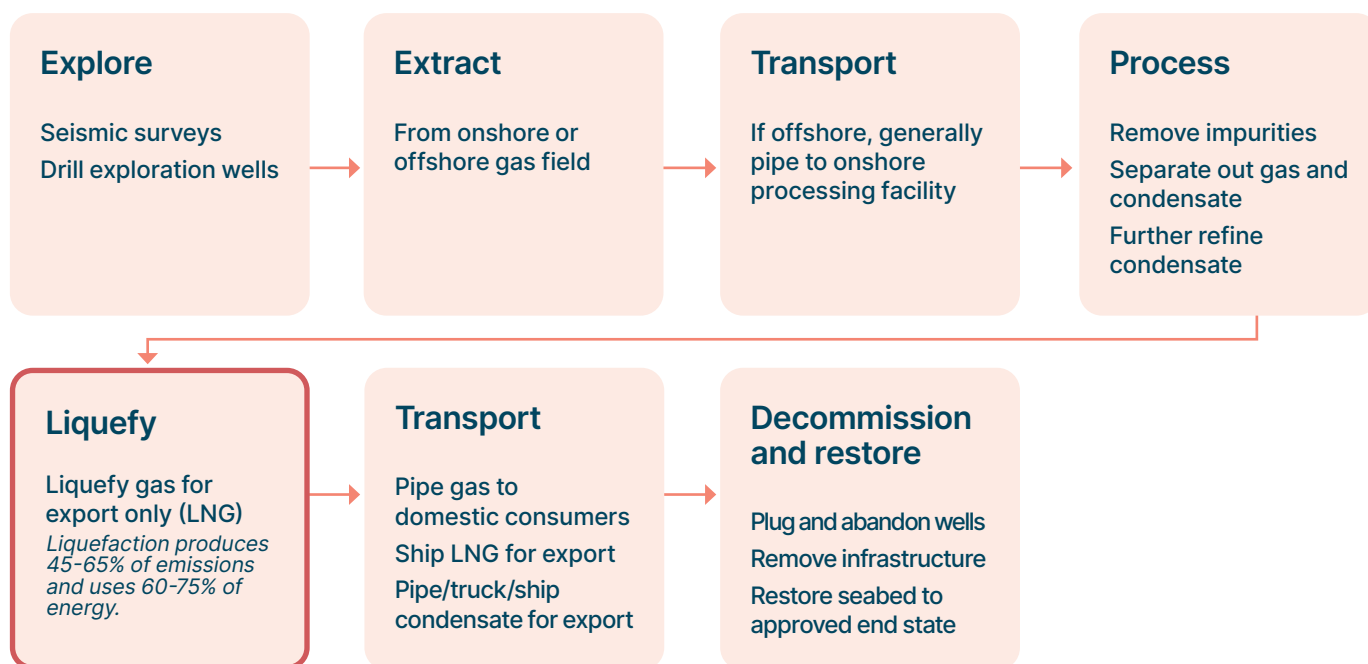
Most of WA's oil production now is condensate, which is a gas co-product.

WA'S FOSSIL FUEL EXTRACTION



Source: Australian Energy Statistics, 2025.
Author's calculations.¹⁴⁸

Gas and condensate production can be simplified to the following steps¹⁴⁹



Energy is consumed and emissions are produced at all stages of the gas production process, but most intensely during extraction, processing and liquification. 90% of energy needs for gas extraction and export are met with gas, which is mostly burnt for mechanical power (compression, refrigeration and pumping).

For natural gas to be exported, it must be liquified for transport, which is the single most energy and emissions intensive step in gas production.

Half of emissions are fugitive emissions, which are a mix of venting (deliberate atmospheric release of methane), flaring (deliberate burning of that methane to CO₂ + H₂O which has a lower greenhouse effect), or unintended leaks of methane (i.e. natural gas) through valves, seals, pipes and other infrastructure. Venting and flaring are most significant during extracting and processing stages, while leaks are most significant during extraction and pipeline transport.

Reducing gas supply chain emissions

To reduce global emissions, the long-term goal should be the managed decline of LNG exports, but 60% of LNG supply chain emissions could be cut using today's technologies, at low to moderate cost according to the International Energy Agency.¹⁵⁰ Half of this can be achieved through fugitive methane abatement, with the rest from improved efficiency, electrification and carbon capture and storage (CCS). The cheapest and most immediate solution is cutting methane emissions by approximately 85% by monitoring and fixing leaks (which are lost product) and eliminating routine venting and flaring. Improving process

efficiency can reduce energy use across all stages at relatively low cost. Replacing gas turbines with electric motor drives, i.e. changing the power source, not the process, can decarbonise compression and refrigeration at extraction, pipeline transport and liquefaction stages.

CCS captures CO₂ that is naturally occurring in the gas stream and separated out during processing, but it cannot address the significant combustion emissions from liquefaction. WA hosts the world's largest CCS project at Chevron's Gorgon LNG facility, approved on condition it would capture 80% of reservoir CO₂ during processing. It has never met that target in any single year and delivered just 25% in FY2024-25.¹⁵¹ Major global CCS projects have consistently underperformed.¹⁵² While CCS has a role to play in industrial decarbonisation, it is not reliable enough to justify any extension to gas production.

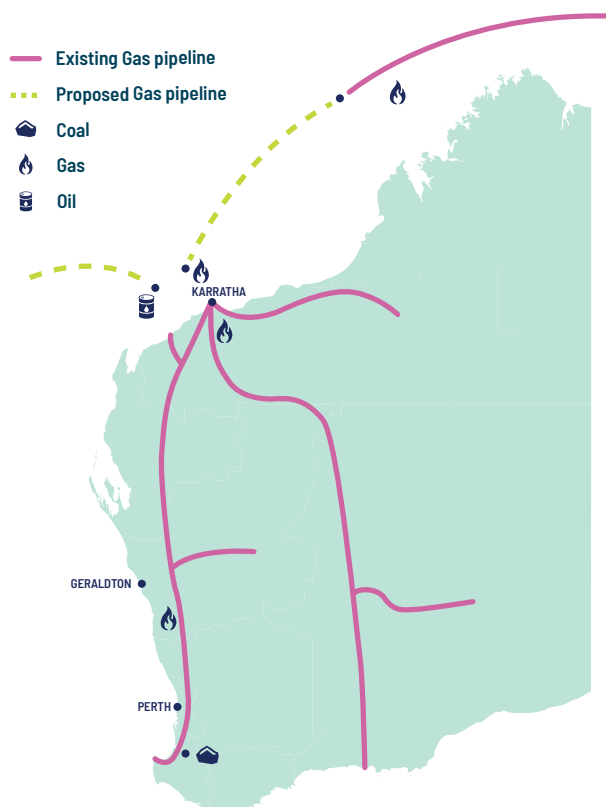
WA's gas comes from two regions

Most offshore gas is piped to the Pilbara coast for processing, except for Shell's Prelude floating LNG facility. All of WA's LNG is shipped from Pilbara ports. A much smaller onshore field near Dongara mainly supplies the domestic market. Around 10,000 km of onshore and offshore pipelines carry gas to customers, including Australia's longest, the Dampier to Bunbury Natural Gas Pipeline.

WA's gas industry is still expanding

Despite company targets of net zero by 2050, no public commitments have been made to electrify or decarbonise LNG production, and companies are actively investing billions to extend production to 2070 and beyond. Domestic gas expansion is also underway but is considerably smaller.

Browse and Valhalla are the two decisions that will determine whether WA's gas industry begins a managed transition or locks in another generation of fossil fuel dependence. Pending government approvals, expected this year, are necessary conditions for both projects but not sufficient. Browse must still raise nearly A\$50 billion in private capital against deteriorating LNG market economics, high emissions reduction obligations and growing investor caution about stranded asset risk. These projects may not proceed, not because of policy, but because of the changing economics.



Major Gas Export Projects in WA

PROJECT	MAIN COMPANY	START DATE	RESERVE END DATE	EXPANSION PLANS	DECARBONISATION
North West Shelf	Woodside	1989	~2028	Facility extension to 2070 approved, not funded. Depends on Browse supply.	No explicit commitment
Gorgon	Chevron	2016	~2049	Funding committed to connect new fields to existing facility, extend to 2070.	CCS only (underperforming)
Wheatstone	Chevron	2017	~2033	New wells in existing fields, drilling underway. Exploration of new fields.	No explicit commitment
Pluto	Woodside	2011	~2049	New Scarborough field to connect to expanded Pluto facility under construction, first cargo 2026.	No explicit commitment
Prelude (Floating LNG)	Shell	2019	~2044	Proposed new Crux field to feed Prelude FLNG. Not funded.	No explicit commitment
Ichthys (WA gas field, piped to Darwin)	INPEX	2018	~2049	New fields acquired and facility expansion planned.	CCS proposed from 2030
Browse	Woodside, BP, Mitsui, Mitsubishi	No date	No date	Federal approval pending mid-2026, not funded. New field to supply NWS to 2070.	CCS component required
Valhalla	Black Mountain Energy	No date	No date	Exploration approval pending for onshore fracking in the Kimberley. Not funded.	No explicit commitment

Browse LNG: a \$49 billion gamble

Browse's capital cost has risen 78% since 2019, before construction has started. Independent analysts assess its delivered cost as unviable against long-run LNG price forecasts.¹⁵³ Iran's 2026 attacks on Qatar temporarily made prices spike, but production is expected to recover well before Browse's first cargo in 2030.

LNG expansion won't address domestic shortfalls

New LNG expansion offers little relief for WA's domestic gas supply gap. Browse gas would arrive too late, and cost four times current domestic prices.¹⁵⁴ Demand reduction via decarbonisation remains the best avenue to address gas shortfalls.

Continued gas expansion sends the wrong signal to clean energy export investors. Every dollar and decade committed to new gas fields is capital and approvals capacity not available for new clean exports. Australia should work collaboratively with trading partners to encourage investment towards clean energy.

Industry must pay for its own cleanup

Every offshore well and platform must eventually be removed. Australia faces an estimated \$60 billion of offshore decommissioning over the next 30 to 50 years, with almost 70% of it in WA waters.¹⁵⁵ This work is already underway and expected to peak in the 2030s. Decommissioning is deductible against PRRT, so the public effectively meets much of the bill; the Commonwealth is now reviewing these arrangements.¹⁵⁶ Decommissioning could be a new industry for WA, if we build out the ports and recycling capacity required (see Advanced Manufacturing, p58).

Challenges facing fossil fuel extraction decarbonisation

● major ◐ moderate ○ minor

Finance ◐ | Global markets ● | Technology ◐ | Planning ◐ | People ● | Environment ●

This is the one sector that needs a long-term managed decline, yet current global demand is driving it to expand instead. There are active environmental fights over projects like Browse and Valhalla. Gas companies face considerable social licence and credibility challenges over focusing on extraction emissions which are dwarfed by downstream exported emissions.

Federal policy asks

- 1 Introduce laws enabling assessment and refusal of new and extended fossil fuel projects based on their full climate impact, including downstream export emissions.
- 2 Strengthen the Safeguard Mechanism to prioritise onsite abatement over offsets, and set differential baselines for fossil fuel facilities.
- 3 Regulate methane emissions from oil and gas operations consistent with international best practice: mandatory leak detection and repair, limits on non-emergency venting and flaring, and measurement-based reporting rather than estimation.
- 4 Strengthen decommissioning requirements so that companies are required to adequately prepare, plan and fund decommissioning activities.

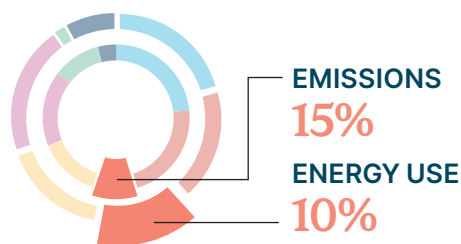
State policy ask

- 1 Strengthen implementation of WA's Domestic Gas Reservation policy to address domestic supply shortfalls.

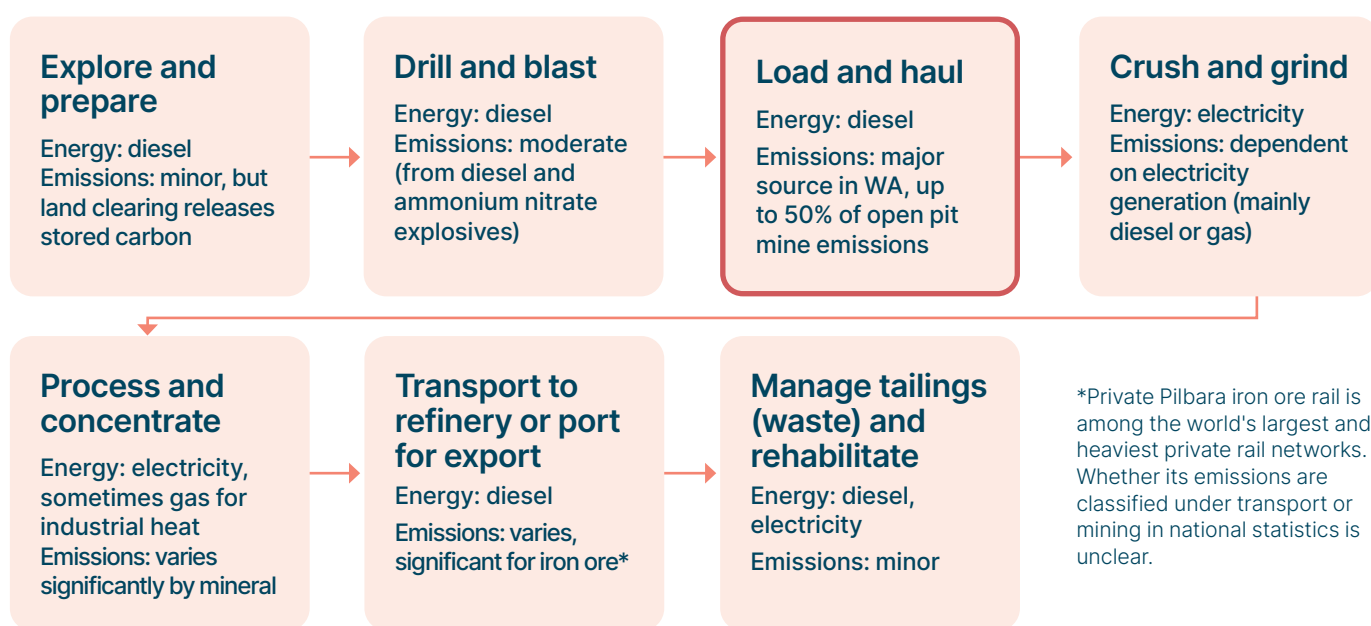
Mining

WA's 186 operating mines produce around 30 distinct minerals and ores, making WA one of the world's most significant mining jurisdictions.

We produce iron ore at a scale that dominates global steel supply, alongside the lithium, rare earths, nickel and critical minerals needed for clean energy. Regardless of mineral, mining follows similar steps, although processing of ores varies significantly by commodity and grade.



Diesel powers nearly every stage of the mining process, making mining the single biggest user of diesel in WA, at 38% of total WA use. Roughly 67% of mining's energy needs comes from diesel, followed by electricity (28%).¹⁵⁷



Decarbonising mining requires four parallel, but staged, approaches:

1 Clean electricity for fixed infrastructure:

Stationary equipment, such as crushing and grinding mills and conveyors, already run on electricity. Diesel and gas generators must be replaced with renewable energy and battery storage (see Electricity p30).

2 Cable and hybrid solutions for semi-mobile equipment:

Large equipment operating within a defined area can connect to onsite power via high-voltage trailing cables, switching to battery for repositioning. This approach works well for excavators and drills — cable-electric where infrastructure allows, battery-electric for more remote sites. This technology is proven and starting to roll out.

3 Mixed solutions for mobile equipment:

Light vehicles: Replace with commercially available EVs.

Large haul trucks: Accounting for up to 50% of open pit mine emissions, these are the hardest problem. Two pathways are being pursued simultaneously:

- battery electric
- trolley assist (sections of overhead electric wire on main haulage ramps, like a tram system for giant trucks, combined with smaller onboard batteries).

Biodiesel is a near-term transitional fuel.

Rail: The Pilbara's iron ore rail networks move ore at a scale that makes electrification technically challenging. Battery-electric locomotives are in trial, testing to limits of current technology. Trolley assist and hybrid systems are also being explored. Most other WA mining commodities move by road or public rail freight (see Transport p40).

4 Reducing N₂O emissions from explosives:

Better blast design reduces but does not eliminate emissions from explosives. Nitrate-free hydrogen peroxide explosives are in early commercial development in Europe. See Clean hydrogen and ammonia (p52) for decarbonising ammonia production.

Fortescue's stated goal is real zero emissions by 2030, without offsets.

Fortescue has deployed 16 electric excavators, commissioned battery-electric locomotives, ordered hundreds of electric haul trucks and drills, and built over 1.4 GW of renewable energy across its Pilbara operations, making it the most ambitious mining decarbonisation program in the world.¹⁵⁸

Mining decarbonisation policy is dominated by two opposing but unequal forces. The Safeguard Mechanism sets declining emissions baselines but allows cheap offsets and carries minor penalties. The Diesel Fuel Tax Credit (DFTC), refunds the full fuel excise on virtually all mining diesel use, including electricity generation and light vehicles, where renewables may otherwise be cost-effective.

The share of DFTC claimed for electricity generation and light vehicles off-road is unknown, as the ATO does not collect this data. At 52.6 cents per litre versus the Safeguard's carbon price signal of roughly 10 cents per litre of diesel, the DFTC is a five-times-stronger incentive not to decarbonise.¹⁵⁹

Most of WA's potential clean energy exports depend on mining products as their feedstock, making decarbonisation of mining essential to clean energy export certifications that premium markets will one day expect.

Challenges facing mining decarbonisation

● major ◐ moderate ○ minor

Finance ● | Global markets ○ | Technology ●
Planning ● | People ◐ | Environment ◐

Technology and finance are the biggest gaps. Heavy haul-truck electrification is the unsolved frontier and particularly acute for iron ore, where trucks dominate emissions. Mining equipment has a long life-span and high upfront costs, so decarbonisation is capital intensive. Electrification also requires renewables grid build-out to current off-grid mine sites. The diesel fuel tax credit rewards diesel usage roughly five times more strongly than the Safeguard penalises it. Mining's large environmental footprint from land clearing and pending rehabilitation is a live environmental and social licence issue that decarbonisation alone doesn't resolve.

Federal policy asks

- 1 Introduce a cap of \$50 million per consolidated group for Diesel Fuel Tax Credits that targets the largest mining companies but protects farmers and truck drivers.
- 2 Strengthen the Safeguard Mechanism to prioritise on-site emissions reduction over offsets.
- 3 Work with State Government and industry to develop a mining electrification strategy to reduce diesel dependence.

State policy ask

- 1 Ensure new Pilbara and Goldfields transmission lines are delivered to allow widespread mining electrification.

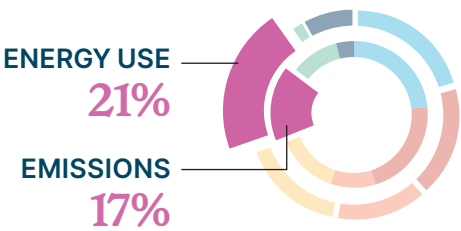
97% of transport’s energy comes from fossil fuels, with 95% from oil alone, nearly all of which is imported as diesel, petrol and jet fuel.

This is a huge supply chain security risk, as those refined oil fuels power road, rail, air and sea transport. Electricity only powers about 3% of transport at present. Road vehicles dominate transport energy consumption (65%) and emissions production (73%), which reflects WA’s car and truck dependency. Rail, aviation and shipping make up most of the rest of energy and emissions.

Decarbonising transport requires three changes across all modes of transport that must be accompanied by greater focus on productive and efficient transport systems:

- 1 Mode shift to reduce road vehicle use
- 2 Electrifying most vehicles
- 3 Using sustainable fuels for long distances and heavy loads.

Reducing road vehicle dependency is one of the most cost-effective system-level interventions. For personal travel in cities, this means increasing walking, cycling and public transport. For freight, shifting from road to rail improves efficiency and reduces diesel exposure. But neither happens by accident. Both require deliberate policy and long-term infrastructure investment to give individuals and businesses a genuine alternative. Reducing the kilometres driven must go hand-in-hand with changing what powers the vehicles that remain.



Electric vehicles have reached a tipping point

For most road vehicles (cars, vans, small trucks and buses) battery electric is the leading solution. Electric vehicle (EV) costs have fallen dramatically, and battery technology has developed, extending range and cutting charging times. EV sales are growing exponentially, turbocharged by the Iran War. In June 2026, battery EVs reached 25% of national light vehicle sales. With hybrids added in, the market share reaches nearly 50%.¹⁶⁰

Electric trucks have started from much further behind, making up 1% of sales in March 2026. A range of models are reaching price parity with diesel trucks.¹⁶¹ ‘Last-mile delivery’ in urban areas is ready to electrify. Perth’s trains have run on overhead electric wire since 1991, Transperth is rolling out electric buses, and WA is building its first electric ferry fleet.¹⁶² Short-haul electric aviation is expected to arrive in the early 2030s.¹⁶³

Some sustainable fuels, like biodiesel or sustainable aviation fuel (SAF) require blending with their petroleum counterparts. Others, like renewable diesel, are true drop-in replacements that can run in existing engines. They are most valuable where electrification remains impractical: long-haul aviation, deep-sea shipping, and long-haul heavy freight. But sustainable

VEHICLE	CURRENT FUEL	DECARBONISATION	TECHNOLOGY MATURITY
Cars	Petrol and diesel Electricity	Shift to active and public transport Electric	Mature
Trucks and buses	Diesel	Shift to rail Electric Sustainable fuels	Buses and smaller trucks mature Heavy trucks developing
Trains	94% Diesel 6% Electricity	Electric Sustainable fuels	Metro trains mature Regional trains early development
Aeroplanes	100% Aviation fuel	Electric Sustainable fuels	Early
Ships and boats	Diesel and heavy fuel oil	Electric Sustainable fuels	Ferries mature Long-haul early development

fuel supply is currently limited, and production costs remain high, so they should be prioritised for uses that genuinely cannot electrify.¹⁶⁴ Australia needs to develop a domestic biofuel industry to increase fuel security and decrease prices. Across all modes, charging and refuelling infrastructure must keep pace, particularly along freight corridors and in regional WA.

Transport policy is full of potholes

The only substantial regulation in place to reduce transport emissions is the New Vehicle Efficiency Standard, which sets emissions limits on new light vehicle sales. WA's EV rebate has ended, leaving no state-level incentive in place. To reach net zero by 2050, Australia needs 100% of light vehicle sales to be electric by 2035. In 2026, EV sales may cross the threshold that makes this national conversation politically possible.

There is no equivalent regulation for decarbonising heavy vehicles, and existing policies are aimed at supporting sustainable fuel production rather than driving freight electrification. The Safeguard Mechanism covers most domestic aviation and rail, but excludes nearly all heavy vehicles. Fragmented state and federal regulations on truck width and axle weights are also preventing imports of existing overseas electric truck models.¹⁶⁵ With 56% of Australia's trucking fleet approaching replacement, the window of opportunity is now. Sustainable fuels will be essential for long-haul and remote operations but the \$1.1 billion Cleaner Fuels Program should not substitute for the regulatory framework and infrastructure investment needed to electrify the routes where the technology already works, particularly urban freight.

Productivity improvements to freight systems require collaboration across all three levels of government and community. Done well, they can improve economic and decarbonisation outcomes at the same time. For example, dedicated zero emission loading zones would incentive truck electrification and reduce courier delivery times simultaneously.

Fuel excise raises approximately \$12 billion annually, a revenue stream that will decline as the national fleet electrifies. Layered on top is the misnamed "heavy vehicle road user charge", which returns a partial tax credit to heavy vehicles. The Iran War response provided short-term solutions, including halving the fuel excise and a \$10 billion fuel stockpiling package. Permanent fuel independence requires electrification and domestic production of sustainable fuels from Australian feedstocks. Decarbonising WA's freight system and building domestic fuel production capacity should go hand-in-hand with improving freight system productivity.

Challenges facing transport decarbonisation

● major ● moderate ○ minor

Finance ● | Global markets ○ | Technology ●
Planning ● | People ● | Environment ○

Technology splits sharply between battery-electric light vehicles that are ready, near cost-parity and rolling out while heavy freight, aviation and shipping decarbonisation technologies are still maturing. Charging and refuelling infrastructure along freight corridors and in the regions still needs to be rolled out. Public confidence in EVs, especially for longer distances and heavier loads, is growing but not yet as widespread as for rooftop solar.

Federal policy asks

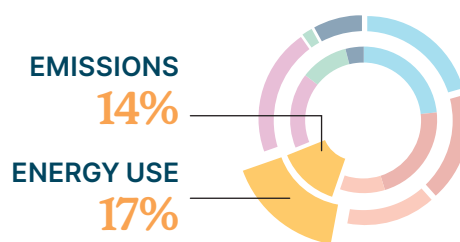
- 1 Legislate 100% zero emissions new light vehicle sales by 2035.
- 2 Increase requirements for heavy vehicle emissions reduction and provide dedicated decarbonisation support for small to medium freight operators. Support electric retrofit of existing diesel trucks.
- 3 Replace the fuel excise and heavy vehicle road user charge patchwork with a single road user charge covering all vehicles.
- 4 Introduce regulation to increase domestic sustainable fuel production and use, with a focus on renewable diesel.

State policy asks

- 1 Align WA's heavy vehicle framework with national electric truck reforms and sustainable fuel policy.
- 2 Work with local governments to improve freight system productivity, particularly for electric last-mile delivery.

Manufacturing

WA's manufacturing is gas dependent. Gas provides almost three quarters of manufacturing's energy needs, and is also a feedstock for some industrial processes. This additional feedstock consumption does not appear in energy figures.



Around three-quarters of emissions come from fuel combustion for heat, power and steam; the remainder are industrial process emissions, i.e. chemical byproducts rather than combustion. Over 98% of emissions are confidential, but are dominated by alumina refining and ammonia production.

WA's manufacturing sector also encompasses a diversity of smaller industries: food and beverage processing, paper and printing, cement, fabricated metals, chemicals, and light manufacturing of all kinds.

Manufacturing decarbonisation looks different depending on what's being made¹⁶⁶

EMISSIONS SOURCE T	SOLUTION T	TECH MATURITY T	ADOPTION T	POLICY T
On-site power generation Gas generators, combined heat and power systems <i>Factories, processing plants</i>	Renewables + storage or grid connection	Mature	Low	Partial
Mobile equipment Diesel forklifts, loaders, telehandlers <i>All manufacturing sites</i>	Battery-electric Vehicles & equipment	Mature	Patchy	Gap
Low-temperature heat Gas below 200°C - flexible loads <i>Food & beverage, brewing, drying, paper and print</i>	Heat pumps Electric resistance & electric boilers	Mature	Very low	Gap
Refrigerants GHG emissions from <i>Industrial cooling chemicals</i>	Low emission Refrigerant substitutes	Mature	Slow	Partial
High-temperature heat Gas and coal above 200°C - large scale, continuous supply <i>Alumina refining, cement kilns, metal smelting, mineral processing</i>	Electric furnaces Hydrogen combustion, emerging technologies	Developing	Early stage	Partial
Feedstock substitution Gas as a source of hydrogen Coal as a source of carbon <i>Ammonia production, steel, synthetic rutile processing</i>	Clean hydrogen replaces gas; biochar or renewable carbon replaces coal.	Developing	Negligible	Partial
Process emissions GHGs inherent to chemistry <i>Cement, lime, some chemicals</i>	Process redesign Carbon capture, alternative materials	Technology not yet proven	Negligible	Gap

 Mature
  Developing
  Not yet proven
  Some action
  Gap

Four decarbonisation pathways are proven and ready to deploy:

- replacing on-site generators with renewables
- electrifying mobile equipment
- electrifying low-temperature heat
- substituting industrial refrigerants

The barrier for smaller manufacturers, such as food processors, brewers, paper mills, and fabricators, is not technology but economics and knowledge: higher upfront costs, unfamiliar systems, and no policy incentive to take the first step. The current Safeguard Mechanism excludes virtually every small and medium manufacturer. For owner-operators with deep expertise in systems they know, rational caution about replacing them will not be overcome without both financial support and hands-on help through the transition. Refrigerants are a partial exception; a phase-down schedule exists but lacks follow through. Across all four pathways, what is needed is the same: a clear expectation that change must happen, and practical support to make it feasible.

High-temperature heat, feedstock substitution and process emissions are three genuinely harder pathways. Above 200°C, the challenge is not just

the temperatures required, but that these processes typically run continuously, with heat supply interruption risking equipment damage and product loss. Replacing the heat source means retrofitting around existing infrastructure that was built for gas. Where coal and gas are used as chemical feedstocks of hydrogen and carbon, green hydrogen and biochar are technically proven substitutions: the reaction and end product stay the same but the source changes. The challenge for policy is to reduce the cost of the renewable alternative. For some processes, like cement production, substitution isn't possible, as the emissions are an inherent byproduct of the industrial chemistry itself. The solutions require either capturing the emissions or redesigning the process entirely. WA's large alumina refineries and ammonia producers face high heat and feedstock substitution challenges, which are addressed in detail in Chapter 3.

Forecast gas shortages and rising gas prices provide energy security and economic reasons to electrify manufacturing. For flexible power users like food processors and brewers, there is a further advantage: shifting energy-intensive processes to times when renewable electricity is cheapest further reduces energy costs.

Challenges facing manufacturing decarbonisation

● major ① moderate ○ minor

Finance ● | Global markets ○ | Technology ① | Planning ① | People ① | Environment ○

Finance is the major challenge for both smaller manufacturers and larger manufacturers; investing in new tech requires significant upfront capital costs. Some technologies are proven and mature, while others are still being developed. Electrification depends on renewables roll out being ready to support additional demand.

Federal policy asks

- 1 Establish a national industrial electrification program combining financial assistance, energy audits, and hands-on transition support for smaller and mid-tier manufacturers.
- 2 Establish dedicated support for high-temperature heat electrification, carbon reductant substitution, and domestic ammonia decarbonisation.
- 3 Accelerate the industrial refrigerant phase-down by tightening the regulatory schedule and introducing equipment replacement incentives.

State policy ask

- 1 Reward flexible industrial demand through tariff reform and incentives, so manufacturers that shift energy-intensive processes to periods of cheap renewable generation are paid for the grid services they provide.

Agriculture and land use

WA's agricultural production is dominated by grain (wheat, barley, canola) and livestock (cattle, sheep).

Diesel imports supply 97% of agriculture's energy needs.

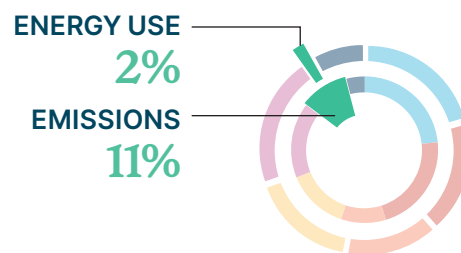
Addressing diesel dependency requires a few solutions. Some electrification is already underway; solar-powered bore water pumps are already the standard on remote cattle stations, and electric alternatives are available for stationary energy demands.¹⁶⁷ Smaller electric tractors are entering the market and electric heavy machinery is expected in the 2030s.¹⁶⁸ The near-term solution for bigger mobile machinery such as tractors, headers, and harvesters, is drop-in renewable fuels, such as renewable diesel.

The renewable energy infrastructure needed to decarbonise WA will sometimes need to be hosted on agricultural land. Hosting can diversify and stabilise farm income in a sector exposed to seasonal and price volatility, but current tax settings don't treat this income the same way as other farm income.

Iran War, February 2026

US and Israeli strikes on Iran closed the Strait of Hormuz, soon before the WA grain seeding season commenced. Farmers depend on diesel and urea from the Middle East to get crops started. Within weeks, urea prices rose 60% and diesel prices 88%. China simultaneously halted exports of urea-ammonium nitrate (UAN), cutting off alternative supply. Farmers were forced to change their cropping plans last minute.

Modern broadacre cropping depends on synthetic nitrogen fertiliser, and Australia has no domestic manufacture of urea, fertiliser's primary ingredient, although the Perdaman urea plant in the Pilbara is under construction. Urea is manufactured from ammonia, which WA already produces.



Most agricultural emissions come from natural processes involving plants, animals or soil, exacerbated by modern farming practices

Agricultural emissions from biological processes are more difficult to address and require changes to farming practices. Livestock is the biggest source of WA's agricultural emissions and almost all of this comes from enteric fermentation: the methane produced when microbes in the digestive systems of cattle and sheep break down feed. Seaweed-derived feed supplements have shown significant methane reduction in feedlot trials, but consistent delivery under open grazing conditions, where animals cannot be reliably dosed, remains unsolved.

Further emissions come from how we manage soil and organic matter and apply fertilisers. Bulk manure pits in intensive feedlot operations release methane. Liming, urea application, and burning crop stubble all release CO₂ or other gases directly. Bacteria in healthy soils naturally transform nitrogen compounds, producing small amounts of N₂O, a very potent greenhouse gas. Agricultural soils produce far more N₂O because synthetic fertiliser adds nitrogen faster than plants can absorb it, and the excess is converted to N₂O by soil bacteria.

Natural and managed landscapes can both be a carbon source or a sink depending on how they are managed

Landscapes are WA's only carbon sink, with plants removing carbon from the atmosphere equivalent to roughly 6% of WA's total emissions. Forests sequester the most carbon and are maintained by reduced land clearing and careful forest management. Well-managed cropland builds up soil carbon, and harvested wood products store carbon in long-lived timber. Set against these sinks, grassland and pasture produces more emissions than livestock, because WA's degraded pastoral land releases carbon faster than it stores it.

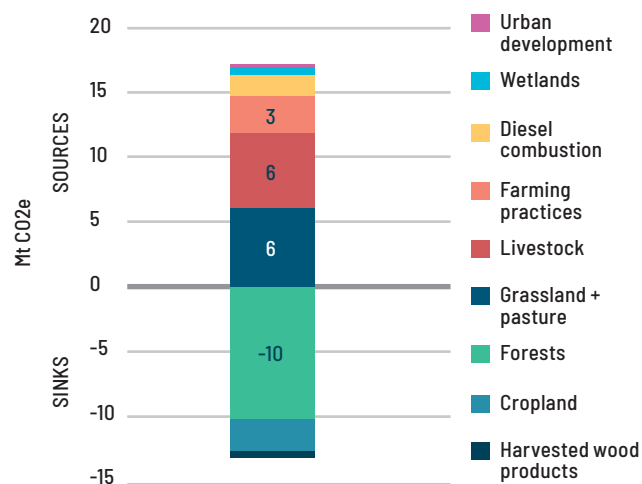
Regenerative agriculture and ecological restoration can improve carbon sinks and reduce emissions simultaneously, because healthy soils and landscapes cycle carbon and nitrogen more

efficiently. Regenerative practices like reduced tillage, cover cropping and diverse rotations, reduce synthetic fertiliser use, cutting import dependency, soil N₂O emissions and increasing soil carbon. On pastoral land, better grazing management through rotational grazing, reduced stocking rates, and restoring perennial pasture cover rebuilds soil carbon.

Our natural ecosystems are finite and under threat: hotter, drier conditions reduce vegetation growth and increase fire frequency, potentially releasing carbon back into the atmosphere. **WA's carbon sink should be treated as a precious resource, reserved for emissions that genuinely cannot be eliminated, not used to defer action on those that can.**

No emissions reduction obligation currently exists for the agricultural sector. Farmers are already experiencing the effects of climate change on growing seasons. Further policy to reduce agricultural and land use emissions should be developed in conjunction with climate adaptation efforts, conservation efforts that improve carbon sequestration and biodiversity, and programs to improve farm resilience through diversified income streams.

AGRICULTURE AND LAND USE EMISSIONS (2024)¹⁶⁹



Reducing diesel dependency and energy insecurity should be the immediate priority for agricultural decarbonisation.

Challenges facing agriculture decarbonisation

● major ◐ moderate ○ minor

Finance ◐ | Global markets ○ | Technology ◐ | Planning ○ | People ● | Environment ◐

Most agriculture and land use emissions come from natural processes, not fossil fuel combustion, and are not as easily solved by technology. Emissions reduction often requires a change in farming and land use practices, which is a behaviour change challenge. Farmers are dependent on diesel and fertiliser imports.

Federal policy asks

- 1 Develop and implement a national strategy for agricultural energy security that prioritises electrification, sustainable fuels, and domestic clean fertiliser production, with dedicated support, incentives and demonstrations for agricultural technology transition and regional clean energy infrastructure. Ensure farmers are protected from any reform to Diesel Fuel Tax Credits.
- 2 Provide funding and support for agricultural decarbonisation including: R&D for agricultural abatement technologies; improved assessment of farm emissions; and on-the-ground programs to facilitate uptake of soil carbon, manure management and regenerative agriculture practices.
- 3 Adjust tax settings so that farm income from hosting or generating renewable energy is treated, like carbon credit income, as primary production income for tax purposes, allowing farmers to diversify revenue streams.

State Policy ask

- 1 Support the uptake and hosting of renewable energy, electrification and biofuels in WA's agricultural sector.

Residential and commercial buildings

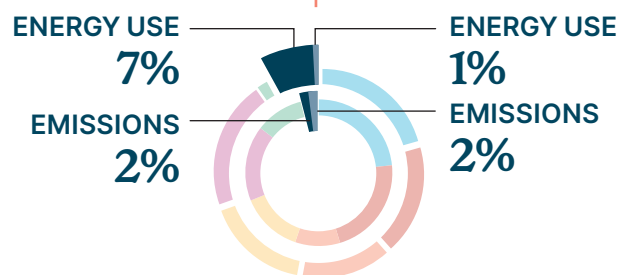
With 56% of energy already coming from electricity, decarbonising buildings is simpler. The pathway is threefold: expand rooftop solar and battery storage, improve energy efficiency, and electrify gas appliances.

Many homes and businesses are already taking the first step to become energy generators. WA has 569,000 rooftop solar systems, but only 13% of the SWIS's rooftop solar potential has been realised.¹⁷⁰ Rental properties and large commercial and industrial roofs have low uptake. Fully utilising suitable rooftops could add 16 GW of capacity and save an estimated \$14.5 billion in transmission infrastructure.¹⁷¹ Improving building energy efficiency, through features such as insulation and double glazing, reduces energy needs. Electrifying gas appliances means replacing gas hot water, space heating and cooking with hot water heat pumps, reverse cycle air conditioners and induction cooktops. Commercial gas use serves the same purposes at larger scale, with equivalent electric solutions available. The technology is mature, cost-competitive, and saves households an average of \$4,300 per year.¹⁷² Efficiency and electrification are best when built in from the start, but simple policies can encourage retrofits.

The longer-term consequence of electrification is the managed decline of the domestic reticulated gas network. As households and businesses disconnect from gas, the fixed costs of maintaining the pipe network is spread across a shrinking customer base. Without a transition plan, the network becomes a stranded asset and costs fall inequitably on remaining users. WA's gas distribution operator, ATCO, decommissioned the Esperance gas network in 2023, and will begin disconnecting Albany from late 2026.¹⁷³ Both decisions were driven by network economics, leaving the government and community to fill the breach.

Electrifying Esperance

When Esperance's gas network was shut off, almost 400 customers chose to electrify, with energy bill savings of up to 59%.¹⁷⁴ A planned network retirement, with government transition support, delivers real, local economic benefits.



Challenges facing building decarbonisation

● major ● moderate ○ minor

Finance ● | Global markets ○ | Technology ○
Planning ● | People ○ | Environment ○

Electrification technology is mature and electrification already saves households an average of \$4,300 a year, with public uptake running ahead of policy. The remaining gaps are about coordination and fairness: network rules that let renters and commercial tenants access solar, batteries, and electric appliances, and a managed retirement of the gas network so its fixed costs don't fall on the households least able to switch.

Federal policy ask

- 1 Strengthen the National Construction Code and related building decarbonisation policy, to increase support for all-electric new builds and retrofits.

State policy asks

- 1 Review network rules and tariff structures to encourage commercial and industrial battery-backed rooftop solar installations.
- 2 Require all new buildings to be all-electric, mandate efficiency and electrification disclosure at point of sale and lease, and set end-of-life electrification requirements for gas appliances.
- 3 Develop a staged gas network retirement strategy in partnership with ATCO. Start by requiring customers to pay the full cost of joining the gas network.

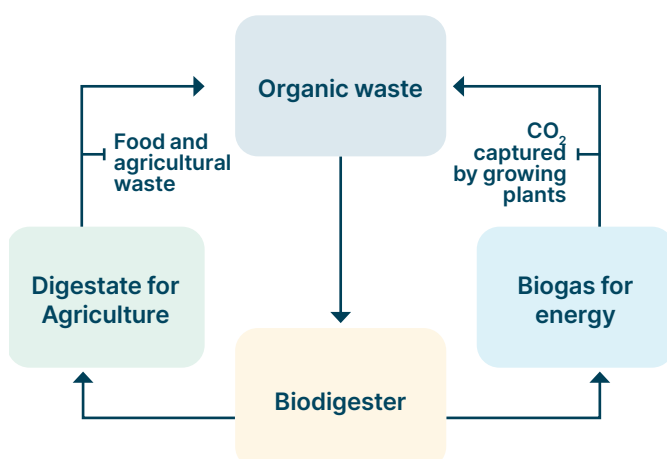
Waste

Waste emissions come from organic decomposition, rather than fossil fuel combustion, with 85% from landfill and most of the rest from sewerage.

When organic matter decomposes with access to air, as in composting, it produces CO₂. When it decomposes without air, as in landfill, it produces methane, which is a far more potent greenhouse gas. Waste emissions can be reduced by diverting organic waste from landfill and using anaerobic biodigesters to capture the methane or composting for CO₂. Compost is a valuable byproduct for agriculture. Biodigesters produce a compost-like substance (digestate) as well as biogas. Once refined to biomethane, it is a renewable 'drop-in' replacement for fossil gas.

Organic waste can be diverted from landfill through food and garden organics (FOGO) collection. WA set, and missed, a target for all Perth and Peel councils to offer FOGO by 2025, although rollout continues.¹⁷⁵ FOGO collection is currently sent to large-scale composting facilities. Many of Water Corporation's wastewater facilities don't capture methane produced, and some of those that do flare (burn) the biogas directly into the atmosphere. Several of WA's landfills capture methane and use it for electricity generation.¹⁷⁶ Landfill gas capture is less efficient than anaerobic digestion, because a landfill leaks and a sealed digester does not. Biodigesters have not been extended to food and organic waste in WA, despite significant international precedent.

Biodigesters enable circularity of both nutrients and energy. The CO₂ emissions from biogas combustion are recaptured by new plant growth, while the digestate feeds new agriculture, which ultimately ends up as organic waste. At scale, WA's municipal, agricultural and industrial organic waste streams represent a potential domestic clean fuel resource that strengthens fertiliser and fuel security. (see Biofuels and biochar, p60)



Challenges facing waste decarbonisation

● major ◐ moderate ○ minor

Finance ◐ | Global markets ○ | Technology ○
Planning ◐ | People ○ | Environment ○

Diverting organic waste from landfill and capturing methane through FOGO collection and biodigesters uses technology that is proven and commercial internationally. But WA is still rolling out FOGO and has barely deployed biodigesters beyond sewerage and landfill sites. Richgro, in Jandakot, is home to WA's only commercially operating anaerobic digester. Australia's only operational biomethane plant is in NSW. WA is developing an Advanced Biofuels Strategy that should include organic waste feedstocks.

Federal policy ask

- 1 Strengthen policy support for organic waste recovery for biogas and biomethane production.

State policy asks

- 1 Support the rollout of FOGO across all WA councils, with funding and development of recovery infrastructure.
- 2 Ensure WA's Advanced Biofuels Strategy includes organic waste recovery for biogas and biomethane production. Introduce policy to support biodigester uptake, including regional adoption for agricultural waste.
- 3 Support the upgrade of Water Corporation wastewater recovery facilities to capture and utilise biogas.

Chapter 3:

Diversifying into clean energy exports

Clean energy exports build prosperity, strengthen energy security, and cut emissions.

They keep WA's exports relevant as the world decarbonises and could make us indispensable to the world's clean energy transition. They build domestic industrial capacity, diversify the critical mineral supply chains essential for the energy transition, and keep more of the value of domestic resources onshore rather than shipping out raw feedstock.

Decarbonising what WA sells to the world does more to reduce global emissions than decarbonising what WA uses at home. But clean energy exports must be built on clean foundations. Renewable electricity generation is the precondition for almost everything here. Exports that utilise mining and manufacturing capacity need those sectors to decarbonise as well.

The eight export opportunities in this sector include existing industries that need to decarbonise,

value-adding opportunities for raw materials we currently export, and new materials with high potential global demand.

Green iron represents the biggest economic opportunity, adding value to our iron ore exports. The others add resilience, develop alternate global supply chains, support domestic decarbonisation, and provide feedstock for other clean exports, in addition to their own export potential.

WA also has the potential to export uranium. However, the WA Government has implemented a ban on new uranium projects. Due to this ban and the complex social licence issues, uranium exports are considered out of scope for this report.

EXPORT	DESCRIPTION	OPPORTUNITY FOR WA
Critical minerals	Lithium, rare earths, and more processed into higher-value products instead of raw ore	Add value to WA's existing mineral exports Develop alternate supply chains outside China
Clean hydrogen and ammonia	Hydrogen made from renewable electricity, used directly or turned into ammonia	Feedstock, fuel and fertiliser to supply other industries Decarbonise ammonia exports
Green iron	Iron ore processed into iron using renewable energy instead of coal	WA's biggest opportunity Decarbonise Asian steel production
Green alumina	Alumina refined using renewable heat and electricity instead of coal or gas	Decarbonise and defend WA's existing ~\$10 bn alumina trade
Advanced manufacturing	Some equipment the clean energy transition needs, made onshore, like battery components or transmission towers.	Support domestic decarbonisation, build industrial capacity and develop niche export markets
Biofuels and biochar	Renewable fuel and biochar made from organic waste and WA's existing canola exports	Strengthen fuel security Add value to existing canola exports Produce sustainable fuels and industrial feedstocks for domestic and international use
Carbon dioxide removal	CO ₂ removed from the atmosphere and stored durably	Longer-term carbon credit opportunities for residual emissions and atmospheric overshoot
Data centres	Renewable-powered computing serving Asian and domestic demand	Real interest, but requires strict conditions to be met to satisfy social licence concerns

Green iron is WA's biggest clean export opportunity

A WA green iron industry could generate \$4 billion in annual exports by 2030, growing to \$170 billion by 2050 and supporting nearly 20,000 new direct jobs.¹⁷⁷

Clean energy exports would diversify WA's regional economies.

The map below shows the mix of clean energy export projects being proposed by region. Diversifying WA's exports also spreads economic activity across the State.

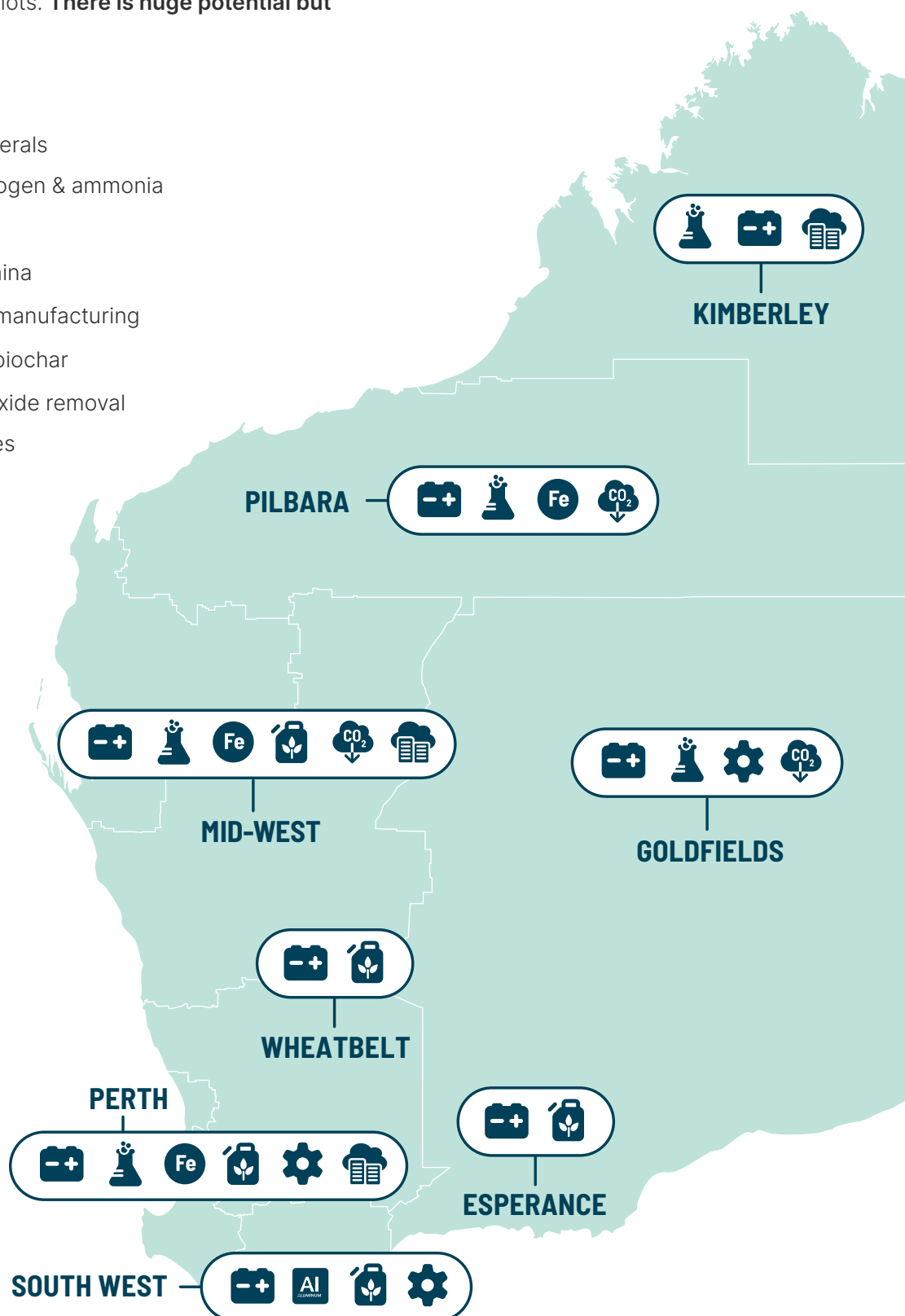
WA currently has a pipeline of more than 100 clean industry projects (see Appendix p96), but the newer opportunities (such as green iron, and clean hydrogen and ammonia) are almost entirely proposals and pilots. **There is huge potential but**

very few projects have reached the investment decision that triggers construction.

This section examines each export in turn, laying out the opportunity, how it works, the current pipeline and the challenges it faces. **Each export is assessed against the same six challenges: finance, global markets, technology, planning, people and environment, with the most pressing highlighted.**

Legend

-  Critical minerals
-  Clean hydrogen & ammonia
-  Green iron
-  Green alumina
-  Advanced manufacturing
-  Biofuels & biochar
-  Carbon dioxide removal
-  Data centres



Critical minerals

WA is already a major critical minerals miner and exporter; the biggest opportunity is to move further into processing.

The clean energy transition, modern defence systems and advanced manufacturing all depend on a group of minerals, including lithium, nickel, and rare earths, which have supply chains that are dangerously concentrated in China.

The opportunity

While critical minerals are not geologically scarce, the ability to process them into battery-grade chemicals or refined metals is concentrated in China. **China controls between 70 and 90 per cent of global refining capacity for most critical minerals and dominates component manufacturing for rare earth magnets and battery cells.**¹⁷⁸ This is not accidental. China has pursued deliberate, decades-long industrial policy to control the most strategically

valuable stages of the supply chain. Indonesia has done the same for nickel, scaling from near zero to more than half of global supply in less than a decade and forcing the suspension of WA's nickel industry in the process.

Critical minerals will never replace iron ore in scale because the transition needs hundreds of thousands of tonnes of critical minerals, not hundreds of millions. But value per tonne is higher, strategic importance is growing, and demand is expected to increase. Diversifying our economy to increase critical minerals processing strengthens our resilience, including through stronger trading and strategic relationships. WA has the mineral reserves, mining expertise, and the renewable energy potential to power processing at lower emissions. The United States, Japan, South Korea and the European Union are all actively seeking supply chains outside China, but WA must compete against heavily subsidised processing elsewhere.

MINERAL	MAIN USE	PROCESSING SUPPLY RISK	WA TODAY
Lithium	Batteries	China	Major producer; processing establishing
Nickel + cobalt	Batteries, stainless steel	China Indonesia	Major producer; mining and processing established then suspended 2024
Rare earths	Batteries, motors, defence	China	Major producer; processing emerging
Graphite	Batteries	China	Mining and processing developing
Copper*	Electrification	China	Operating mines; no processing
Manganese	Batteries, steel	China	Operating mines; no processing
Vanadium	Batteries, steel	China	Significant reserves; no production

*Copper is essential to electrification, but not included in Australia's official Critical Minerals List¹⁷⁹

Decarbonising critical mineral processing

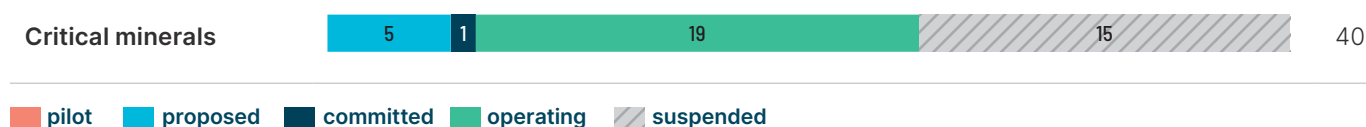
Critical mineral processing is not one step, but a toolbox of techniques that varies by mineral. Processors use heat, chemicals, water, mechanical separation and sometimes electric currents to unlock the valuable material and purify it into battery-, magnet- or metal-grade products. Decarbonising processing requires clean electricity and clean industrial heat, with additional mineral-specific chemistry challenges. Even where these supply chains are not yet clean, critical minerals

are essential to provide the renewable energy technology that keeps the energy transformation moving forward.

67%

of survey respondents said WA should process more of its minerals here

WA's critical minerals projects



WA's critical minerals pipeline is dominated by existing mining operations and some processing facilities across lithium, nickel and cobalt (mined together), copper (often mined with gold), manganese and rare earths. Vanadium mining operations are proposed. None of these have decarbonised yet, but the biggest challenge is market conditions that have seen some lithium and nickel operations suspended.

Challenges facing critical minerals

● major
 ◐ moderate
 ○ minor

Finance ● |
 Global markets ◐ |
 Technology ◐ |
 Planning ◐ |
 People ◐ |
 Environment ◐

Finance: WA's lithium refining costs roughly \$4-5 per kilogram more than China's, driven by higher labour and energy costs and thinner support through the capital-intensive start-up phase. Three refineries were built from 2022; only two are still operating in 2026, with global oversupply and slower-than-expected EV demand piling short-term pressure on top of that structural gap. Indonesia's nickel dominance has had an even stronger impact on WA. The resulting price collapse made WA's established nickel industry unviable almost overnight. BHP suspended Nickel West in October 2024, writing down AU\$5.4 billion. WA nickel sales fell 61% in 2025 to \$1.3 billion.¹⁸⁰ The federal Critical Minerals Production Tax Incentive (CMPTI), passed in February 2025, offers a 10% refundable offset on processing costs, uncapped, for up to a decade per project. It is a cost-bridging mechanism that will commence in July 2027.

Global markets: The strategic demand for alternate supply of critical minerals outside China is real. Australia has critical minerals agreements with several allies to provide funding to domestic production. Australia's own \$1.2 billion Critical Minerals Strategic Reserve (CMSR) aims to give producers the same demand-side certainty through government-backed offtake. But WA is not guaranteed to win the contest. Indonesia banned raw nickel ore exports in 2020, drew in predominantly Chinese investment to build domestic processing, and within four years went from under 5% of global supply to more than half.

Lynas Rare Earths

In 2025, Lynas Rare Earths became the first company outside China to produce commercial quantities of dysprosium oxide, a magnet metal critical to EVs, wind turbines and defence. Lynas' success is largely privately financed¹⁸¹ but has received Federal support through grants and Major Project Status. Japan has been a co-investor since 2012, and the Japan-Australia Rare Earths partnership guarantees a floor price on Lynas output.¹⁸²

Federal policy asks

- 1 Ensure timely and effective implementation of critical minerals funding support such as the CMPTI and CMSR.
- 2 Work with trading partners to develop international offtake agreements for critical minerals.

State policy asks

- 1 Build out the supporting shared infrastructure and enablers for critical minerals processing. Facilitate shared processing infrastructure that can be utilised by smaller mining companies.

Clean hydrogen and ammonia

Green hydrogen looked promising as WA's next great export — clean fuel made from sun and wind, shipped to Asia.

It hasn't materialised, because producing and shipping green hydrogen as a fuel remains too expensive. The 2024 National Hydrogen Strategy targeted 15 million tonnes of domestic production by 2050, but the 2026-27 Budget cut one of its main funding mechanisms by half. **Hydrogen's real value to WA is as an input: not something we ship, but the common ingredient in many other clean energy export opportunities.**

Fossil fuel-based hydrogen is already a globally significant industry, producing almost 100 million tonnes per year. It is used mainly as an industrial feedstock, and co-located with the oil refineries, ammonia plants or other chemical plants it supplies, because it is so difficult to store and transport.

The opportunity

There are three parts to the clean hydrogen opportunity in WA:

- 1** decarbonising production of WA's existing **ammonia plants**, which produce mining explosives and fertiliser;
- 2** adapting hydrogen for new clean industrial uses, such as replacing coking coal in future **green iron production**; and
- 3** **for high heat industrial processes** that can't currently be electrified. Hydrogen combustion releases vast heat and produces water, not CO₂.

Ammonia (NH₃) is hydrogen combined with nitrogen from the air, through the century-old Haber-Bosch process. Green ammonia is green hydrogen combined with nitrogen from the air. **In addition to contributing to a clean, secure domestic supply of ammonia-derived products, such as fertiliser, green ammonia could become its own export opportunity, as it is far easier to store and ship than hydrogen gas and is already traded globally.** Ammonia also holds some potential as a fuel to decarbonise international shipping.

How to make clean hydrogen

Hydrogen is almost never found on its own; making it means breaking it out of something else. Grey fossil fuel hydrogen production extracts hydrogen

from natural gas, with the use of steam, emitting significant volumes of carbon dioxide. Preventing these emissions from entering the atmosphere through carbon capture and storage (CCS) is one way to decarbonise hydrogen production but depends on effective CCS. Green hydrogen is split from water using renewable electricity, emitting oxygen instead. It's a reversal of hydrogen combustion, which releases energy, so its greatest barrier is the sheer energy the process needs. Breaking hydrogen out from water instead of gas requires ~55kWh/kg of hydrogen produced; roughly seven times the energy at a molecular level. Green hydrogen's substantially higher energy need is what currently makes green hydrogen several times more expensive to produce than grey hydrogen.

Hazer is a WA company developing a new method of turquoise hydrogen pyrolysis production that circumvents this energy barrier.¹⁸³ It uses methane as the feedstock but splits it into hydrogen and solid carbon, instead of CO₂. The process costs slightly less than fossil hydrogen and much less than green hydrogen. It also produces graphite (solid carbon), a highly valuable critical mineral. The process is promising but has not yet reached commercial scale. It also raises a question about whether fossil gas should be promoted as a feedstock if pyrolysis does not produce emissions, if the gas extraction process has not yet decarbonised.

Western Green Energy Hub (WGEH)

WGEH is a proposed clean hydrogen and ammonia export mega-project located in the Goldfields region. It is a joint venture between InterContinental Energy, CWP Global and Mirning Green Energy, a company wholly owned by the Mirning Traditional Lands Aboriginal Corporation, which will retain a permanent board seat. The project's own charter rules out any activity on Mirning land without Mirning consent. At a proposed 70 GW, targeting 5 million tonnes of green hydrogen a year, if it proceeds, it would be one of the largest renewable energy projects in the world.

WA's clean hydrogen and ammonia projects



Despite the exit of a few major projects, clean hydrogen's WA pipeline remains substantial. Most proposed projects plan to combine hydrogen and ammonia production for export or supply domestic clean industries. WA's existing ammonia operations have yet to decarbonise, and will expand significantly in the next year as Perdaman's urea plant comes online.¹⁸⁴

Challenges facing clean hydrogen and ammonia

● major
 ◐ moderate
 ○ minor

Finance ● |
 Global markets ◐ |
 Technology ◐ |
 Planning ◐ |
 People ◐ |
 Environment ◐

Finance: The primary barrier for green hydrogen electrolysis is cost of production, a consequence of its vast requirements for renewable electricity. While the expectation is that renewable electricity costs will come down over time, no commercial-scale projects in WA have yet reached financial close. There are supportive policies including Hydrogen Headstart and hydrogen production tax credits, but these are not enough to close the cost gap.

Global markets: The export market for traded hydrogen is unlikely to eventuate, but WA's renewable energy potential gives us strategic advantage in clean hydrogen production as an upstream input. Ammonia is already a global commodity.

Technology: Electrolysis itself is commercially available technology, and scope remains for efficiency improvements that would make green hydrogen more cost competitive.¹⁸⁵ Turquoise pyrolysis has not yet reached commercial scale.

Planning: The huge amount of renewables generation and transmission that will have to be built poses planning challenges for land use, grid connection and scale of the broader grid transition. Desalination, to supply water for electrolysis, brings brine disposal challenges and other required approvals.

People: WA's existing ammonia industry has contentious First Nations relationships. Yara and Perdaman both sit on Murujuga land, next to UNESCO World Heritage-listed rock art up to 50,000 years old.¹⁸⁶ Greening its hydrogen feedstock would not fix the damage, which comes from downstream nitric acid manufacture for explosives.

Federal policy asks

- 1 Set eligibility for hydrogen production incentives and the Guarantee of Origin scheme on verified lifecycle emissions intensity, rather than on a named production pathway, so that any process meeting the threshold can compete on cost and scale.
- 2 Extend hydrogen production incentives to cover ammonia as a product. Develop dedicated ammonia policy to support decarbonisation of existing production and new export projects.

State policy ask

- 1 Commit to building shared hydrogen pipeline infrastructure in designated industrial precincts, to serve multiple users and projects.

Green iron

Steel is the building block of modern economies, essential to construction, transport, clean energy infrastructure, and manufacturing, and currently responsible for around 7–9% of global CO₂ emissions.

As the world's largest iron ore producer, WA is a material contributor to this process, with our iron ore converted first into iron and then into steel by our trading partners. WA's opportunity is to move up that value chain – producing green iron onshore, capturing more economic value, and helping our trading partners decarbonise their steel industries in the process.

The opportunity

WA's natural advantages for green iron production are significant. We hold the world's largest iron ore reserves, with established mining operations, port infrastructure and trade relationships. While China has vast renewable energy capacity already, Japan and South Korea have limited renewable energy potential of their own; they can make steel, but they will struggle to make green hydrogen competitively. Our renewable energy potential positions WA as a natural location for cheaper green hydrogen production.

Projections suggest Australia will be the third cheapest producer of green iron globally by 2050, behind only China and India, with WA positioned to capture 14% of global supply. A WA green iron industry could generate \$4 billion in annual exports by 2030, growing to \$170 billion by 2050 and supporting nearly 20,000 new direct jobs. If WA supplies 14% of global green iron by 2050, this will reduce global emissions by over 1%, roughly equivalent to Australia's entire domestic emissions.¹⁸⁷

How to make green iron

Making steel requires three things: converting iron ore into iron by removing the oxygen chemically bonded to it; removing impurities for lower-grade ores; and adjusting carbon to specification. The final step of carbon adjustment to make steel is comparatively straightforward to decarbonise and would be done by our current trading partners. Existing electric arc furnace (EAF) technology is mature, and sustainable biochar can substitute for fossil carbon. Except for the small domestic

steel market (targeted by Generation Steel's Collie EAF proposal), WA's major opportunity lies in the earlier step of ironmaking, where around 90% of steelmaking's emissions originate. The challenge is that coking coal currently does all the hard work at once. In a blast furnace it removes oxygen, melts out impurities, and provides an excess of carbon. It also produces roughly 2.3 tonnes of CO₂ for every tonne of steel. Coal is doing chemical work, not just providing fuel. Removing coal from the process removes emissions, but separate solutions are required for each of the three jobs it was doing.

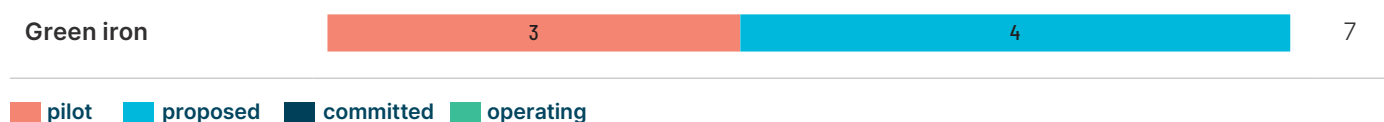
The established alternative uses natural gas to produce iron through direct reduction (DRI), which cuts process emissions by around 40%.¹⁸⁸ Hydrogen can replace gas in the same furnace, removing oxygen just as effectively, and producing only water vapour instead of CO₂. But this process uses lower heat that doesn't remove impurities, requiring high-grade ore to make iron of a quality suitable for steel. **WA's predominantly low-grade iron ore used in a gas or hydrogen furnace will require an additional electric smelting furnace (ESF) to remove impurities from the iron before it can be made into steel, but this technology is yet to be proven.**

NeoSmelt is a Kwinana pilot attempting to solve this problem. Some projects have identified WA reserves of higher-grade ore to bypass this challenge. A further alternative, electrolysis, uses electric current to remove oxygen and impurities, without hydrogen. It may offer a lower-energy, lower-cost pathway, but is not yet at commercial scale.

Port Hedland Iron Project

Korean steelmaker, POSCO, is leading the Port Hedland Iron Project (PHI), which aims to use higher-grade ore to produce Hot Briquetted Iron (HBI), ready for shipping and steelmaking in Korea. PHI will start with natural gas in a DRI/HBI furnace, and shift to hydrogen over time. POSCO is providing the major offtake for the project, and is separately developing other low-emissions iron-making technologies in Korea.

WA's green iron projects



WA has no existing iron or steel manufacture, so this industry needs to be built from scratch. WA's pipeline of green iron projects targets many different aspects of production, but all projects are currently pilots or proposals.

Challenges facing green iron

● major ◐ moderate ○ minor

Finance ● | Global markets ● | Technology ● | Planning ● | People ◐ | Environment ○

Finance: No commercial project in WA's pipeline has reached financial close, and several pilots are still in development. Green steel currently costs roughly 30% more than conventional steel to produce, and an estimated \$37.5 billion in investment is needed to reach WA's 2030 potential, more than half of it for renewable energy alone. Federal funding, including grants, is available to support new green iron projects, but demand-side measures, to guarantee customers, are absent.

Global markets: Demand for green iron depends on willingness to pay a price premium to meet emissions reduction ambitions. Asia-Pacific green steel demand alone is estimated at roughly 5.5 million tonnes a year by 2030, worth around \$2.8 billion annually to Australian exporters, but this demand is still abstract. WA has not secured international offtake agreements from Asian trading partners and without them, projects won't proceed. First mover advantage provides real structural benefit, but WA's window of opportunity is closing. Other countries, including China, Sweden and Oman, are moving faster.

Technology: WA can contemplate a two phase scale up of green iron. Moving ahead with existing technology routes for high grade magnetite ores while in parallel scaling up the electric smelting furnace (ESF) that would allow our low-grade ore to be used. Commercial scale application of ESF could be a decade away. Electrolysis, that bypasses the need for hydrogen, is not yet at commercial scale.

Planning: The difficulty of transporting hydrogen means it needs to be generated on-site. Integrated green iron projects that combine iron production, hydrogen production and vast renewables generation are more likely to succeed but will need planning and coordination. The potential scale of renewables buildout dwarfs current grid transition challenges.

Federal policy asks

- 1 Fast-track technology scale-up; fund R&D, commercialisation and first-of-a-kind project support for ESF, hydrogen DRI and iron electrolysis.
- 2 Create demand certainty by facilitating international offtake agreements and green trade partnerships with Japan, South Korea and the EU. Make green iron an explicit priority for DFAT, Austrade and Export Finance Australia.

State policy asks

- 1 Designate integrated green iron precincts that co-locate iron, hydrogen and renewables projects with fast-tracked planning and coordinated approvals.
- 2 Sequence grid and land access so green iron projects, whose renewables needs dwarf the current transition pipeline, are planned into SWIS/NWIS buildout rather than queued behind it.

Australia is already the world's second largest producer of alumina and the biggest exporter, and WA contributes most of this.

Alumina is the mid-point between bauxite ore and aluminium metal. **WA mines bauxite and refines it into alumina, and our clean export opportunity lies in decarbonising this process to protect the \$10 billion export industry we currently have.** But bauxite mining in WA's Jarrah forests poses risks to threatened species and Perth's water supply. Those risks must be resolved before any expansion proceeds, and addressed in existing operations.

The opportunity

Projections for Australia's green aluminium export industry are as high as \$60 billion, but nearly all of this lies with smelting, and all of Australia's aluminium smelters are in the eastern states. The federal government's \$2 billion Green Aluminium Production Credit reinforces this: it supports smelters switching to renewable power, and WA has none to switch. There are also no current proposals to develop aluminium smelting in WA. Smelting is the most electricity intensive step of aluminium production, requiring very large amounts of firm, continuous electricity. Historically, the SWIS has been less able to provide the power needed than the large, interconnected eastern states grid.

Providing adequate firm renewable electricity supply for alumina electrification will be a considerable challenge for the SWIS already. Decarbonising alumina refining is a significant technical challenge and will become increasingly necessary as WA's Middle Eastern export markets respond to their own decarbonisation pressures from their final buyers, the EU.

How to make green alumina

Refining bauxite into alumina (the Bayer process) uses large amounts of industrial heat, split two ways: around 70% goes into steam production (heating and dissolving the ore, at 150–300°C), and about 25% into calcination (baking the alumina at over 900°C to drive off remaining water). The two halves are at different stages of readiness.

Decarbonising steam is more technically mature. Electric boilers and mechanical vapour recompression can replace coal- or gas-fired steam, and WA's cheap renewable power should

theoretically make this an option. However, South32's \$4.4 million ARENA-backed prefeasibility study into electric boilers and mechanical vapour recompression¹⁸⁹ found that existing technologies were not operating anywhere near the scale needed by WA's alumina refineries. Upgrades may require custom build and retrofit of major refinery assets which are not economically viable at present. South32 has also converted two of its coal-boilers to gas as recently as 2023-24. Alcoa's two refineries source their steam from co-generation (heat and power) gas plants owned and operated by Alinta, which sells the power back to the SWIS. Decarbonising Alcoa's steam supply could mean purchasing new electric steam assets, with implications for Alinta's gas-fired electricity generation.

Calcination is even harder technically. It needs much higher temperatures, and viable clean pathways, including electric calcination (trialled by Alcoa) and hydrogen calcination (piloted by Rio Tinto at Yarwun in Queensland), are still early and unproven at commercial scale. Decarbonising alumina refining in WA will require a mix of technical development and financing solutions to replace current arrangements.

Long-duration storage for refineries

In August 2026, Alcoa signed a non-binding agreement with Perth-based Australian Vanadium to explore the potential for a 50–80 MW vanadium flow battery at its WA refinery sites, storing six to eight hours of power.¹⁹⁰ The technology is Australian-invented, and the electrolyte would be made in Perth. This is a scoping study for the long-duration storage that electrifying alumina will require.

■ pilot ■ proposed ■ committed ■ operating

WA's three alumina refineries, and the three bauxite mines that feed them, all need to decarbonise to realise a green alumina industry. Alcoa owns two of the three refineries (Pinjarra, Wagerup) and is in the process of acquiring South32's Worsley refinery, in a deal announced in June 2026 and expected to complete by mid-2027.¹⁹¹ Alcoa also needs to address significant environmental concerns regarding clearing of Jarrah forest for bauxite mining.

Challenges facing green alumina

● major ● moderate ○ minor

Finance ● | Global markets ● | Technology ● | Planning ○ | People ● | Environment ●

Finance: No dedicated support reaches WA alumina. The federal \$2 billion Green Aluminium Production Credit funds smelters switching to renewable power, but not alumina refineries. The Critical Minerals Production Tax Incentive covers high-purity alumina, but not the smelter-grade alumina WA produces. Refining is left with only the Safeguard Mechanism and small ARENA grants, and no carbon price signal from WA's non-EU export markets reaches the refineries at all.

Global markets: WA's alumina export market is mature but lacks the price signal of an enabling carbon price in international trade (outside of Europe). Gulf buyers face their own decarbonisation pressure (from Europe), Queensland is greening ahead of WA on calcination, and Middle Eastern producers are investing in clean process heat ahead of any regulatory requirement. WA risks being out-greened by competitors moving faster.

Technology: Steam electrification is proven technology in other contexts but not yet deployed at commercial scale to suit WA's refineries. Calcination is even harder: no commercial clean pathway exists anywhere in the world, with electric and hydrogen calcination still at pilot stage.

Environment: Bauxite mining clears substantial areas of Jarrah forest at Huntly, Willowdale and Boddington, posing a threat to unique threatened species and to Perth's water supply. In February 2026, Alcoa agreed to pay \$55 million for illegally clearing around 2,000 hectares of WA's northern Jarrah forest yet was granted an exemption to keep mining while a longer extension is considered. Public concern about the conservation impact of these activities carries a genuine social licence cost. A 'green alumina' story that reduces emissions but does not address the underlying environmental concerns visibly and credibly, risks landing as greenwashing.

Federal policy asks

- 1 Establish dedicated support for decarbonisation of alumina refining. Consider extending the Green Aluminium Production Credit to alumina.
- 2 Take a rigorous, transparent approach to Alcoa's strategic assessment process. Ensure that environmental impacts can be adequately prevented before granting further exemptions or long-term approval for bauxite mining.

State policy ask

- 1 Provide confidence that transmission and renewable energy will be available to power alumina refinery electrification.

Advanced manufacturing

Advanced manufacturing means making some of the sophisticated equipment the clean energy transition needs, such as wind turbine parts, transmission towers, battery components, and electric trains and buses.

For WA, there are two opportunities: diversifying and building our domestic manufacturing base to produce more of the essentials that WA currently imports and producing specific high-value products with export potential that build on our strengths in battery minerals.

The opportunity

Diversifying WA's manufacturing base

The downside of WA's resources boom is a lack of complexity and strength in our manufacturing sector, which makes us heavily reliant on imports for many essential items. Every bit of clean technology that we can make here provides jobs, reduces imports, and progresses the general decarbonisation that underpins other clean export opportunities.

The WA Government has set a clear goal to diversify WA's economy, backing this up with investment in electrified public transport manufacture. WA is now manufacturing some of its own electric railcars and electric buses to serve Perth's public transport system, with electric ferries also under construction.¹⁹² WA assembles clean energy microgrids from imported components, tailored to fit WA's unique remote conditions. The State is also supporting the manufacture of wind turbine components and transmission towers which may potentially be fed by local green steel. Generation Steel is planning to build WA's first steel electric arc furnace in Collie which will make steel from the recycled scrap metal which WA currently ships to Asia.¹⁹³ Generation Steel is targeting domestic construction use, but a broader steel opportunity exists in oil and gas decommissioning.

Winding down the fossil fuel industry is itself an industrial workload. Removing Australia's offshore oil and gas infrastructure is a legal obligation estimated at \$60 billion, with almost 70% in WA's waters.¹⁹⁴ At least 5 million tonnes of material will come ashore, a large part of it steel.¹⁹⁵ Without the required infrastructure, including domestic steel and plastics recycling and a confirmed deepwater

decommissioning port, the work will be given to foreign companies, not Western Australians.¹⁹⁶ A single retired production vessel holds enough steel to feed an electric arc furnace for a considerable time, turning scrap into steel the transition needs.¹⁹⁷ If WA can develop the expertise, there is an export opportunity in cleaning up the world's oil and gas facilities. Decommissioning ports, recycling facilities and skills would also serve offshore wind and mining rehabilitation.

Battery component exports

WA's mining and metallurgical expertise gives it a genuine, though modest, export-capable frontier in **battery components and recycling**, both a further step up the supply chain from critical minerals processing. Precursor cathode active material production uses refined critical minerals to make an essential battery component currently dominated by Chinese production. End-of-life battery recycling uses mineral processing techniques to harvest, recover and refine battery minerals. Both produce a high-value, refined product ready for export. These opportunities are real but early. WA is already doing early stage manufacturing of vanadium flow battery components and electrolyte (VSUN Energy, Perth),¹⁹⁸ and the WA Government's planned 500 MWh flow battery project in Kalgoorlie explicitly requires the technology to be built in WA using WA-processed vanadium.¹⁹⁹ Electro Aero is a company developing charging equipment for electric aviation already supplying overseas buyers.²⁰⁰ As WA's manufacturing base develops, more niche production and exports will emerge.

How to decarbonise advanced manufacturing

The manufacturing processes mentioned above carry their own emissions, which can be addressed through the pathways in Manufacturing (p42). Most importantly, these advanced manufacturing products are essential to the transition regardless of how cleanly they are currently produced, in the same way that critical minerals remain essential. Decarbonising the manufacture of clean energy equipment is a parallel task, not a precondition for WA to start making them.

■ pilot ■ proposed ■ committed ■ operating

WA's advanced manufacturing pipeline includes a range of smaller manufacturers making clean transport and energy components for WA use, both operating and in development, and pilots testing export-potential battery components manufacture. None of these have decarbonised their own manufacturing processes yet.

Challenges facing advanced manufacturing

● major ① moderate ○ minor

Finance ● | Global markets ① | Technology ① | Planning ○ | People ① | Environment ○

Finance: Several of WA's domestic manufacturing gains exist only because of substantial government backing. \$1.25 billion for railcars, \$250 million for electric buses and \$75 million transmission manufacturing investment are what make these industries viable here at all; the scale and underlying economics don't yet stack up. The lack of an effective price on carbon pollution weakens the economic case for both domestic manufacture of clean energy technologies, and decarbonisation of their manufacturing processes.

Global markets: WA's manufacturing ambitions enter mature, established global markets where competitors (particularly in Asia) already operate at scale. Carving out a niche for WA means competing on cost or specialisation. The openings are specific rather than general: allied governments actively seeking non-Chinese supply, regional partnerships that dilute supply chain concentration risk, and early positioning as the first generation of clean technology reaches end of life.²⁰¹

Technology: The manufacturing processes themselves are mature and proven, if not yet done in WA. The challenge is decarbonising these processes at commercial scale. Lower-carbon approaches exist in pockets, but manufacturing generally is a sector that has made less decarbonisation progress.

Planning: WA faces a genuine skills gap for advanced manufacturing roles, driven by training pipeline timing and competition from other sectors (such as defence, shipbuilding expansion and housing construction) all drawing on the same trades simultaneously.

Kalgoorlie's vanadium flow battery

The WA Government is putting \$150 million behind Australia's first utility-scale, locally manufactured vanadium flow battery; a 50 MW / 500 MWh system near Kalgoorlie, capable of storing and discharging power for up to 10 hours to firm the Goldfields grid. The project explicitly requires the technology to be manufactured in WA, using vanadium mined and processed within the state; three steps of the supply chain that usually happen offshore.

Federal policy asks

- 1 Reform funding rules so that companies that are less than 3 years old are eligible for more funding.
- 2 Recognise battery recycling as low-emissions critical minerals production, so that 'urban mining' qualifies for the support given to conventional mining and processing.
- 3 Fund a small certification grant stream for export-ready manufacturers, allowing small businesses and start-ups to access international markets.

State policy ask

- 1 Build out the common user infrastructure that enables new manufacturing and decommissioning industries to start.

Biofuels and biochar

WA is a major canola exporter, with a large share destined for biofuel refineries overseas.

WA also grows and discards enormous amounts of organic material, including crop stubble, used cooking oil, household and agricultural waste. Two related industries can add value to our existing canola export and turn our organic waste into products the transition needs: liquid biofuels, which can run in existing engines and infrastructure without modification, and biochar, a stable form of carbon with uses ranging from soil improvement to industrial processing. Neither requires diverting existing food production towards fuel, although a successful biofuel industry may encourage more suitable feedstock production. The immediate opportunity is processing more of what WA already exports for biofuels, and in recovering value from our waste streams.

The opportunity

WA imports 100% of its refined fuels, and diesel is essential to mining, agriculture and construction, not just transport. **Domestic biofuel production can simultaneously address three problems:**

- 1 reducing demand for imported fuels
- 2 providing sustainable fuels to decarbonise heavy transport, machinery, backup power generators and industrial processes that are not easy to electrify, and
- 3 reducing organic waste emissions by turning that waste into energy. Biofuel production from canola destined for exports captures more value onshore.

Biofuels still produce CO₂ when burnt, but because their source was recently living organic matter, rather than long-dead fossil fuels, they are essentially emissions neutral, if new plants are grown to recapture that carbon.

Australia's total biogas potential from agricultural and municipal organic waste is estimated at 371 PJ per year by 2050, equivalent to 64% of the east coast domestic gas supply. Adoption of biogas technology could add \$50 billion to Australia's GDP and create 18,000 full-time jobs, mostly in regional areas.²⁰² Current Australian biofuel projects in the pipeline could produce 2 billion litres of low-carbon liquid fuel a year, enough to displace an estimated 19% of fuel imports by 2040 and up to 47% by 2050,²⁰³ but lack of cost-competitiveness with fossil fuels without an effective price on carbon is a real barrier. Australia currently exports biofuel feedstocks (such as canola,

used cooking oil and tallow) worth \$3.9 billion a year. Domestic biofuel production could provide a \$36 billion market opportunity by 2050, diversifying exports as well as meeting domestic needs.²⁰⁴

How to make biofuels and biochar

There are many different biofuels, but those most relevant to WA are biogas and biomethane, renewable diesel and sustainable aviation fuel (SAF). Biodigesters produce biogas from organic waste. Once upgraded to biomethane, it is interchangeable with natural gas and can be for backup gas power or high temperature industrial heat. Most of Australia's existing biodigesters are located at landfill and sewerage treatment sites. As of 2023, 40% of these were flaring their biogas, i.e. burning it directly into the atmosphere, rather than using it for energy.²⁰⁵ Conventional biodiesel requires blending with petroleum diesel to be usable in diesel engines. Renewable diesel, produced by hydrotreating oils (such as canola, tallow or used cooking oil) with hydrogen, is a true drop-in replacement.

SAF is chemically able to be used in current aircraft engines, but international fuel certification currently requires it to be blended for commercial use. The benefit of drop-in replacements, and blends to a lesser extent, is that they allow emissions reduction without requiring infrastructure upgrades. As biofuel production is still relatively expensive, it must be prioritised for aviation, shipping, agricultural machinery and other equipment difficult to electrify.

Biochar is solid carbon produced from biomass and has a range of industrial uses. Biochar is made by heating biomass without oxygen (pyrolysis) into a stable solid carbon. It can be used as an agricultural soil amendment, for filtration, and as a renewable substitute for the coking coal used in metallurgical processes like green iron. As a renewable feedstock replacement, it is essential to certain industrial decarbonisation processes. Biochar used as a feedstock keeps carbon locked up for centuries, which means that biochar production can also generate carbon credits.

Australis Biofuels

Esperance is home to an existing biomass export facility that plans to expand into integrated biofuel production, including bioethanol, SAF, renewable diesel and biochar, all run on a biomass power station. Australia Biofuels expects to create over 100 permanent local jobs.



Most of WA's biofuel and biochar projects have not yet secured the finance to begin construction. As for other exports, the decarbonisation of biofuel and biochar production itself is a parallel goal that some of WA's biofuel projects already plan to address.

Challenges facing biofuel and biochar production

● major
 ◐ moderate
 ○ minor

Finance ● |
 Global markets ◐ |
 Technology ◐ |
 Planning ◐ |
 People ○ |
 Environment ○

Finance: Currently, Australia's limited biofuel production is not cost competitive with petroleum fuels, not helped by the lack of an effective price on carbon. Balancing the scales requires policy to support biofuel production and encourage biofuel demand. Current fuel tax settings don't incentivise renewable diesel use, treating it the same as fossil diesel for both fuel excise and DFTC.²⁰⁶ Australia has no blending mandates for biofuels, whether biodiesel or SAF. The new federal \$1.1 billion Cleaner Fuels Program is promising, although there is uncertainty about whether current Hydroprocessed Esters and Fatty Acids (HEFA) renewable diesel technology will qualify for funding.²⁰⁷

Global markets: Until recently, Australia's biofuels conversation was framed around emissions targets. The closure of the Strait of Hormuz in March 2026 has strengthened the energy security argument for biofuels globally. WA already exports most of its canola crop to Europe for biodiesel; domestic production of biofuels may still reach that same export market. The viability of a WA biofuel export industry depends on how global biofuel markets develop, and whether Australian production can compete on cost.

Planning: Biofuel production depends on collecting dispersed feedstocks, including crop residue, forestry waste, used cooking oil, and tallow, from many separate landholders and businesses. The Federal Government's National Bioenergy Feedstock Strategy exists precisely because this coordination won't happen on its own.²⁰⁸ Australia's most recent comprehensive national feedstock dataset is nearly a decade old. WA's own Advanced Biofuels Strategy is \$1.2 million simply to study the state's feedstock and supply chain options.²⁰⁹

Federal policy asks

- 1 Introduce demand-side policy for biofuels, which could include a blending mandate or clean support for drop-in replacements like renewable diesel.
- 2 Adjust fuel tax and credit settings so that biodiesel and renewable diesel are incentivised over fossil diesel.
- 3 Ensure that the Cleaner Fuels Program's carbon-intensity thresholds and incentive design permit HEFA renewable diesel from canola to be eligible for funding.

State policy ask

- 1 Deliver a Western Australian Advanced Biofuels Strategy that includes policy to support biofuel production and encourage demand.

Carbon dioxide removal

Carbon dioxide removal (CDR) means drawing CO₂ out of the atmosphere and locking it away durably.

This is distinct from carbon capture and storage (CCS), which prevents a concentrated industrial point source of CO₂ from entering the atmosphere in the first place. IPCC modelling consistently shows that CDR will be essential in our response to climate change. **CDR has two roles: balancing the last, unavoidable slice of residual emissions on the way to net zero and drawing down the carbon already in the atmosphere that has overshoot safe levels.** Importantly, CDR should not be used to offset emissions that can be avoided or abated with available technologies.

The opportunity

WA's three key pathways to CDR are **mineralisation**, **bio sequestration** and **direct air capture (DAC)**. WA has a strong comparative advantage in these CDR methods, particularly mineralisation and DAC. WA is likely to be able to export CDR (in the form of carbon credits) to other countries that cannot undertake CDR at scale but are looking to counter-balance their residual emissions to reach net zero. **Realistically, CDR is a long-term opportunity.** It should not distract from the more immediate export opportunities that will reduce global emissions production.

How to remove carbon dioxide from the atmosphere

Mineralisation

Some of WA's nickel mine tailings are made of ultramafic rock, which reacts naturally with atmospheric CO₂ to form solid carbonate. This is permanent storage, with no risk of the gas ever leaking back out, unlike pumping it underground. This already happens passively at several WA sites, and technology is being trialled to scale up the process. WA has considerable potential for mineralisation, because mine tailings already exist across the landscape. The process yields saleable byproducts like magnesium carbonate and silica.

Bio sequestration

Healthy soils and landscapes pull carbon into the ground as a side effect of regenerative agriculture and ecological restoration. A carbon market lets farmers and landholders earn income for this kind of restoration. But natural carbon removal has

real limits. The carbon only stays removed as long as those landscapes stay healthy and undamaged. The co-benefits, including better soil health, biodiversity, and First Nations land management, may matter as much as the carbon dioxide removal itself. Durable bio sequestration can be achieved by harvesting the biomass and producing biochar, which can lock away carbon for a thousand years or bioenergy CCS, with the emissions captured and stored underground.

Direct air capture

This involves large fans blowing air over a chemical that reacts with CO₂, pulling it out of the atmosphere, to be stored underground. The technology works at pilot scale, and is attracting global investment, but is still very energy-intensive and very expensive, far from a path to cost-competitiveness. DAC at scale will require transport and underground storage infrastructure to be developed in parallel.

Underground carbon storage

CO₂ captured from the air by DAC is stored underground. Concentrated streams of CO₂ are injected into large, depleted gas and oil reservoirs, where they either mineralise, or are trapped. This is the same process used by CCS, and the two uses may compete for suitable storage locations. This technology is still developing and some concerns remain around the durability of underground storage. Long-term monitoring is required.

What about carbon capture and storage?

The value of carbon capture and storage (CCS) depends on its application. CCS reinjected into oil reservoirs for enhanced oil recovery increases fossil fuel production. Used to capture CO₂ from gas extraction, CCS risks becoming a way of prolonging fossil fuel use, if not applied as part of broader rigorous production decarbonisation. But used to manage the concentrated CO₂ released by hard-to-abate industrial process, such as cement production, CCS is useful as a bridge while genuinely zero-emissions alternatives mature. The effectiveness of CCS technology is essential regardless of application but requires a carbon price 3-4x current levels in Australia. Existing deployment of CCS has underperformed expectations.

■ pilot
 ■ proposed
 ■ committed
 ■ operating

WA has several CCS projects covering both gas extraction emissions and industrial process decarbonisation, neither of which are true CDR. There is one pilot for mineralisation, one for DAC, and a proposed commercial scale durable biochar project that will target invasive weeds in the Pilbara. There are also several hundred projects already generating ACCUs.

Challenges facing carbon dioxide removal

● major
 ● moderate
 ○ minor

Finance ● |
 Global markets ● |
 Technology ● |
 Planning ● |
 People ● |
 Environment ○

Finance: DAC and mineralisation are expensive. One widely agreed target is to bring the costs down to US\$100 per tonne of CO₂, over four times the current cost of an ACCU, which also represents a tonne of CO₂.

Global markets: There is no stable global market for selling CDR. The vast majority of CDR purchases are made voluntarily by large corporates, such as Microsoft. To provide a stable, long-term demand signal for CDR, there will need to be mandatory markets – where companies are required to purchase CDR to counterbalance their residual emissions. But a harder issue sits underneath: there is no obvious private buyer for removal aimed at drawing down the world's existing carbon overshoot, rather than offsetting ongoing emissions. This is where governments may need to step in, treating CDR in the same way as a traditional household waste service – except the waste is in the atmosphere. Storage-as-a-service is a nascent trade market. Australia and WA both permit CO₂ transport and underground storage, but bilateral agreements between nation states must be signed before such trading can take place, and Australia has not yet done so.

Technology: DAC and mineralisation are approaching commercial readiness. There are a small handful of commercial trials around the world. The technologies continue to improve and a range of newer generation technologies are also undergoing trial and development. Bio-sequestration is commercially ready and widely deployed around the world.

Planning: Ongoing reviews into the ACCU scheme must address public concerns about credit integrity, and broader regulation must restrict access to offsets where emissions could reasonably be avoided. Biochar is not presently eligible to generate ACCUs.

People: Carbon and nature repair markets will mean little if farmers and landholders are not participating. Farmer uptake of soil carbon projects has stayed low since 2014 despite strong prices and real co-benefits, and the reasons are practical, not attitudinal: upfront costs must be borne before any credit is earned, there is uncertainty about returns, and program complexity. CCS has low levels of public trust, because of its association with the gas industry and decades of promise with next to no delivery globally.

Mineralisation at Mt Keith

BHP's Mt Keith nickel mine, in WA's Northern Goldfields, sits on tailings that have been quietly absorbing CO₂ from the atmosphere for years, turning it to solid rock. Arca, a carbon removal startup, is now piloting engineered acceleration of that same reaction on-site, in a world-first at this scale, with an eventual ambition to remove carbon at the gigatonne level.

Federal policy asks

- 1 Develop the methodology to enable biochar projects to generate ACCUs that recognise their durability.
- 2 Strengthen ACCU integrity for bio sequestration.
- 3 Develop a Federal CDR strategy, which will be required to meet net zero, including recognising the role of permanent, high-integrity CDR as well as land-based sequestration. Support CDR demonstrations and pilots.

Data centres

Data centres are not a new industry. They're the physical buildings that store, process and deliver the internet.

What's new is the scale. AI has turned data centres from modest, largely invisible buildings into some of the largest electricity loads a state can host, closer to an industrial operation than an office block. Data centres are a large export opportunity. WA isn't selling a physical product; it's selling electrons and compute – the fundamental building blocks of AI.

The opportunity

The demand for data centres is enormous. Global AI and cloud companies are already committing billions in capital to Australia (Amazon has pledged \$20 billion, Microsoft \$25 billion) and national data centre electricity demand is forecast to increase from around 4 TWh in 2025 to 12 TWh by 2030.²¹⁰ WA has a strong competitive advantage because it has land, firm renewable energy potential, and direct access to international subsea fibre-optic cables. A parallel opportunity exists for Australia to develop more sovereign compute capacity, which can support government and defence activities.

How to make data centres support decarbonisation

The growing number of overseas moratoria on AI data centres are an indication of escalating public concerns about the costs of AI and data centre rollout. **For data centres to qualify as a clean energy export opportunity, they must satisfy several conditions:**

- 1 economic and social benefits that stay onshore,
- 2 additional renewable energy and
- 3 sustainable water use.

Capturing economic benefit

Data centres are the clean export opportunity most at risk of exacerbating the economic vulnerabilities that WA's resource-heavy economy already faces. Data centres are often foreign-owned, capital-intensive to build but light on ongoing local jobs, with much of the value flowing straight back offshore. For every \$100 a company like Amazon or Google invests here, \$70 to \$80 flows straight overseas again, to buy servers and semiconductors from other countries. Tech companies are also very effective

at minimising tax, by offshoring profits to low-tax jurisdictions. Altogether, this means that data centres will not automatically be an economic benefit to WA.

Economic benefit could be captured in a few ways. Ownership structures can provide First Nations and other local stakeholders equity in the project, providing a share of future profits. Tax and royalty settings could ensure foreign companies return part of the value they produce to WA or Australia. Binding local employment and training commitments are a third component, given data centres create relatively few permanent jobs once construction ends.

Adding to the energy transition

AI data centres are extremely energy intensive. Without renewable energy additionality requirements, data centres will strain grids under transition, risking the build of new gas or diesel generation. The required power has to be genuinely additional renewable generation and battery firmed, not electricity diverted from everyone else, not blocking other users or generators on transmission lines, and not backed by gas the moment the sun isn't shining.

Sustainable water use

Data centres generate huge amounts of heat, which is often managed by water-hungry evaporative cooling. Fortunately, other cooling methods exist that significantly reduce water use. Minimum water use efficiency standards should be set to ensure water use is sustainable.

■ pilot
 ■ proposed
 ■ committed
 ■ operating

There are only a handful of hyperscale data centres proposed for WA. The smaller data centres already in operation in WA have not been included here; the current biggest, at 20 MW, is dwarfed by the 200 MW proposals being put forward. Some, such as Project Meridien, have plans to meet these requirements of capturing economic benefit, adding to the energy transition and sustainable water use.

Challenges facing data centres

● major
 ● moderate
 ○ minor

Finance ○ | Global markets ○ | Technology ○ | Planning ● | People ● | Environment ●

Finance: This is the sole clean export that doesn't struggle for capital. Global AI and cloud companies are among the best-funded businesses on Earth, and that money is actively looking for investment opportunities. Without adequate regulatory settings, that capital may arrive in WA but leave behind few local economic benefits, as profits flow offshore.

Planning: This is the biggest challenge. WA's electricity grid is small and isolated, and gigawatt-scale, always-on loads need new transmission, new generation and new firming capacity to serve them. Built well, a data centre can fund shared infrastructure that also benefits other projects. Built without coordination, it can simply claim the grid capacity, sites and connection queue slots that other clean industries need.

People: AI data centres face an escalating social licence problem, such as the 2026 withdrawal of GreenSquareDC's Hazelmere proposal east of Perth due to community opposition. This can be seen around Australia and the world. Without public trust in data centres and AI, the industry will face major barriers to sustainable growth.

Project Meridien

Project Meridien, a proposed gigawatt-scale AI data centre south of Broome, is a joint venture between Longreach Capital Investment, Fugro Australia and the Karajarri Traditional Owners, giving WA a genuine stake in what the facility earns over time. Its design targets around 90% renewable power from solar, wind and batteries, with a closed-loop cooling system built to recycle.

Federal policy asks

- 1 Set binding obligations for all new large-scale data centre developments: 100% additional renewable energy, including co-funding common-user grid infrastructure, transmission and storage; genuine water efficiency standards; and grid connections sequenced so data centres do not claim scarce capacity ahead of higher-value, variable-load clean industries.
- 2 Require large-scale data centre developments to demonstrate local economic and community benefit. This may include adjusting tax and royalty settings, binding commitments to local employment, providing public interest compute, skills and training, and local or First Nations equity.

Chapter 4:

Addressing system-wide challenges

Finance, global markets, technology, planning, people and environment are six challenges that must be met by all clean industries, although to varying degrees.

In the previous two sections, each sector to decarbonise and potential clean energy export was assessed for the scale of the current challenges it faces. The compilation of these ratings can be found in the matrices in Appendix B (p96); when seen together, patterns emerge.

The challenges facing sector decarbonisation and new clean exports vary, but **finance is the primary challenge right now**. Tackling barriers one project at a time is slow and repetitive. Tackling them where they are shared is far more effective. Solving the shared constraint once means every industry behind it moves. This section outlines each of these six challenges, and how Governments can address them at the system level.

Government has a role to play in addressing current system-wide challenges.

Finance: Many clean energy and industrial projects are struggling to reach Final Investment Decision because technology costs, market uncertainty and first-mover risks remain too high for private investors alone. Governments have a critical role in crowding-in private capital through strategic risk-sharing and support that helps new industries become commercially viable.

Global markets: WA's clean industries will succeed or fail based on demand for low-carbon products in international markets. Trade policy, carbon border measures, certification systems and strategic partnerships will determine whether WA can secure a competitive position in the global transition.

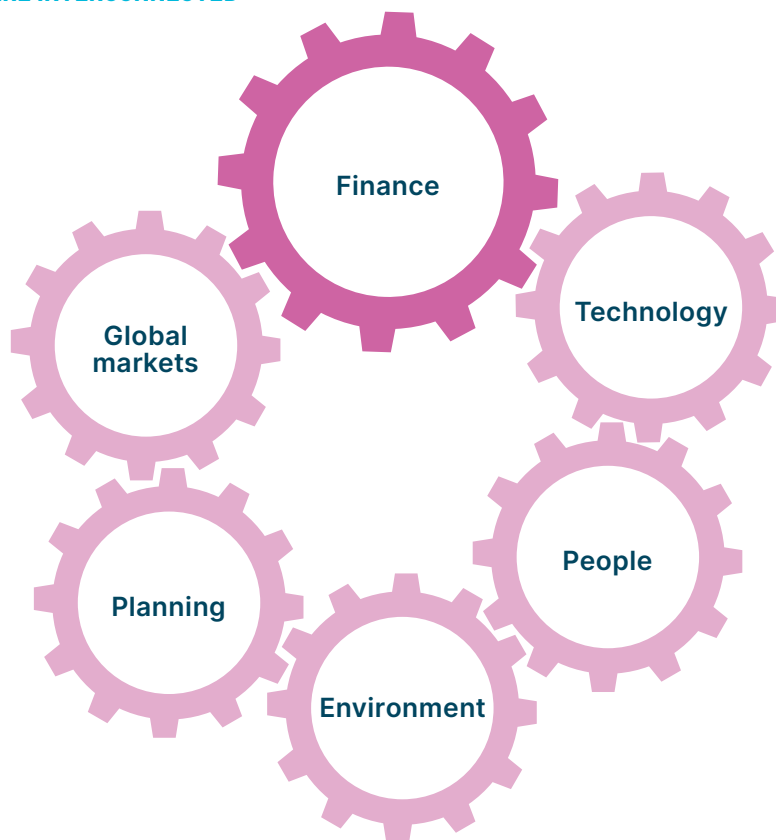
Technology: Many of the technologies needed to decarbonise already exist, but others remain expensive, immature or difficult to deploy at scale. Continued investment in research, development, demonstration and commercialisation will be critical to turning promising technologies into globally competitive industries.

Planning: Decarbonisation requires more than just approving individual projects. It depends on coordinated development of transmission, water, ports, industrial precincts and other shared infrastructure. Government planning must proactively prepare the foundations for a clean energy economy.

People: The energy transformation will reshape WA's workforce, creating new jobs and industries while changing the skills required in existing sectors. Success more broadly depends on projects securing social licence from First Nations and local communities, which in turn requires that those projects deliver tangible economic benefits to communities across WA.

Environment: A clean energy superpower must also be an environmental steward. Decarbonisation should be achieved in ways that protect biodiversity, ensuring the transition delivers lasting environmental benefits rather than new environmental pressures.

THESE SIX CHALLENGES ARE INTERCONNECTED



Addressing these challenges requires recognition of feedback loops. Investors won't commit to a project until they're confident the shared infrastructure, particularly grid connection, will be there; but governments hesitate to build that infrastructure until they're confident the projects will come. Each waits on the other, and the result is visible in the national grid queue: more than 60 GW of generation and storage waiting to connect, even as new financial commitments fell last year. This is not due to lack of capital or ambition, but because the pieces aren't moving together.²¹¹ The same loop runs between finance and the wider world. Investors want certainty that trading partners are decarbonising and will buy what WA builds before they back an export-scale project. Domestic and international confidence feed or stall each other. The effectiveness of addressing any single challenge depends on its interactions with another.

Governments uniquely hold the authority to act across the whole system, aligning the levers they control and convening the actors they don't. Government often fails in this approach. Siloed departments and short political horizons produce the piece-by-piece tinkering that fails to tackle complex challenges and loses public trust in the process. Government can steer the system by setting a direction, aligning the rules and signals so they reinforce one another, then letting people act.

Getting it right won't be neat and tidy. Coordinating six challenges across a whole economy is harder than clearing one barrier at a time, and it will mean disagreement, trade-offs, and outcomes that satisfy no one completely. But we cannot avoid the transition. We can only choose whether to approach it head on, on our terms, and make the most of this opportunity to build our economic resilience or to have change forced upon us, risking stranded assets, disrupted workers and communities, and clean industries that take root elsewhere. Getting it right means choosing the path that is harder upfront, but for a bigger payoff, before the choice is taken out of our hands.

"There needs to be an overall, integrated strategy rather than isolated initiatives. Everything is interconnected. This also means high risk if you don't achieve one of them."

Survey respondent

System Challenge 1: Finance

Finance is presently the biggest barrier across WA's sector decarbonisation and new clean export industries.

Renewable energy projects, new clean industry and the decarbonisation of existing heavy industry all struggle to reach financial commitments for different reasons. Government financing and policy must bridge this gap without funding private projects indefinitely, and prioritise making existing funding more accessible to first-of-a-kind developments.

THE CHALLENGE

WA's decarbonisation projects are struggling to reach final investment decision. Renewable generation is a mature technology, but projects need offtake certainty and access to shared transmission infrastructure that isn't yet in place. New clean industry often faces additional first-of-a-kind technology risk. Existing heavy industry has already made the easy efficiency and operational gains to reduce emissions and now faces step-change asset replacement with high capital cost. Private investors have strict requirements about risk and return. Government must balance making projects fundable and crowding-in private capital during the development phase, while building in an off-ramp that lets government step back once industry gets underway. Governments do not have unlimited resources and will need to prioritise investments, make difficult trade-offs against other priorities, and use innovative policy tools to set WA up for future success.

POTENTIAL BENEFITS

Adjustments to investment mandates could make existing government funding more accessible to clean industry proponents, without needing additional funding allocations. Addressing these challenges together can create a positive feedback loop that amplifies progress. A clean industry project reaching FID creates the offtake that makes a renewable generation project bankable and can provide the feedstock that heavy industry decarbonisation may require. New renewable supply makes connected industrial projects viable. Stronger decarbonisation requirements on existing industry create the demand that new clean products need. Done well, that reinforcement compounds, and de-risking early projects can build a sector that no longer needs government support to function.

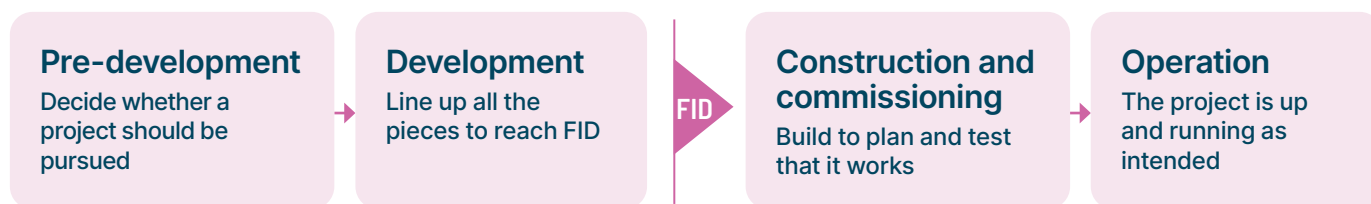
Making projects bankable

Major energy and industry projects follow a similar path from idea to operation. Final Investment Decision (FID) is the major milestone, the boundary between development and construction, and the point that many of WA's clean energy projects are struggling to reach. Industrial decarbonisation projects may be upgrades to existing facilities rather than new builds, but they follow the same process within their own scope.

Financial institutions won't back a project until risk is reduced to an acceptable threshold, requiring a level of comfort about all the requisite pieces coming together: land, First Nations consent, community support, government approvals, infrastructure and grid access, suppliers, offtake agreements, construction contractors and financing. Projects also need to continually secure development funding as they go to conduct development activities. Finance itself can take many forms from different sources,

including debt (loans), equity (ownership stakes), and government grants.

Existing industrial facilities work differently. Many industrial assets have decades-long lifespans, which means decision windows for major upgrades or retrofits may not always be open. Upgrades to an existing plant are generally funded from the company's own balance sheet, competing internally against every other call on that capital. The upgrade must not price the existing product out of its market, and it must pay for itself within the years the facility has left to run. Government has several mechanisms through which it can address these financing challenges, simultaneously supporting renewable energy projects, new clean industry and heavy industry decarbonisation to move forward.



Demand certainty

Clean industry projects in Australia rate commercial offtake as their primary challenge, followed by financing. Without securing a buyer in advance, revenue is uncertain and private investors won't commit. **Clean industry advocates say that without demand-side policy this year, Australia's project pipeline will begin to fail.** Governments have a range of mechanisms to create that certainty: mandates or quotas for specific products, such as a sustainable fuel blending mandate; stronger emissions reduction policy that sends a market signal and pressures companies to clean up their supply chains; direct offtake agreements for its own procurement; and help negotiating international offtake agreements with trading partners.

De-risking first-of-a-kind projects and shared infrastructure

Government's role is to share first-mover risk without taking ownership, through concessional finance, production tax credits, or blended public-private structures that make a project fundable. Projects that are the first to commercialise a new technology, or the first to build shared infrastructure in a new industrial precinct, carry more uncertainty but could be strategic investments for governments looking to build industrial capacity long-term.

Changing the underlying economics

Much of WA's existing heavy industry finds itself in a difficult position with decarbonisation. Finance can close a capital cost gap, not an ongoing production cost gap. The effective carbon price it pays under the Safeguard Mechanism is too low to justify step-change investment, and without a carbon border adjustment, cleaner domestic production competes against imports carrying no equivalent cost.

Building an industry that stands on its own

Support to establish early-mover advantage, first-of-a-kind projects, or new industry needs to sunset eventually. Industries should thrive unaided once technology and markets mature. Government's role will then be to create stable long-term policy settings, credible carbon price signals, and market settings that let clean options compete on cost rather than needing to be subsidised into competitiveness.

What this costs the budget

Governments do not have unlimited funds to spend. Decarbonisation and new clean industry will require financial support, but not all of this requires new budget commitments. Renewable energy and clean industry projects need existing allocations made more reachable. Where new spending is required, it is front-loaded capital to get first-of-a-kind decarbonisation or export projects built, and it returns, through royalties, company tax and payroll tax from industries that may not otherwise exist.

The budget case runs the other way too. Australia currently forgoes billions each year through petroleum resource rent tax settings that collect little from LNG exports and through diesel fuel tax credits flowing overwhelmingly to a few dozen of the largest mining companies. Reform of both would improve the bottom line while weakening disincentives to transition.

77%

of survey respondents support public funding to establish strategic new Australian industries. More than half want this support to be short-term only, while the industry becomes competitive.

Federal policy asks

- 1** Introduce domestic demand-side policy, such as blending mandates and stronger emissions reduction requirements, to help projects secure commercial offtake.
- 2** Adjust concessional financing requirements to enable more support of higher-risk projects, including equity injections of capital at the pre-FID development stage. Prioritise deployment of capital already allocated by governments for clean energy transition.
- 3** Introduce policy, such as a carbon price, that strengthens the economic case for industrial decarbonisation.

System Challenge 2: Global markets

WA's exports must compete in a global market it does not control.

Federal and State Governments should aim to position Western Australia and Australia as partners of choice, strengthening trade relationships, and securing first-mover advantage for WA's most promising new exports. At the same time, both governments need to be clear-eyed about the trajectory of current export markets.

THE CHALLENGE

WA's major exports, iron ore and gas, face structurally declining long-term demand from their Asian customers. Demand for new clean exports will be driven largely by the carbon policies of other countries, which federal and state governments cannot influence directly. WA is also not the only player pursuing these opportunities. Several competitors are further ahead, locking in buyers and reaching financial close for new clean export projects. If WA doesn't act soon, we risk losing out as mid-term demand is met.

POTENTIAL BENEFITS

Positioned early and credibly, WA still has an opportunity to become a preferred trading partner, securing long-term offtake agreements and strengthening trade relationships with allied nations.

Our current export markets are shifting

Iron ore exports to China have been WA's economic backbone for decades, as China's rapid 21st century urbanisation drove exponential growth in steel demand. But this trajectory is starting to slow. China's steel production peaked in 2020,²¹² and its own state iron ore body is targeting a fall in import reliance from roughly 80% of consumption today to 50% by 2030, as domestic ore and scrap steel capacity grow.²¹³ China is also diversifying its supply away from Australia: the Chinese Government co-owns Guinea's Simandou mine, now shipping high-grade ore, explicitly framed as reducing dependence on Australia. 2026's import growth reflects stockpiling, not a reversal of the long-term trend.²¹⁴ WA's ore quality is also declining as existing mines are depleted. Rio Tinto, BHP and Mineral Resources have all sold lower grade ore in recent years,²¹⁵ at exactly the time that Asian steel makers are looking for higher-grade ore that current green steel technology requires.

Japan is the largest importer of WA's LNG, buying 40% of the state's LNG exports in 2025,²¹⁶ which it uses for electricity generation and industrial processes. Japan imports 98-99% of the gas it consumes,²¹⁷ and signs long-term contracts to guarantee that supply. But Japan's domestic gas consumption fell 27% from 2014 to 2024, and its government forecasts an additional 20% reduction from current levels by 2040.²¹⁸ Yet its imports have not declined, because it is onselling gas to other Asian buyers.²¹⁹ Unlike some other exporters, Australian supply contracts do not include resale

restrictions, so most LNG onsold is Australian. The total volume of Japan's gas resale is greater than Eastern Australia's annual domestic gas consumption and could be generating Japanese profits estimated at more than A\$1 billion.²²⁰

Japanese companies own stakes in almost every single LNG project committed or operating in WA, and the Japanese Government itself holds a direct equity interest via a 24% stake in INPEX. This means that declining demand alone will not soften this market. The Japanese government is actively engaged in diplomatic efforts to keep it flowing, and to oppose any new Australian tax on gas exports, because Japan has a material financial interest in the industry's continuation. It profits from the initial export as well as the resale.

88%

of survey respondents said gas export taxes should be reformed to return more to the public.

└ 53%

wanted reform to collect more for the public.

└ 35%

wanted careful reform so as to not deter investment.

“[We have] a huge opportunity to capture a fair amount of our gas revenue, after all, the gas belongs to the people and management of that sovereign asset is entrusted to the state who are currently giving it away for free.”

Survey respondent

Demand for future clean exports is growing

Demand for future clean exports depends largely on two types of carbon policy in other countries; carbon border tariffs, which tax carbon intensive imports, and domestic carbon prices, which send a price signal to domestic manufacturers to clean up their own supply chains. The EU's carbon border adjustment mechanism (CBAM) came into effect in 2026, and now covers iron, steel, aluminium and hydrogen, with further extensions agreed for 2028.²²¹ The UK is developing its own version for 2027.²²² While WA is not a significant exporter to the EU or UK, these policies have downstream effects, particularly on China's export production.²²³ China's emissions trading scheme now covers steel and aluminium and is committed to an absolute emissions cap by 2027.²²⁴ Japan and Korea are tightening domestic carbon pricing rather than taxing imports directly, partly in response to CBAM itself.²²⁵ None of these markets is moving at the same pace, but none is standing still either.

Australia's most direct lever here is positioning itself within the carbon policies other countries are already setting, through bilateral agreements and mutual standards recognition that govern WA's export markets. Some of this groundwork already exists: the Australia-China Steel Decarbonisation Dialogue will host its inaugural session in Australia in 2026, and the Australia-Korea Green Economy Partnership established a joint ministerial mechanism specifically to progress cooperation on hydrogen and green metals.²²⁶ These dialogues and frameworks must translate into the binding offtake agreements or standards recognition that would actually secure WA's place in these markets.

WA is not the only player in the game

For some of WA's clean energy export opportunities, we are competing against other countries that are further down the path; whoever gets there first gains a real advantage. In green iron, Oman's Meranti Green Steel has already secured full offtake agreements and is targeting final investment decision this year;²²⁷ Sweden's Stegra has pre-sold

most of its planned output to Mercedes-Benz, Porsche and Volvo, and several offtakers have joined as investors.²²⁸ This matters because early green steel producers typically need 10-20 year offtake contracts to become bankable, meaning a buyer who signs with a competitor is effectively out of the market for a decade or more.²²⁹ In Australia, industry consensus is that one or two lighthouse projects need to reach financial close by late 2027 to secure genuine first-mover advantage; getting this right could double WA's iron export revenue.²³⁰ In green hydrogen and ammonia, Saudi Arabia's NEOM complex is already 80% built,²³¹ and Chile has secured offtake on five separate projects,²³² while no commercial scale green iron or clean hydrogen project in WA has yet reached final investment decision. Beneath both races sits China, whose deliberate industrial strategy now gives it 80-95% of global manufacturing capacity across solar, batteries and related supply chains, making it simultaneously WA's largest customer, its most formidable competitor, and an unavoidable supplier of the inputs WA's clean industries need.²³³

77%

of survey respondents support the use of gas as a temporary 'bridge' feedstock in new clean export industries like green iron, as a means establishing a foothold in WA before the window of opportunity closes.

43%

said that gas use must have binding conditions and a timeline to switch to clean hydrogen.

Federal policy asks

- 1 Proactively pursue bilateral offtake and standards-recognition agreements with trading partners, including China, Japan, Korea and the EU, rather than waiting for buyers to come to WA.
- 2 Expand Guarantee of Origin certification to green iron and other metals to contribute to building demand for WA projects.
- 3 Coordinate first-mover offtake support to help flagship clean export projects get built.

System Challenge 3: Technology

Technology is built through research, innovation and then deployment from pilot to large scale until it becomes commercial.

Most of the technologies that decarbonisation requires already exist. Renewable energy is mature and growing cheaper with deployment. Electrification of light vehicles and smaller or lower temperature heating needs is becoming more affordable. Cleaner fuels are commercially available but scarce and expensive. Other technologies, such as high temperature heat for industrial processes, low carbon cement, or direct air capture are at earlier stages of development. Technological readiness requires new technology to follow the path from research, through development, to commercial deployment.

THE CHALLENGE

Many new technologies fail to cross the ‘valley of death’: the gap between successful pilots and bankable commercial projects when research funding has ended but private investment is not yet confident in the commercial viability of a technology. Technical decarbonisation challenges that have not yet been solved require more research and development, but funding for general R&D cannot guarantee success, so is often the first to go when budgets are tight.

POTENTIAL BENEFITS

Supporting new clean technologies across the ‘valley of death’ builds economic, energy and emissions benefits and could turn WA’s intellectual property into an advantage, where new technologies and innovation are commercialised onshore. Deployment at scale drives costs down for everyone, and owning technological capability in a fast-moving, contested global field can become a strategic asset.

Making clean technologies commercial

Technology manufacture becomes cheaper with repetition, as accumulated learning uncovers efficiencies and process improvements. **Since 2010, global solar costs have fallen by 89%, onshore wind by 71%, and battery storage by 95%.²³⁴** This is the direct result of exponentially increasing installed capacity, itself largely driven by Chinese government subsidies for renewables manufacture. Each new gigawatt makes the next gigawatt cheaper again, and renewables are the fastest growing electricity sources in history.

Many technologies central to future clean energy exports have been proven in the lab and at pilot scale but are not yet commercial. Private finance is hesitant to take on this level of risk. To build new industries, Federal Government support programs need to be willing to accept higher risk than private investors so it is derisking and crowding-in investment, not replacing it.

Technologies proven overseas may still not be commercially viable in WA, where heavy industrial facilities are large, custom-built and long-lived. Industry consultation indicated that multiple technologies for high-heat electrification had never been deployed at the scale required anywhere globally, and that significant engineering would be needed to adapt them to WA’s operations.

Where a country intends to control a supply chain, it may also restrict the transfer of knowledge that it has developed, such as China has done for critical minerals processing. Lynas built its Kalgoorlie rare earths plant without Chinese supply, or the benefit of Chinese expertise, accepting a cost premium as the price of independence. Developing our own capabilities has a strategic advantage as it is built and operated in WA.

Investing in invention

For the decarbonisation challenges that have not yet been solved, government must support the research base that produces breakthroughs through direct funding for public research institutions, such as universities and the CSIRO, and tax or funding incentives for private-sector R&D. Research and invention are inherently uncertain, and breakthroughs can often come from unexpected places. Public research funding for clean energy innovation measurably increases private-sector patenting,²³⁵ tends to target the areas private funding avoids, and produces patents with disproportionate long-term technological influence.

Australia has proven successes in clean energy research. In 1983, UNSW researcher Martin Green invented a new type of silicon solar cell that is now found in more than 90% of the world’s solar panels. It

was Green's former students who, in 2001, founded Suntech Power, China's first commercial solar cell company. Australia failed to make the most of this breakthrough and now, Australian research funding is going the wrong way. The decline in funding for universities and public research is well documented, and Australia's total R&D investment has fallen below 2% of GDP over the past 15 years, below comparable economies.²³⁶

Policy and funding should also be technology neutral. Policy that specifies how a problem should be solved forecloses the answers nobody has thought of yet. Government should back the outcome it wants, such as lower emissions, at lower cost, and let proponents compete on how to get there. WA researchers and companies have already developed innovative solutions that sidestep the primary issues facing conventional decarbonisation approaches. Element Zero has developed an electrochemical process that allows it to produce green iron without needing hydrogen reduction.²³⁷ It circumvents the hydrogen cost issue and is suited to Pilbara ore. Hazer has built on UWA research to develop turquoise hydrogen pyrolysis, splitting methane directly into hydrogen and graphite.²³⁸ Its key distinction is its cost-parity with conventional fossil hydrogen production, with a fraction of the emissions. Both have proven their technology at demonstration scale but not yet at commercial scale.

Federal and State Governments have a policy suite to support clean energy research and innovation in public and private sectors, but these need to increase, not decline. If WA wants to capture the economic opportunity that clean energy exports provide, it needs to support new technological breakthroughs, and then help them reach commercialisation, rather than letting other countries get there first.

In the face of an enormous challenge, such as the clean energy transformation, technology uptake creates a positive feedback loop, building public confidence and capacity to keep acting, in addition to the material changes taking place.

“The only way we can truly move towards decarbonisation and a better future is to invest in education and create a supportive environment for new businesses in emerging industries...Research isn't getting enough funding to generate the next generation who could potentially build a better future. Instead our best minds move overseas, where there are opportunities.”

Survey respondent

Federal policy asks

- 1** Adjust clean energy financing to better support commercialisation of new technologies, including first-of-a-kind projects and higher risk profiles for government loans.
- 2** Strengthen funding and support for public research institutions and private-sector R&D in clean energy and industrial decarbonisation.
- 3** Dedicate funding to identified technological gaps in industrial decarbonisation.
- 4** Support scalable technologies that deliver low-cost, low-emissions outcomes, regardless of 'colour', to accelerate the transition to a cleaner energy future.

System Challenge 4: Planning

Planning is more than just approving projects.

For WA to become a clean energy superpower, the federal and state governments need to coordinate and facilitate shared infrastructure such as transmission lines, grid connections, roads, ports, desalination plants and more. In WA, discussions around development areas often focus on identified Strategic Industrial Areas (SIAs) however many of these are greenfield sites that lack the necessary infrastructure to attract and support new industries. Any planning approach must be driven by an overarching vision for industrial transformation, clearly show where renewable projects and other clean industry projects are proposed, while being carefully timed to ensure the best use of resources.

THE CHALLENGE

Project approvals often take years, making projects more expensive and creating challenges for investors and project proponents, but speeding up processing cannot come at the expense of essential scrutiny. Delays with transmission build-out create delays for renewable generation projects. A lack of overarching direction and evidence of shared infrastructure build-out creates bottlenecks and uncertainty that large industrial projects cannot afford. Unclear delineation of responsibility between different spheres of government adds further complication. Proposals backed by foreign investors may look outside WA or Australia to jurisdictions that appear more certain, with the necessary infrastructure further developed.

POTENTIAL BENEFITS

Faster approvals processes and greater policy certainty surrounding clean energy projects make it easier for projects to reach financial close and begin construction. Coordinated common-user infrastructure and a deliberate industrial direction become a structural advantage, drawing in projects and investors. Designated SIAs allow industrial ecosystems to develop. Not only can major infrastructure be shared, but industries can sometimes make valuable use of another industry's by-products; an industrial symbiosis brought about by inherent efficiencies.

Speeding up approvals

Development and environmental approval processes exist to ensure that projects are suitable for their location, without significant negative impacts on neighbours, public infrastructure and the environment. Historically, renewable energy generation, storage and transmission projects have taken years to approve, with assessment times varying significantly by technology and jurisdiction. Going into 2025's major reform of national nature protection laws, many industry groups were primarily concerned with speeding up approvals, with delays costing millions of dollars. The national reforms include a new streamlined assessment pathway that provides an assessment decision within 30 business days. It favours proposals that have done the environmental studies and community engagement work already while excluding fossil fuel projects from consideration. The nature reforms will take effect during 2026, so evidence of their impact is yet to be seen.

Over the last few years, WA has made several reforms to reduce approval times for clean energy

projects, with the result that WA now has the fastest approvals of any state, with wind projects averaging 151 days and solar 94 days to get the green light.²³⁹ The most significant has been the State Development Act 2025, which provides the Minister for State Development new powers to designate priority projects and streamline their approvals requirements, and declare State Development Areas (SDAs).²⁴⁰ There are legitimate concerns about the sweeping powers the Act provides, as the Minister has broad scope to designate priority projects, which can then modify environmental regulations. Wielded carefully, these powers allow for the prioritisation of common-user infrastructure that will be essential for clean energy industries. The first eight Priority Projects announced in 2026 are delivering on energy transition: four wind farms and three transmission links on the SWIS, and the NeoSmelt green iron pilot in Kwinana.

Coordinating shared infrastructure

Approvals are not the only planning barrier projects face. Transmission bottlenecks are emerging as a new chokepoint for renewable energy generation projects to proceed. The average time for Western Power to approve new grid connections for generators and large loads is currently around two and a half years, and the backlog of approvals is growing.²⁴¹ The Pilbara Energy Transition Plan proposes four new major transmission corridors to expand the NWIS. While the Federal Government pledged 3 billion dollars through Rewiring the Nation to assist in accelerating the roll out, the WA Government is relying on private industry to build them, and commitments have not yet been made. The Rewiring the Nation funding requires First Nations inclusion in the overall project structures.

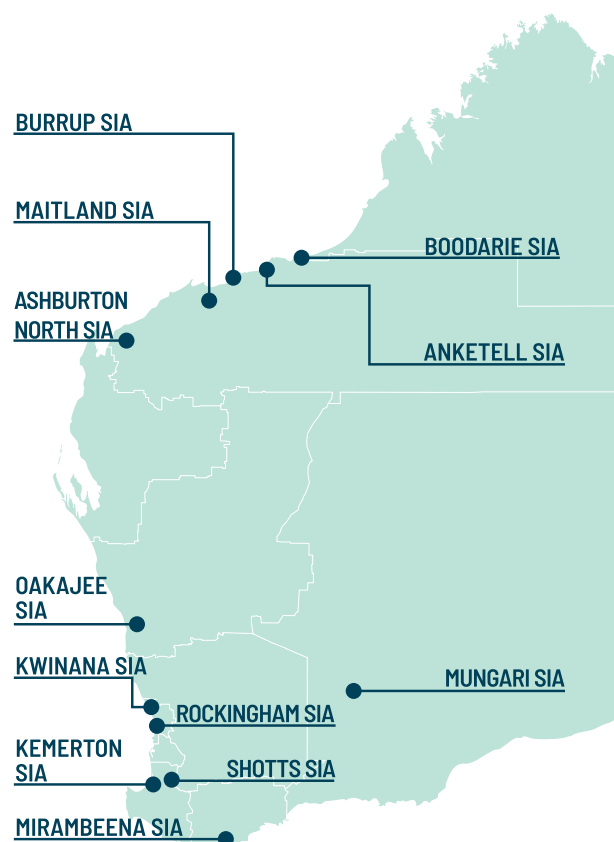
Future export industries will also require significant quantities of water. Desalination is the only solution that might work at scale, but itself requires significant electricity supply. The State Government, with Rio Tinto, is constructing an 8GL desalination plant in Dampier.²⁴² It is anticipated that more than 370 GL of water per year will be required to support Pilbara industry.²⁴³ Ngarluma Water, a proposed First Nations co-owned 150 GL desalination plant would provide 40% of that demand.²⁴⁴

Transport infrastructure also needs to keep pace, including roads, rail and shipping. Major port upgrades will be essential to support new exports. Westport will see WA's container port relocated from Fremantle to Kwinana but will take 10 years to build and has local environmental impacts yet to be resolved. Geraldton port is being extended to include designated renewable energy berths, and Pilbara port upgrades have received Commonwealth investment. The adequacy of these expansions to support future export industries is unclear.

WA has eleven Strategic Industrial Areas which are, in theory, meant to provide the common user infrastructure, including road, rail and port access, water and electricity substations, for heavy industry in pre-designated areas, with defined processes for accessing land within them. This co-location can support shared supply-chains, and circular industry, where one facility's byproduct can be utilised by another. Kwinana has developed this industrial ecosystem over decades.

The most successful SIAs, such as Asia's special economic zones, provide turnkey, pre-built industrial parks funded ahead of demand to attract foreign direct investment. WA has historically taken the opposite approach, waiting for proponents to come to the Government, before any shared infrastructure gets developed. If WA wants to become a new

industrial, manufacturing and economic centre and attract foreign companies and investment, SIAs will need to be developed at speed, to provide facilities that encourage industry to come to WA and commit their operations.



Federal policy ask

- 1 Continue to improve approval processes for clean energy projects, including speeding up assessment times, and simplifying regulatory navigation.

State policy asks

- 1 Clear grid connection bottlenecks and ensure transmission upgrades are progressing.
- 2 Proactively develop Strategic Industrial Areas and State Development Areas to provide industrial infrastructure pre-demand.

System Challenge 5: People

People are the heart of the clean energy transformation.

The workforce and skills clean energy industries need could provide thousands of new, stable livelihoods. Fossil fuel workers must not be left behind as their industries sunset. Projects need social licence from First Nations people and local communities, and governments need the political mandate to act from the broader public. Without clear, tangible benefits from the energy transformation, public support will evaporate. The clean economy needs to work for all of us.

THE CHALLENGE

WA already faces skills shortages in some trades essential to clean energy. Our education sector is not fully prepared for changing employment needs. Job loss concerns create difficulties for the closure of fossil fuel assets. Regional community and First Nations opposition to projects risks delays or abandonment. The speed and scale of investment and policy reform governments must achieve won't happen without a strong public mandate.

POTENTIAL BENEFITS

Done right, decarbonising and diversifying our economy and exports can bring tangible economic and social benefits to many different people. This includes providing local, stable jobs from trades to scientific research, greater First Nations economic participation and planned regional economic development reversing decades of decline. Cheaper and more secure energy supply reduces inflationary pressures and the cost of living. If well planned, more wealth can be returned from our exports to the public purse for infrastructure and social services investment.

Jobs, skills and education

Modelling from 2023 suggests renewable energy generation, storage and transmission could provide 350,000 jobs in WA by 2050,²⁴⁵ with only 36% located within the SWIS boundary. These numbers do not include jobs required for decarbonisation of other sectors, or the growth of clean energy exports. The latter could see an additional 3.25 million jobs across Australia.

Providing these skilled workers will require realignment of education pipelines, with a particular focus on vocational training. Jobs and Skills Australia identified 38 occupations critical to clean energy deployment, with electricians and engineers being two of the most important occupations already facing national skills shortages.²⁴⁶ A lack of workers can be the downstream effect of curricula that have not adapted (renewable energy skills are often optional), and trade schools that are already at capacity. WA will host Australia's first TAFE Clean Energy Skills National Centre of Excellence, supported by \$70.5 million of government funding.²⁴⁷

Many fossil fuel workers have industrial skills suited to working in clean energy, but they will need support for retraining. As other sectors start to decarbonise at pace, workers will need to acquire new skills to operate and maintain electrified equipment. Researchers and scientists

will be needed to solve the technical problems that are outstanding and address other challenges we have not yet foreseen. School leavers across WA should be provided with information about future clean energy careers when making higher education decisions or when considering transitioning into vocational education.

Our education and employment sectors need to recognise and prepare for the clean energy transition, to ensure that WA has the skills to make it happen, and that our people and communities benefit directly.

Social licence and community benefit

The wealth generated by WA's resources sector has not always been adequately captured or shared. The clean energy transformation will bring change across WA, and without social licence, projects will fail. To maintain public support, people need to see that they will benefit from the change, and to feel like they have had a say in what happens to their community.

Renewable energy and the clean industries it will power will be built across the state. Residents of regional WA face economic and social disadvantage, from fewer job opportunities to poorer access to healthcare and essential services. People in these regions, who are

likely to be the hosts of renewable energy infrastructure, deserve to see positive outcomes for their community. This could include co-ownership, provision of local jobs and training, or neighbourhood benefit programs.²⁴⁸

Communities also need to be consulted, not just told, about what change should look like. Communities are more likely to support outcomes they have had a genuine say in, even when those outcomes don't satisfy everyone. The Federal Government has voluntary guidance on community consultation for large-scale renewable projects, and the WA Government has a voluntary guideline on community benefits. Neither jurisdiction covers both, and neither extends to other clean industries.²⁴⁹

Clean energy provides an opportunity to increase First Nations economic participation, and provide the affordable, secure, clean power that many remote communities don't have. Free, prior and informed consent (FPIC) is the principle underpinning international best practice for engagement with First Nations people, though it is not required by federal

or state law. The First Nations Clean Energy Network helps First Nations people have a say in clean energy projects on their land and provides best practice guides for developers. WA has 14 clean energy projects co-owned by First Nations Corporations. Where First Nations groups hold equity rather than just a right of consultation, projects can move faster. The Aboriginal Clean Energy Partnership in the Kimberley integrates heritage, native title and environmental work into project development rather than treating them as consent hurdles. But proponents report that government often treats First Nations ownership as an added risk rather than a strategic advantage, and First Nations-led projects struggle to access development finance. The Federal Government has a First Nations Clean Energy Strategy that aims to deliver economic benefits,²⁵⁰ but to date has only released small scale grants to assist First Nations corporations dealing with proponent-led projects, and has not yet made the \$10 million allocated available to First Nations corporations for First Nations-led proponents.

The number one issue raised by regional survey respondents was having a real say in decisions, followed by bringing new investment to their region.

Regional responses about transition were mixed.

41%

saw clean industry as an opportunity to their region.

32%

saw clean industry as a threat.

23%

saw clean industry as a mix of both.

78%

of metro survey respondents said regional WA should benefit from the transition.

Federal policy asks

- 1 Expand the remit of the Net Zero Economy Authority to include workers and communities impacted by broader fossil fuel industry closures, not just coal power.
- 2 Embed clean energy skills as core rather than elective units in the trades identified as critical to clean energy deployment, and work with the State Government to expand vocational training capacity.
- 3 Extend and deploy funding for the First Nations Clean Energy Strategy. Revise federal financing criteria to reframe First Nations led projects as opportunities that should be supported and prioritised.
- 4 Mandate best practice guidelines for community engagement and benefit-sharing for large-scale renewables. Develop guidelines for other new clean industries.

State policy ask

- 1 Ensure a fair share of royalties or revenue from new clean export industries is returned to regional WA.

System Challenge 6: Environment

Clean energy industries, whether for domestic or export markets, still have an environmental footprint, including land, water or other pollution.

Projects that reduce emissions also need to minimise local environmental impacts, for nature's sake, for compliance with environmental protection laws, and for the social licence that projects need to proceed. Buyers, here and overseas, who are willing to pay a green premium for emissions reduction often expect environmental credentials as well. **The transition must be built well, or it risks adding to the environmental damage it's meant to prevent.**

THE CHALLENGE

Projects which are poorly planned or executed risk further environmental damage, approval delays, community opposition, and reputational cost. Environmental regulation must balance genuine conservation of WA's rare and threatened biodiversity, with allowing clean energy projects that address climate change to proceed at the pace required.

POTENTIAL BENEFITS

Done well, decarbonising and diversifying is a chance to leave WA's environment measurably better off, through reduced emissions and impacts from climate change, and preventing damage to WA's most valuable ecosystems.

Balancing act

All industry, clean or dirty, carries an environmental cost through land clearing, water use, and pollution of air, land and water, which impacts native habitat, threatened species and cultural heritage. Climate change is already reshaping WA's ecosystems, mining has cleared vast swathes of native vegetation, and heavy industry has put drinking-water catchments and cultural sites at risk. The clean energy transition reduces the climate problem but critical minerals mines and new transmission still require some land clearing, while hydrogen, critical minerals processing and data centres are heavy water users. The challenge that governments and the public must face is to identify which impacts can be avoided, which can be reduced, and which we are prepared to accept and at what cost.

A **mitigation hierarchy** aims to avoid damage wherever possible, minimise what can't be avoided, and only then repair or offset the damage that remains. Repair and offset sit at the bottom because they are the least reliable approaches. Restored land rarely equals what was lost, and an offset elsewhere doesn't bring back what was destroyed. Environmental laws that allow developers to offset everything are not protecting nature.

But the hierarchy can't answer the underlying values question: what must simply be avoided, and what are we willing to accept? Whilst scientific experts can give technical answers about what stresses an ecosystem or species can tolerate, the answer must ultimately be resolved by political decisions.

Asked whether they would support a clean energy project that would damage a local environmental or heritage site,

15%

of survey respondents said oppose it outright.

55%

wanted the damage avoided or offset.

29%

said it depends on the specifics.

“Real environmental leadership means reducing emissions and protecting biodiversity, not sacrificing one in the name of the other.”

Survey respondent

Learning from past mistakes

WA's existing industries show the dangers of lax environmental regulation, highlighting the corrections needed for new clean industry to get it right.

Deferred rehabilitation

WA requires land restoration at the end of mining, but not progressive mine rehabilitation as the mining moves on. The WA Environmental Protection Authority has identified that the gap between land cleared and land rehabilitated in the Pilbara keeps widening.²⁵¹ Many sites avoid the responsibility by sitting indefinitely in 'care and maintenance'. This status retains the option to resume mining, deferring rehabilitation.

Irreparable damage

Murujuga, on the Burrup Peninsula, is UNESCO World Heritage listed and holds more than a million rock engravings up to 50,000 years old. One of WA's largest industrial precincts sits next to it. The science is contested, but peer-reviewed research has found measurable physical change to the rock surfaces that preserve the art, associated with industrial emissions across the precinct.²⁵² This is damage that can only be avoided, because a 50,000-year-old artwork can't be repaired or offset. Yet in 2025 the Federal Government approved a 2070 extension to the precinct's largest gas facility, two days after UNESCO's advisory body warned that industrial emissions were the main threat to the site.²⁵³ The listing went ahead in July, but the recommended protections were weakened along the way. UNESCO's advisers wanted further industrial development in and around Murujuga prevented; the final decision asks only that it be assessed.²⁵⁴

Weak enforcement

In February 2026, Alcoa agreed to pay \$55 million over the clearing of more than 2,000 hectares of WA's northern Jarrah forest between 2019 and 2025.²⁵⁵ This equates to only \$27,500 per hectare, which is well below comparable undertakings for similar environmental harm. None of the money goes to repairing the damage, despite the Federal Government issuing warnings to Alcoa that its

clearing was unlawful since 2011.²⁵⁶

At the same time, the Government granted Alcoa a 'national interest' exemption from federal environmental laws, allowing clearing for a further 18 months. At the same time, Alcoa will conduct a strategic assessment of its own operations to 2045, which the Minister may choose to endorse. Historically, the national interest exemption has been used only for emergency safety works or urgent species protection. This is the first time it has been used for commercial considerations.²⁵⁷

Major reforms are being implemented

Major reforms to national environmental laws are coming into effect throughout 2026, establishing a National Environmental Protection Authority, new National Environmental Standards, an unacceptable impacts threshold and designated 'no' and 'go' zones for development. Fossil fuel projects are not eligible for fast-tracked approvals. Whether these reforms will deliver stronger environmental outcomes remains to be seen.

WA's 2025 State Development Act creates fast-track approval powers for strategically significant projects, including clean industry, but legal experts warn its 'modification order' powers carry no explicit safeguard against weakening environmental or heritage protections.

Federal policy ask

- 1 Ensure the new National Environmental Standards, once finalised, are strong enough to deliver the “unacceptable impact” test's intent in practice, not just on paper.

State policy asks

- 1 Strengthen requirements for mine rehabilitation, including emphasising progressive mine rehabilitation. Limit how long a mine can defer rehabilitation by sitting in indefinite 'care and maintenance'.
- 2 Monitor whether State Development Act modification orders result in a weakening of environmental or Aboriginal heritage protections.

Chapter 5:

Policy priorities

The transformation to a clean energy export economy is WA’s path to future prosperity and resilience.

It is also one of the largest undertakings in our State’s history, and the scale of renewable build-out required to decarbonise our economy and grow new export industries should not be underestimated.

But transformational change is not linear. Effort concentrated up front, on the conditions that enable everything else, can reorient a system so that a fragile new state becomes self-sustaining and builds its own momentum through positive feedback loops.

This report has identified some of the actions needed to decarbonise major sectors, grow new clean export

industries and address the structural conditions that shape success across the economy. The policy asks throughout the report are compiled on p90. Not every reform can happen at once. The challenge for government is deciding where to focus first.

The following priorities target the most important barriers to decarbonising and diversifying WA’s economy and exports. They address different depths of system change, from improving existing policies to reshaping the purpose and direction of the system itself.

Four levels of system change²⁵⁸

LEVEL	WHAT IT CHANGES
Intent	Changing the overall purpose and direction of the system.
Feedback	Changing the incentives and accountability mechanisms that influence behaviour.
Design	Changing how the system is structured and how resources, responsibilities and benefits flow.
Parameters	Adjusting the settings within an existing system, such as targets, subsidies or tax settings.

“We seem to lack both a coherent story that helps everyone to see what we need to achieve and how it would be better, together with a lack of collective responsibility and will to make it happen. As a result it is too easy to give up when things don’t go perfectly and revert to old ways.”

Survey respondent

Changing a system requires intervention at different levels. While parameter changes can be important, the deepest and most durable reforms are those that reshape how the system operates and what it is designed to achieve.

Systems also respond in ways nobody designs for, so policymakers must aim to anticipate and mitigate these impacts where possible. Transformational change requires active governance; not a fixed blueprint but a clear direction, honest measurement of whether we are moving towards it, and a willingness to change the instruments when they are not working.

These priorities are not comprehensive, but they are complementary and strategic. Several of these priorities have been the focus of political discussion in 2026, and the survey results show public appetite for reform.

Together, these priorities create a pathway for economic transformation.

PRIORITY		LEVEL	SURVEY SUPPORT
1	Supercharge renewables roll-out: to build out renewables at the speed and scale the energy transformation needs, governments must coordinate strategic transmission investment, streamline planning and approvals, and underwrite large-scale clean energy projects to unlock private capital.	Intent	68%
2	Reduce dependence on imported fossil fuels: a long-term strategy to replace imported diesel, petrol and jet fuel with domestic renewable energy, electrification and sustainable fuels, rather than just managing the risk of supply disruption.	Intent	84%
3	Make sure Australians get a fair share from our resources: reform royalties and export taxes so that the wealth generated by Australia's fossil fuel and clean energy resources flows back to Australian communities, not just to shareholders.	Design	84%
4	Level the playing field for clean Australian industry: ensure clean domestic producers are not undercut by cheaper high-emissions imports, while positioning WA's clean exports to access premium international markets that increasingly require low-carbon credentials.	Design	62%
5	Derisk clean industry investment: help first-mover clean energy and industrial projects reach Final Investment Decision by sharing early-stage risk and creating demand certainty, so private capital has the confidence to invest at scale.	Design	80%
6	Make big polluters accountable for emissions: strengthen and expand the Safeguard Mechanism so that Australia's largest emitters are incentivised to undertake ambitious, on-site decarbonisation.	Feedback	74%
7	Stop subsidising the wrong fuels: reform the Diesel Fuel Tax Credit scheme and transition to a road user charge, so government revenue policy stops actively rewarding fossil fuel use at the expense of cleaner alternatives.	Feedback	63%
8	Make sure no business gets left behind: targeted support for small and medium businesses in manufacturing, transport, agriculture and commercial sectors that sit outside the Safeguard Mechanism and currently have neither the incentive nor the means to decarbonise.	Parameters	83%

Survey respondents voted Priority 3 the policy they wanted government to act on first.

Legend for policy priorities

SECTORS

- Electricity
- Mining
- Manufacturing
- Residential & commercial buildings
- Fossil fuel
- Transport
- Agriculture & land use
- Waste

EXPORTS

- Critical minerals
- Green iron
- Advanced manufacturing
- Carbon dioxide removal
- Clean hydrogen and ammonia
- Green alumina
- Biofuels and biochar
- Data centres

CHALLENGES

- Finance
- Technology
- People
- Global markets
- Planning
- Environment

Supercharge renewables roll-out

Decarbonising WA's economy and exports requires a massive expansion of renewable energy infrastructure, yet current efforts focus largely on replacing existing coal capacity in the southwest grid.

Renewable technology is already the cheapest new electricity generation in Australia but planning and coordination for the speed and scale needed to underpin economic transformation is absent. Federal and state governments must work together to prioritise the provision of adequate, affordable renewable electricity and other shared infrastructure needed to let clean industrial precincts develop.

STRATEGIC OPPORTUNITY

Renewable electricity underpins all other decarbonisation. Without swift action to provide confidence to WA's clean industry pipeline that shared infrastructure will eventuate, projects and investment risk landing elsewhere.

THE PROBLEM

Federal and State Governments have stated their ambition for WA to become a clean energy exporter and made a range of funding and policy commitments. But the support is largely reactive and project-by-project, approving proposals and financing put forward rather than actively building the conditions in which clean industries become viable. WA has designated Strategic Industrial Areas to host these industries, but several remain undeveloped, without visible commitment to building the shared infrastructure that would make them usable. Recent investment in the SWIS covers the coal exit and little more, and Pilbara transmission corridors have been identified but not committed to. Export-scale renewable generation and industrial production cannot move forward without confidence in energy infrastructure.

THE SOLUTION

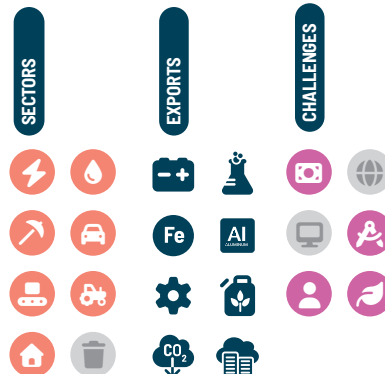
Shift to a proactive approach to industrial decarbonisation and clean export growth: Ministers should direct the Commonwealth's financing agencies, through the investment mandates they already issue, to actively pursue projects in clean industries and fund the shared infrastructure they depend on, rather than only assessing what arrives.

Collaborate to deliver turn-key strategic industrial areas: Federal and State Governments should jointly identify industrial precincts and industries to back and commit to developing minimum shared infrastructure to support existing users and new industries.

Plan and underwrite renewable generation at export scale, connected to industrial zones: Conduct grid planning modelled around future clean export growth, and plan renewable build-out to serve industrial precincts so that generation and industrial loads are developed together. Ensure that long-term Federal underwriting is applicable to projects in WA.

PRIORITY
1

Impact



Survey support

68%
of survey respondents
said WA should be doing
more to build renewables.

Reduce dependence on imported fossil fuels

WA is 100% dependent on imports for refined fuels, including petrol, diesel and jet fuel.

Current policy manages fuel supply risk through stockpiles and emergency procurement without reducing the underlying dependency on imports. Domestic, clean energy supply, through electrification or sustainable fuels is less exposed to volatile markets and international conflict. It may also offer cheaper and more stable energy prices for households and business.

STRATEGIC OPPORTUNITY

The 2026 closure of the Strait of Hormuz highlighted the risks of our fuel import dependence, increasing prices and constraining supply. The subsequent spike in EV sales shows consumers see the benefits of removing those fuel costs permanently.

THE PROBLEM

When the 2026 Iran War closed the Strait of Hormuz, the federal response was substantial: more than \$10 billion in the May budget to increase fuel reserves and secure additional international supply, along with a temporary halving of the fuel excise. WA established its own state diesel reserve, though at full capacity, its reserve is only a matter of days. Every dollar of this response addressed supply, not dependency. While EVs have seen significant uptick in sales, the most diesel dependent sectors have fewer commercially available solutions, or policy support, to address this gap.

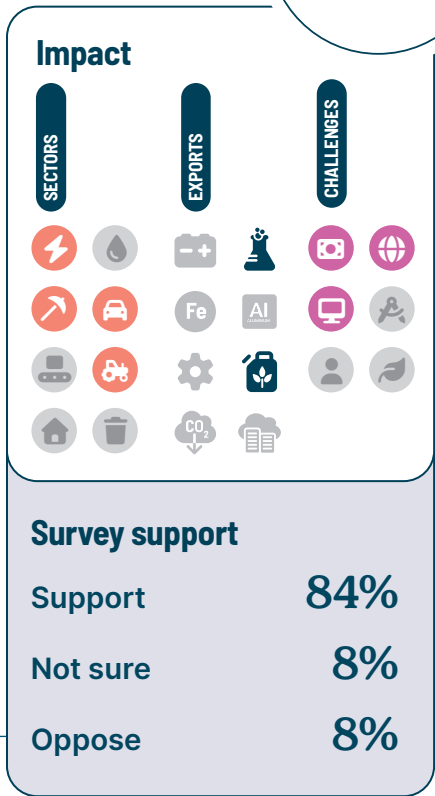
THE SOLUTION

WA and Australia should have long-term fuel security strategies to replace imported fuel with domestic, renewable alternatives such as electrification, biofuels and clean hydrogen. These plans should explicitly target the most diesel dependent sectors (freight transport, mining, agriculture and off-grid electricity generation), which often constitute many small operators. Solutions for these sectors are generally less technologically mature than passenger vehicles. A fuel security strategy will need to balance encouraging uptake of more mature technologies (such as EVs and smaller electric trucks), and supporting the sectors and operators who are most diesel dependent (such as farmers) where alternatives still need developing. Modelling shows that electrification and sustainable fuels could shift Australia's fuel security from 17% in 2026 to 87% by 2040.²⁵⁹

WA's second potential fuel supply shortage

WA has a forecast domestic gas shortfall by the 2030s, a consequence of gas producers favouring export markets. WA's Domestic Gas Reserve policy of 15% of exports only currently provides around 8% in practice. The Federal Government is planning to introduce a Domestic Gas Reserve Policy of 20%, but the interaction with WA's policy is not yet clear. While reducing gas use is the goal, different sectors are at varying stages of readiness. Household electrification technology is mature, but industrial and manufacturing decarbonisation is a work in progress. Annual enforcement of the 15% reserve would more than address supply gaps. Diverting just 4% of gas destined for export would close the shortfall to 2034, without needing to approve new gas extraction projects. Additional policy support to decarbonise manufacturing and soften gas demand should be a priority.

PRIORITY
2



Make sure Australians get a fair share from our resources

Australians are not getting a fair share for their gas.

Australia's gas export wealth has largely flowed overseas and to shareholders for decades. As clean export industries begin generating their own revenue, Australia risks repeating the same pattern unless a framework for capturing that value is built in from the start.

STRATEGIC OPPORTUNITY

Recent international conflicts in Ukraine and Iran have highlighted the inequity of gas companies making windfall profits while ordinary Australians face higher energy costs. Strong campaigning by the crossbench for reform of Australia's broken gas tax system has been hugely successful, building strong public pressure for gas tax reform across the political spectrum.

THE PROBLEM

The federal tax on gas exports (the Petroleum Resource Rent Tax, or PRRT) was designed for oil projects and fails to capture value from gas projects. Its take is shrinking further as companies claim decommissioning costs.²⁶⁰

In 2023, Australia raised about \$14 billion from the PRRT and company tax combined, at a rate of about 15% of oil and gas industry profits. Norway collected A\$66 billion from petroleum taxation the same year, an effective rate of around 48% of profits.²⁶¹ Norway channels its resources wealth into a sovereign wealth fund. Australia and WA have no equivalent fund, and no framework to convert the wealth of future clean export industries. This includes AI data centres built and owned by foreign technology companies, into lasting public benefit.

THE SOLUTION

Reform gas export tax: Our gas tax system should be reformed in two ways so that gas exporters pay Australians a fair share. Firstly, gas exporters should be paying Australians for the right to access and sell the gas. Secondly, when international gas prices spike, gas exporters rake in huge profits; Australians should be getting a slice of these. Windfall profits are not a return for risk-taking, innovation or new investments, they are unexpected upsides, so taxing them would not distort investment decisions. Reform options include restructuring the PRRT, a royalty system, or a windfall profits tax. Gas tax reform could provide billions in new revenue for government,²⁶² but must be done carefully so Australia continues to be seen as a stable jurisdiction for future investment and industry we wish to attract.

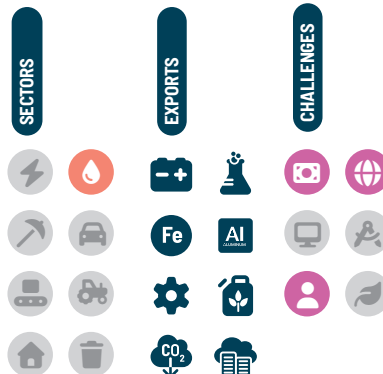
Future clean exports: The same principle should extend to the renewable generation and clean export industries now being built, but timed carefully to ensure that it does not deter new investment. The Clean Energy Council has proposed a legislated Renewable Resources Payment on every megawatt-hour generated, paid to the councils

hosting the infrastructure, explicitly modelled on how coal and gas pay royalties.²⁶³ The same logic applies to AI data centres, where international technology companies take profits offshore. The exact mechanism, whether a digital services tax, levy or licensing arrangement, matters less right now than signalling clearly that a fair public return is expected.

A sovereign wealth fund: Reformed gas tax and new clean export revenue could provide additional money to government budgets. Some of that should fund essential services now. But resource revenue is volatile and finite, making it a poor foundation for ongoing costs. The remainder should be saved and invested through a sovereign wealth fund, building an asset for future generations. Over time, the fund's earnings can support recurring government programs, turning volatile resource wealth into a permanent, reliable source of funding. Australia and WA should each have such a fund, whether adapted from an existing vehicle or established new, with a legislated share of new or reformed revenue flowing in automatically each year.

PRIORITY
3

Impact



Survey support

Support	84%
Not sure	8%
Oppose	8%

Level the playing field for clean Australian industry

WA's clean industries need to compete against cheaper, carbon-intensive imports at home, and access international premium markets that increasingly reward low-carbon products.

This double-sided issue needs solutions at both ends. Australia needs a Carbon Border Adjustment Mechanism (CBAM) to ensure domestic clean industry is not undercut by cheap, dirty imports, and clean exports need internationally recognised green certification to capture the green premiums available in select export markets.

STRATEGIC OPPORTUNITY

The EU's CBAM entered into force in 2026, imposing a carbon border levy on the import of carbon-intensive products, unless those products have green production certification. Affected exporters across the globe are bringing forward their decarbonisation ambitions in response. Australia is president of the 2026 international climate negotiations (COP31), granting us an opportunity to shape the agenda to advance international trade in clean energy products. The 2026-27 Safeguard Mechanism review will consider the implications of an Australian CBAM on domestic emissions reduction efforts.

THE PROBLEM

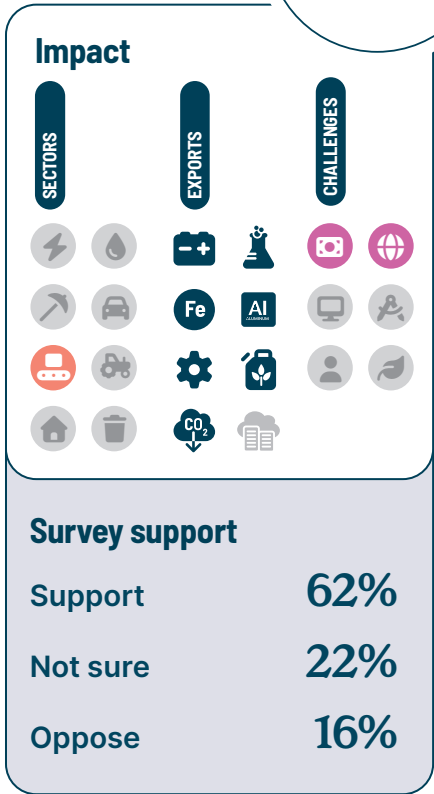
Without a carbon border levy, such as the EU has, cheap, dirty imports will undercut domestic producers who are taking real steps to decarbonise, threatening their continued viability. Industry consultation indicated this is already starting to take place, and some companies consider the introduction of a CBAM an immediate priority. No Australian carbon border levy currently exists. The Federal Government's own review has found this is warranted for at-risk commodities and recommends a staged introduction starting with cement and clinker, before potentially expanding to ammonia, glass, lime and steel. The Government has not yet responded to the review's recommendations.

The international certification and standards systems that would let WA's clean exports capture a premium abroad, such as recognised green iron or green steel definitions, or tradeable guarantees of origin, remain underdeveloped or fragmented across our trading partners.

THE SOLUTION

Carbon border levy: Introduce an Australia CBAM in line with the Carbon Leakage Review's recommendations. Mirror the Safeguard Mechanism's scope, exclude export rebates, and coincide the introduction with the removal of trade exposed baseline adjustments. Start with cement and clinker, before extending coverage to other commodities in a timely manner that supports the new clean industries Australia is trying to grow, such as green iron, or existing industries, like ammonia, trying to decarbonise. A carbon border levy will ensure that Australia retains sovereign capability in industry and manufacturing as we decarbonise.

International market access: Use diplomatic tools to work with trading partners to get WA's clean exports recognised under the systems buyers already use, including Guarantee of Origin schemes, green steel and iron definitions and green public procurement criteria in Japan and Korea.



Derisk clean industry investment

Federal and State Governments have a range of funding support available for clean industry projects, but the pipeline is not reaching FID.

Existing capital is not getting to the projects and the stages where it is most needed, including first-of-a-kind technologies and development stage funding. Government’s role in clean industry finance is to derisk early-stage projects to crowd-in private capital, not replace it by requiring the same low risk tolerance.

STRATEGIC OPPORTUNITY

WA’s pipeline of clean energy projects is largely at the pilot and proposal stage. Project proponents cite their primary barriers for progress as the demand certainty or offtake agreement needed to reach financial close. Without strong financial commitments or forward momentum in the next 6-12 months, WA risks losing these projects entirely to other countries with more favourable conditions.

THE PROBLEM

Supply-side funding already exists, through a suite of government investment funds, such as the Clean Energy Finance Corporation (CEFC), the National Reconstruction Fund Corporation and tailored funds like the Green Iron Investment Fund. These bodies have been critical to Australia’s clean energy transition so far. Over its lifetime the CEFC has committed \$24.2 billion, enabling a total of \$97 billion in financing.²⁶⁴ But WA’s clean industry proponents consistently report struggling to secure finance in the stage past seed capital but before FID. Projects making the leap from demonstration to commercial deployment report being unable to obtain federal equity investments or concessional loans because their risk profiles are judged inadequate. Proponents also report difficulties in accessing funding for development activities, indicating that government support here would signal favourably to international investors. First Nations co-ownership of clean energy projects may find that this is treated as an additional risk, rather than a strategic advantage. Sometimes the barrier is a design detail rather than a funding limit: grant criteria requiring three or more years of audited financial statements exclude new first-of-a-kind companies automatically.

THE SOLUTION

Government’s role is to share first-mover risk without taking ownership. This can be done through concessional finance, production tax credits or blended public-private structures that make a project fundable. The most direct fix for the binding constraint is to provide some demand certainty: for government to provide an offtake guarantee or floor to kickstart a new industry. The billions already allocated need to reach projects earlier, accept the higher risk FOAK entails, and flow faster. Proponents have asked for concessional finance and equity to arrive one to three years before FID rather than at FID, and for existing federal vehicles to invest in Western Australian projects at that earlier stage.

Not every project supported by government will succeed. If it did, government was likely crowding-out private investment instead of crowding it in. To establish new industries, it is necessary for government to adopt a higher-risk threshold.



Impact

SECTORS

EXPORTS

CHALLENGES

Survey support

Support	80%
Not sure	10%
Oppose	10%

Make big polluters accountable for emissions

Economists agree the most efficient way to cut emissions is a single, economy-wide price on carbon.

Australia had one, introduced by the Gillard Government in 2012, and repealed by the Abbott Government in 2014. No government has attempted one since. In its absence, the Safeguard Mechanism (SM) is Australia's substitute, regulating the country's largest industrial emitters through facility-by-facility baselines rather than a single price. The SM has good intentions but currently results in little on-site decarbonisation. Australia's biggest emitters should face real, tightening limits, not generous baselines and cheap offsets that let emissions keep growing.

STRATEGIC OPPORTUNITY

The 2026-27 Safeguard Mechanism review will assess its effectiveness and determine the direction out to 2035. Consultation commences in the second half of 2026, with final decisions and implementation in 2027.

THE PROBLEM

Safeguard-covered facilities are responsible for 52% of WA's total emissions, and within that, oil and gas alone account for 45%. The SM sets declining emissions baselines that facilities must meet, or else pay for cheap offsets. Some baselines were set too high initially, allowing continued emissions growth rather than requiring real reductions. Electricity facilities are collectively under a sector baseline set deliberately high enough to have no practical effect. In the absence of a carbon price, the SM is Australia's primary regulation to reduce emissions, yet the carbon credits that facilities can access if they cross their baselines are too cheap to incentivise emissions reduction. Companies simply pay for the offsets. The SM is further undercut by fuel tax credits, which repay five times the value of the carbon price per litre of diesel.

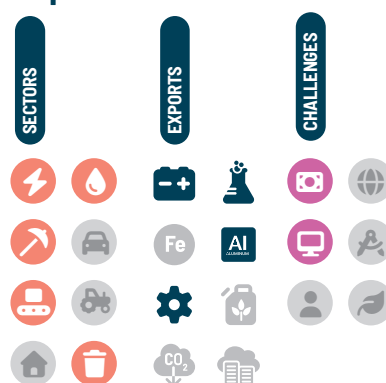
THE SOLUTION

A price on carbon remains the best approach, such as The Superpower Institute's Polluter Pays Levy, an upstream levy on fossil fuel extractors and importers that captures most of the economy's emissions through a small number of entities.²⁶⁵ In the meantime, the SM review must address several weak aspects of the policy's design, to:

- 1 Require real emissions reductions before offset access:** strengthen the mitigation hierarchy to drive greater on-site abatement and less reliance on offsets. Ensure decline rates are aligned with national 2050 and 2035 emissions reduction targets.
- 2 Expand coverage:** assess electricity generation facilities individually and lower the threshold over time to cover more facilities. Tighten rules around new entrants so new projects face best practice requirements.
- 3 Synchronise SM reform with an Australian CBAM:** preserve trade-exposed baseline-adjusted status until a CBAM is in force.
- 4 Set separate, stronger decline rates for fossil fuel facilities,** to support the clean industries of the future and the hard-to-abate transition essentials, like cement.

PRIORITY
6

Impact



Survey support

Support	74%
Not sure	12%
Oppose	14%

Stop subsidising the wrong fuels

Government revenue policy currently rewards fossil fuel use more than it penalises emissions, by refunding the fuel tax paid by off-road heavy vehicles as Diesel Fuel Tax Credits (DFTC) costing taxpayers ~\$11 billion per year.²⁶⁶

That same fuel excise is one of the major revenue streams in the Federal Budget, but it is starting to decline as the vehicle fleet electrifies. Long-term, a universal road user charge (RUC) could replace the revenue from fuel excise, while also providing an incentive to decarbonise.

STRATEGIC OPPORTUNITY

The Federal Government is facing growing pressure to reform DFTC, given its annual cost to taxpayers. Fortescue has come out publicly in support of a \$50 million cap per company, to target large mining companies. The Iran War and subsequent temporary fuel excise cut has brought fuel tax to public attention. After the Victorian Government failed to introduce a RUC for EVs, the Federal Government is considering a national RUC to address declining fuel excise.

THE PROBLEM

The DFTC refunds the full value of the fuel excise for diesel used off public roads, largely supporting mining, agriculture and transport companies. The DFTC is expected to cost roughly \$13.1 billion a year by 2028–29, with mining claiming around 45–47%.²⁶⁷ BHP alone received an estimated \$622 million in FY2024.²⁶⁸ Separately, the fuel excise contributes roughly \$12 billion a year to the Budget, but this will shrink as the national fleet electrifies, with no plan in place for a replacement. The Heavy Vehicle Road User Charge is a partial refund of the fuel excise for on-road heavy vehicles, adding to the policy patchwork. The fuel excise and DFTC make no distinction between fossil and renewable diesel, doing nothing to incentivise the latter.

THE SOLUTION

DFTC reform: A balanced proposal is a \$50 million per-consolidated-group cap, which would affect fewer than 30 companies, who are overwhelmingly large miners, while leaving untouched the roughly 180,000 farmers, truck drivers and small businesses who also claim fuel tax credits. The independent Parliamentary Budget Office estimates a \$50 million cap would improve the Budget’s fiscal balance by at least \$5.1 billion over the forward estimates, and \$22.3 billion over the decade to 2036–37, after accounting for reduced company tax receipts.²⁶⁹ Reform could also pursue a cap-and-reinvest model that would require funds above the cap to be spent on decarbonisation capital expenditure, instead of becoming a budget saving.²⁷⁰ Renewable and biodiesel volumes should be excluded from the cap altogether, so switching away from fossil diesel remains uncapped and fully rebated, turning the reform into a

genuine incentive to decarbonise that will provide the demand that biofuel producers need.

Fuel excise-to-RUC transition: A transition from fuel excise to a universal road user charge is the logical direction as fuel excise declines with EV uptake. A RUC should be scaled by vehicle mass, distance travelled (with carve-outs for rural Australia), and vehicle emissions, with additional congestion charges to help manage peak hour traffic. If extended to heavy vehicles, the emissions charge could function as the missing emissions regulation for that sector. The architecture of a national RUC will likely require state involvement and support, and should support harmonisation of state transport regulations. A fuel excise phase-out should start with biofuels, further incentivising bio or renewable diesel use.

Impact

SECTORS

EXPORTS

CHALLENGES









Survey support

Support	63%
Not sure	18%
Oppose	19%

When presented with four options to reform the DFTC, the most popular proposal was the cap for large mining companies, which received almost four times as many votes as the other options.

Make sure no business gets left behind

Energy and fuel costs are rising for WA’s small and medium businesses (SMEs) across manufacturing, transport, agriculture and commercial sectors.

Rooftop solar, batteries and electrification would reduce operating costs and help meet growing pressures from customers wanting cleaner supply chains but are often out of reach for SMEs due to high upfront capital costs, and a lack of knowledge, skills and networks that larger companies possess. The emissions impact of SMEs is minor, but the energy security challenges they face can be considerable. Supporting SMEs shares the economic opportunity that decarbonisation provides.

STRATEGIC OPPORTUNITY

Australian households are leading the clean energy transition with their uptake of rooftop solar, home batteries and EVs. This transformation has been driven by the clear economic benefit to household budgets, not just climate concern. Small businesses could see many of the same savings, but nearly half of Australia’s small businesses have not started their energy transition.

THE PROBLEM

WA’s small and medium businesses sit outside the Safeguard Mechanism, but face decarbonisation pressure regardless from larger customers and supply chains. That pressure lands on businesses already absorbing rising energy costs on several fronts at once. WA’s electricity and gas prices have both risen in recent years, and diesel has remained high since the Strait of Hormuz closed in February 2026.²⁷¹ National research from 2024 indicated that nearly half of small businesses had not started their energy transition, and 63% say funding it will be difficult.²⁷² Industry consultation found that the barrier isn’t only capital. Small businesses also need skills, networking, information and social capital to decarbonise. Many SMEs face the same installation challenges as residential renters. Some proven technologies also lack a mature local industry: commercial heat pumps are technically and economically viable, but Australia’s supply chain of suppliers and installers is still developing, keeping upfront costs high.²⁷³

THE SOLUTION

No single fix works here. Supporting SMEs means a toolbox of smaller, targeted interventions rather than one big lever. Some are quick wins: fixing a disqualifying eligibility rule for grant funding or extending an existing scheme’s reach. Others are necessarily slower and people-facing, such as plain-language guidance tailored to their size rather than rules written for larger firms.²⁷⁴ Policy to support rental renewables and electrification would support many SMEs as well as households.

Two new 2026 programs (WA’s Made in WA Energy Affordability Investment Program and the Federal SME Industrial Decarbonisation Fund) show governments have started to respond, but both are restricted to manufacturers, leaving other sectors without a matching scheme, and focus on financing alone,

without support for information, skills or networks. A big step in the right direction was the Federal Government’s August 2026 announcements of expansion of the Small-scale Renewable Energy Scheme (SRES). From October 2026, it will extend the upfront rooftop-solar rebate households have used since 2011 to commercial systems up to 1 MW, cutting installation costs by around 20% for the warehouses, farms and community facilities the old 100 kW cap shut out.²⁷⁵ Unlike the two funds above it, spans sectors beyond manufacturing. This policy will help the ‘missing middle’ reap the benefits of cheap, independent rooftop solar, paving the way for future electrification. But governments will need to continue to identify and address policy gaps that risk leaving SMEs behind.



Impact

SECTORS

EXPORTS

CHALLENGES

Survey support

Support	83%
Not sure	11%
Oppose	6%

Summary of policy asks

These policy asks are not a comprehensive list of everything that must change for WA to decarbonise and diversify its economy, and they are not intended to be.

They are the gaps and barriers that emerged in the sectors, exports and enabling conditions this report examines. Some are things to address now, while others are things that may need to happen eventually. Other asks should be read as an assessment of change needed, to prompt discussion about the best way forward.

Most are specific to the topic they sit under, but several relate directly to the policy priorities in Chapter 5.

Policy moves quickly. Some of these asks will be met and others overtaken by events. The direction they point in will hold longer than any specific details. Asks are current as at August 2026.

CHAPTER 2: DECARBONISING WA'S ECONOMY

Electricity

Federal	<i>Safeguard mechanism</i>	1. In lieu of an economy-wide price on carbon, extend the Safeguard Mechanism to individual grid-connected electricity generation facilities with a declining trajectory consistent with Australia's emissions reduction targets. Apply the extension to all on the SWIS and NWIS, not just the eastern states grid.
	<i>Disclosure</i>	2. Require emissions disclosure and renewable transition planning for off-grid mining and industrial operations below the Safeguard threshold, regardless of size.
	<i>Transmission funding</i>	3. Allocate the \$3 billion earmarked for WA under Rewiring the Nation, with concessional finance available for building transmission capacity ahead of committed demand.
	<i>Underwriting</i>	4. Once the Capacity Investment Scheme retires in 2027, provide government underwriting for large renewable projects in the SWIS, NWIS and off-grid.
State	<i>Renewable energy targets</i>	1. Introduce a renewable energy target for WA as a whole, and an 82% by 2030 renewable energy target for the SWIS. Develop plans for the SWIS, NWIS and Horizon Power transitions past 2030 that include how future clean export industries will be supported.
	<i>Pilbara transmission</i>	2. Commit financial support to the Pilbara priority transmission corridors, through early development funding, government equity or underwriting, so they reach final investment decision, and fund capacity beyond current committed load so corridors are built for the demand growth WA is planning for.
	<i>Industrial planning</i>	3. Require Western Power and Horizon Power to publish network capacity data and establish two-way planning with major industrial energy users.

Fossil fuel extraction

Federal	<i>Emissions impact</i>	1. Introduce laws enabling assessment and refusal of new and extended fossil fuel projects based on their full climate impact, including downstream export emissions.
	<i>Safeguard mechanism</i>	2. Strengthen the Safeguard Mechanism to prioritise onsite abatement over offsets, and set differential baselines for fossil fuel facilities.
	<i>Methane emissions</i>	3. Regulate methane emissions from oil and gas operations consistent with international best practice: mandatory leak detection and repair, limits on non-emergency venting and flaring, and measurement-based reporting rather than estimation.
	<i>Decommissioning</i>	4. Strengthen decommissioning requirements so that companies are required to adequately prepare, plan and fund decommissioning activities.
State	<i>Domestic Gas Reservation</i>	1. Strengthen implementation of WA's Domestic Gas Reservation policy to address domestic supply shortfalls.

Mining		
Federal	<i>Diesel Fuel Tax Credits</i>	1. Introduce a cap of \$50 million per consolidated group for Diesel Fuel Tax Credits that targets the largest mining companies but protects farmers and truck drivers.
	<i>Safeguard Mechanism</i>	2. Strengthen the Safeguard Mechanism to prioritise on-site emissions reduction over offsets.
	<i>Electrification strategy</i>	3. Work with State Government and industry to develop a mining electrification strategy to reduce diesel dependence.
State	<i>Transmission</i>	1. Ensure new Pilbara and Goldfields transmission lines are delivered to allow widespread mining electrification.
Transport		
Federal	<i>EV sales</i>	1. Legislate 100% zero emissions new light vehicle sales by 2035.
	<i>Heavy vehicle emissions</i>	2. Increase requirements for heavy vehicle emissions reduction and provide dedicated decarbonisation support for small to medium freight operators. Support electric retrofit of existing diesel trucks.
	<i>Road User Charge</i>	3. Replace the fuel excise and heavy vehicle road user charge patchwork with a single road user charge covering all vehicles.
	<i>Sustainable fuels</i>	4. Introduce regulation to increase domestic sustainable fuel production and use, with a focus on renewable diesel.
State	<i>National alignment</i>	1. Align WA's heavy vehicle framework with national electric truck reforms and sustainable fuel policy.
	<i>Last-mile delivery</i>	2. Work with local governments to improve freight system productivity, particularly for electric last-mile delivery.
Manufacturing		
Federal	<i>SME electrification</i>	1. Establish a national industrial electrification program combining financial assistance, energy audits, and hands-on transition support for smaller and mid-tier manufacturers.
	<i>Hard-to-abate</i>	2. Establish dedicated support for high-temperature heat electrification, carbon reductant substitution, and domestic ammonia decarbonisation.
	<i>Refrigerants</i>	3. Accelerate the industrial refrigerant phase-down by tightening the regulatory schedule and introducing equipment replacement incentives.
State	<i>Demand management</i>	1. Reward flexible industrial demand through tariff reform and incentives, so manufacturers that shift energy-intensive processes to periods of cheap renewable generation are paid for the grid services they provide.
Agriculture and land use		
Federal	<i>Energy security</i>	1. Develop and implement a national strategy for agricultural energy security that prioritises electrification, sustainable fuels, and domestic clean fertiliser production, with dedicated support, incentives and demonstrations for agricultural technology transition and regional clean energy infrastructure. Ensure farmers are protected from any reform to Diesel Fuel Tax Credits.
	<i>Decarbonisation programs</i>	2. Provide funding and support for agricultural decarbonisation including: R&D for agricultural abatement technologies; improved assessment of farm emissions; and on-the-ground programs to facilitate uptake of soil carbon, manure management and regenerative agriculture practices.
	<i>Renewable hosting</i>	3. Adjust tax settings so that farm income from hosting or generating renewable energy is treated, like carbon credit income, as primary production income for tax purposes, allowing farmers to diversify revenue streams.
State	<i>Agricultural decarbonisation</i>	1. Support the uptake and hosting of renewable energy, electrification and biofuels in WA's agricultural sector.

Residential and commercial buildings		
Federal	<i>National Construction Code</i>	1. Strengthen the National Construction Code and related building decarbonisation policy, to increase support for all-electric new builds and retrofits.
State	<i>Rooftop solar</i>	1. Review network rules and tariff structures to encourage commercial and industrial battery-backed rooftop solar installations.
	<i>Efficient, electric homes</i>	2. Require all new buildings to be all-electric, mandate efficiency and electrification disclosure at point of sale and lease, and set end-of-life electrification requirements for gas appliances.
	<i>Gas network disconnection</i>	3. Develop a staged gas network retirement strategy in partnership with ATCO. Start by requiring customers to pay the full cost of joining the gas network.
Waste		
Federal	<i>Biomethane</i>	1. Strengthen policy support for organic waste recovery for biogas and biomethane production.
State	<i>FOGO</i>	1. Support the rollout of FOGO across all WA councils, with funding and development of recovery infrastructure.
	<i>Advanced Biofuels Strategy</i>	2. Ensure WA's Advanced Biofuels Strategy includes organic waste recovery for biogas and biomethane production. Introduce policy to support biodigester uptake, including regional adoption for agricultural waste.
	<i>Water Corporation</i>	3. Support the upgrade of Water Corporation wastewater recovery facilities to capture and utilise biogas.
CHAPTER 3: DIVERSIFYING INTO CLEAN ENERGY EXPORTS		
Critical minerals		
Federal	<i>Production incentives</i>	1. Ensure timely and effective implementation of critical minerals funding support such as the CMPTI and CMSR.
	<i>International offtake</i>	2. Work with trading partners to develop international offtake agreements for critical minerals.
State	<i>Shared infrastructure</i>	1. Build out the supporting shared infrastructure and enablers for critical minerals processing. Facilitate shared processing infrastructure that can be utilised by smaller mining companies.
Clean hydrogen and ammonia		
Federal	<i>Eligibility</i>	1. Set eligibility for hydrogen production incentives and the Guarantee of Origin scheme on verified lifecycle emissions intensity, rather than on a named production pathway, so that any process meeting the threshold can compete on cost and scale.
	<i>Ammonia</i>	2. Extend hydrogen production incentives to cover ammonia as a product. Develop dedicated ammonia policy to support decarbonisation of existing production and new export projects.
State	<i>Shared infrastructure</i>	1. Commit to building shared hydrogen pipeline infrastructure in designated industrial precincts, to serve multiple users and projects.
Green iron		
Federal	<i>FOAK support</i>	1. Fast-track technology scale-up; fund R&D, commercialisation and first-of-a-kind project support for ESF, hydrogen DRI and iron electrolysis.
	<i>International offtake</i>	2. Create demand certainty by facilitating international offtake agreements and green trade partnerships with Japan, South Korea and the EU. Make green iron an explicit priority for DFAT, Austrade and Export Finance Australia.

State	<i>Green iron projects</i>	1. Designate integrated green iron precincts that co-locate iron, hydrogen and renewables projects with fast-tracked planning and coordinated approvals.
	<i>Grid planning</i>	2. Sequence grid and land access so green iron projects, whose renewables needs dwarf the current transition pipeline, are planned into SWIS/NWIS buildout rather than queued behind it.
Green alumina		
Federal	<i>Green alumina support</i>	1. Establish dedicated support for decarbonisation of alumina refining. Consider extending the Green Aluminium Production Credit to alumina.
	<i>Environmental approvals</i>	2. Take a rigorous, transparent approach to Alcoa's strategic assessment process. Ensure that environmental impacts can be adequately prevented before granting further exemptions or long-term approval for bauxite mining.
State	<i>Renewable energy</i>	1. Provide confidence that transmission and renewable energy will be available to power alumina refinery electrification.
Advanced manufacturing		
Federal	<i>New companies</i>	1. Reform funding rules so that companies that are less than 3 years old are eligible for more funding.
	<i>Battery recycling</i>	2. Recognise battery recycling as low-emissions critical minerals production, so that 'urban mining' qualifies for the support given to conventional mining and processing.
	<i>Certification</i>	3. Fund a small certification grant stream for export-ready manufacturers, allowing small businesses and start-ups to access international markets.
State	<i>Shared infrastructure</i>	1. Build out the common user infrastructure that enables new manufacturing and decommissioning industries to start.
Biofuels and biochar		
Federal	<i>Demand-side policy</i>	1. Introduce demand-side policy for biofuels, which could include a blending mandate or clean support for drop-in replacements like renewable diesel.
	<i>Fuel tax credits</i>	2. Adjust fuel tax and credit settings so that biodiesel and renewable diesel are incentivised over fossil diesel.
	<i>Cleaner Fuels Program eligibility</i>	3. Ensure that the Cleaner Fuels Program's carbon-intensity thresholds and incentive design permit HEFA renewable diesel from canola to be eligible for funding.
State	<i>Advanced Biofuels Strategy</i>	1. Deliver a Western Australian Advanced Biofuels Strategy that includes policy to support biofuel production and encourage demand.
Carbon dioxide removal		
Federal	<i>Biochar credits</i>	1. Develop the methodology to enable biochar projects to generate ACCUs that recognise their durability.
	<i>ACCU integrity</i>	2. Strengthen ACCU integrity for bio sequestration.
	<i>CDR strategy</i>	3. Develop a Federal CDR strategy, which will be required to meet net zero, including recognising the role of permanent, high-integrity CDR as well as land-based sequestration. Support CDR demonstrations and pilots.
Data centres		
Federal	<i>Additional renewable energy</i>	1. Set binding obligations for all new large-scale data centre developments: 100% additional renewable energy, including co-funding common-user grid infrastructure, transmission and storage; genuine water efficiency standards; and grid connections sequenced so data centres do not claim scarce capacity ahead of higher-value, variable-load clean industries.
	<i>Economic benefit</i>	2. Require large-scale data centre developments to demonstrate local economic and community benefit. This may include adjusting tax and royalty settings, binding commitments to local employment, providing public interest compute, skills and training, and local or First Nations equity.

CHAPTER 4: ADDRESSING SYSTEM-WIDE CHALLENGES

Finance

Federal	<i>Demand-side policy</i>	1. Introduce domestic demand-side policy, such as blending mandates and stronger emissions reduction requirements, to help projects secure commercial offtake.
	<i>Higher-risk financing</i>	2. Adjust concessional financing requirements to enable more support of higher-risk projects, including equity injections of capital at the pre-FID development stage. Prioritise deployment of capital already allocated by governments for clean energy transition.
	<i>Decarbonisation</i>	3. Introduce policy, such as a carbon price, that strengthens the economic case for industrial decarbonisation.

Global markets

Federal	<i>Trading partners</i>	1. Proactively pursue bilateral offtake and standards-recognition agreements with trading partners, including China, Japan, Korea and the EU, rather than waiting for buyers to come to WA.
	<i>Certifications</i>	2. Expand Guarantee of Origin certification to green iron and other metals to contribute to building demand for WA projects.
	<i>First movers</i>	3. Coordinate first-mover offtake support to help flagship clean export projects get built.

Technology

Federal	<i>Commercialisation</i>	1. Adjust clean energy financing to better support commercialisation of new technologies, including first-of-a-kind projects and higher risk profiles for government loans.
	<i>R&D</i>	2. Strengthen funding and support for public research institutions and private-sector R&D in clean energy and industrial decarbonisation.
	<i>Technological gaps</i>	3. Dedicate funding to identified technological gaps in industrial decarbonisation.
	<i>Technology neutrality</i>	4. Support scalable technologies that deliver low-cost, low-emissions outcomes, regardless of 'colour', to accelerate the transition to a cleaner energy future.

Planning

Federal	<i>Approvals</i>	1. Continue to improve approval processes for clean energy projects, including speeding up assessment times, and simplifying regulatory navigation.
State	<i>Grid planning</i>	1. Clear grid connection bottlenecks and ensure transmission upgrades are progressing.
	<i>Strategic Industrial Areas</i>	2. Proactively develop Strategic Industrial Areas and State Development Areas to provide industrial infrastructure pre-demand.

People

Federal	<i>Just transition</i>	1. Expand the remit of the Net Zero Economy Authority to include workers and communities impacted by broader fossil fuel industry closures, not just coal power.
	<i>Skills and training</i>	2. Embed clean energy skills as core rather than elective units in the trades identified as critical to clean energy deployment, and work with the State Government to expand vocational training capacity.
	<i>First Nations</i>	3. Extend and deploy funding for the First Nations Clean Energy Strategy. Revise federal financing criteria to reframe First Nations led projects as opportunities that should be supported and prioritised.
	<i>Community benefit</i>	4. Mandate best practice guidelines for community engagement and benefit-sharing for large-scale renewables. Develop guidelines for other new clean industries.
State	<i>Regional benefit</i>	1. Ensure a fair share of royalties or revenue from new clean export industries is returned to regional WA.

Environment		
Federal	<i>National Environment Standards</i>	1. Ensure the new National Environmental Standards, once finalised, are strong enough to deliver the “unacceptable impact” test’s intent in practice, not just on paper.
State	<i>Mine rehabilitation</i>	1. Strengthen requirements for mine rehabilitation, including emphasising progressive mine rehabilitation. Limit how long a mine can defer rehabilitation by sitting in indefinite ‘care and maintenance’.
	<i>State Development Act</i>	2. Monitor whether State Development Act modification orders result in a weakening of environmental or Aboriginal heritage protections.

Appendices

Appendix A: Consultation process

This report was developed through a combination of desktop research, public and industry consultation and expert feedback.

Public consultation

Public consultation included two workshops with Curtin constituents, and an online survey open to all Western Australians. Public consultation sought to understand concerns and test framing and messages from the report. The two workshops helped develop the themes and questions for the survey and the report more broadly. Kate Chaney MP's Youth Advisory Group consists of around 25 Year 11 students from all of Curtin's high schools. The Youth Advisory Group workshop ran on Monday 18th May 2026. The Decarbonising WA Public Workshop was held on Wednesday 17th June 2026 in Floreat and was open to all Curtin constituents and publicly advertised, with around 50 participants.

Online survey

The survey data and quotes included throughout the report come from an online survey, Securing WA's Future Prosperity, conducted by the Office of Kate Chaney MP for four weeks from early July 2026. The survey asked a range of questions about economic, energy and climate concerns, and the trade-offs and policies that sit at the intersection of these issues. The survey focused on values and concerns rather than technical understanding of decarbonisation. The survey received 2300 responses, including 1524 Curtin constituents, 496 from the broader Perth metropolitan area, 257 from regional WA, and 23 responses from outside WA. Roughly half of respondents had a member of their household working in one of the following sectors: mining, resources, fossil fuels, renewable energy and technology, agriculture, transport, manufacturing or small business.

Survey respondents came from all age groups, although the distribution skewed heavily towards older demographics. 86% of respondents were 45 years or older. Postcodes show Curtin responses came from across the electorate. Perth metro responses were concentrated in the inner city and suburbs adjacent to Curtin but covered the broad metro area. More than half of the regional responses came from WA's Southwest and a fifth from the Mid-West, with the rest spread across WA's other regions. The survey was advertised through Kate's newsletters, which primarily reach Curtin, and social media advertising targeting the whole state.

As an opt-in survey promoted primarily through the electorate newsletter and social media, respondents were self-selected rather than a representative sample of Western Australians. Results should be read as indicating the views of those who chose to participate, not as polling.

Industry and expert consultation

Industry and expert consultation sought to verify technical decarbonisation understanding developed through desktop research, and to confirm the barriers and challenges faced by various companies and sectors, whether new or existing. Kate Chaney MP and staff met with or received submissions from more than 50 companies, peak bodies, academics and independent think tanks across mining, fossil fuels, electricity, transport, manufacturing, agriculture and new clean industries including green iron, hydrogen, biofuels, critical minerals and advanced manufacturing.

Appendix B: Rating system-wide challenges

Finance, global markets, technology, planning, people and environment are six enabling conditions that must be met by all clean industries, although to varying degrees.

Each of the eight sectors to decarbonise (Chapter 2) and the eight export opportunities (Chapter 3) were assessed against these six conditions. The ratings assessed the size of the challenges that each sector or export currently faces in achieving decarbonisation or establishing a new export industry. Qualitative assessments were made at the sector or export level and may not be true of each individual company or project within them.

In general, **major** implies a large current gap, with issues that are substantially unsolved or actively blocking progress. **Moderate** refers to a partial gap, where real work remains but a path is visible, or a divergence of challenges within a particular topic. **Minor** ratings are considered largely solved or readily solvable. This does not imply that an enabling condition is unimportant, but rather that it has largely been met.

	MAJOR ●	MODERATE ◐	MINOR ○
Finance	No clear route to FID (capital-heavy, thin offtake or revenue)	Financeable with effort or support	Fundable on near-normal terms
Global markets	Market doesn't exist yet, or depends heavily on others' choices	Market exists or emerging, but WA's share is contestable	Market secure and WA well positioned, or largely domestic facing
Technology	Not yet commercially existing; needs invention or first-of-a-kind proof	Proven but not yet commercial	Mature, off-the-shelf
Planning	Depends on major shared infrastructure not yet committed (greenfield transmission, ports, water)	Some gaps, partially in train	Sited where shared infrastructure already exists
People	Scarce specialised workforce not yet available, and/or social-licence exposure that could halt it	Workforce a managed pressure; social licence navigable	Labour readily met, low social-licence risk
Environment	Large, hard-to-avoid footprint, or high-conflict impact	Real impacts, manageable within good practice	Small, contained footprint

Across both sectors and exports, these six conditions cover a range of variables. For example, **People** considers workforce and skills as well as social licence and community benefits. Chapter 4 gives the best overview of the range of factors considered in making these qualitative assessments. The ratings should not be taken as independently quantified or exhaustive.

Summary of current system-wide challenges

Rating scale: ● major ◐ moderate ○ minor

SECTOR	PAGE	FINANCE	GLOBAL MARKETS	TECHNOLOGY	PLANNING	PEOPLE	ENVIRONMENT
Electricity	30	●	○	○	●	●	◐
Fossil fuel extraction	34	◐	●	◐	◐	●	●
Mining	38	●	○	●	●	◐	◐
Transport	40	◐	○	◐	◐	◐	○
Manufacturing	42	●	○	◐	◐	◐	○
Agriculture	44	◐	○	◐	○	●	◐
Buildings	46	◐	○	○	◐	○	○
Waste	47	◐	○	○	◐	○	○

EXPORT	PAGE	FINANCE	GLOBAL MARKETS	TECHNOLOGY	PLANNING	PEOPLE	ENVIRONMENT
Critical minerals	50	●	◐	◐	◐	◐	◐
Clean hydrogen and ammonia	52	●	◐	◐	◐	◐	◐
Green iron	54	●	●	●	●	◐	○
Green alumina	56	●	◐	●	○	◐	●
Advanced manufacturing	58	●	◐	◐	○	◐	○
Biofuels and biochar	60	●	◐	◐	◐	○	○
Carbon dioxide removal	62	●	●	◐	◐	●	○
Data centres	64	○	○	○	●	●	◐

These ratings reflect our assessment at the time of writing and may change.

Appendix C: WA's clean industry pipeline

This appendix lists clean industry projects identified across the eight export opportunities discussed in Chapter 3, compiled from company announcements, government funding records and public reporting.

It is a snapshot of publicly announced activity at the time of writing, not a forecast; inclusion here is not an assessment of whether a project will proceed, but a way to illustrate that the clean energy exports in Chapter 3 are not pure speculation. There are real projects, companies and facilities being proposed, and in some cases, already in operation.

There is no comprehensive public database covering the exports and industries listed below, from which this list could be sourced, and this pipeline does not attempt to be one. Where authoritative sector-specific sources exist they have been used and are cited in the relevant section. While every effort has been made to identify relevant companies and projects in WA, it is possible that eligible entries have been missed. Projects are announced, paused and completed continually, and this list may become out-of-date soon after publication in August 2026.

Projects are grouped by export opportunity, and within each by region. Some WA regions have been consolidated, to match the simplified map of WA in Chapter 3.

Projects are listed at facility level. Where a company operates several distinct facilities these are listed separately, and where a mine and its processing plant form a single integrated operation on one site they are listed once.

Pilot and demonstration projects are shown as pilots regardless of their construction stage; commercial-scale projects are shown as proposed (announced through to pre-construction), committed (under construction), operating (including existing facilities yet to decarbonise), or suspended (only applied to facilities previously operating, not proposals that were abandoned), paused (either during operation or construction).

CRITICAL MINERALS

WA produces a wide range of minerals classified as critical. This list focuses on those most directly tied to clean energy and electrification supply chains, and inclusion reflects that focus rather than any official critical minerals list; there will be critical minerals projects in WA not listed here.

Proponent	Project description	Region	Status
First Quantum / POSCO JV	Ravensthorpe Nickel Operation	Esperance	Suspended
Rio Tinto (ex-Arcadium/Allkem)	Mt Cattlin lithium mine	Esperance	Suspended
BHP Nickel West	Mt Keith nickel mine and concentrator	Goldfields	Suspended
BHP Nickel West	Leinster nickel mine and concentrator	Goldfields	Suspended
BHP Nickel West	Kalgoorlie nickel smelter	Goldfields	Suspended
BHP Nickel West	West Musgrave nickel-copper project	Goldfields	Suspended (during construction)
BHP Nickel West	Cliffs nickel mine	Goldfields	Suspended
BHP Nickel West	Kambalda nickel concentrator	Goldfields	Suspended
Covalent Lithium	Mt Holland lithium mine and concentrator	Goldfields	Operating
Glencore	Murrin Murrin nickel-cobalt mine and refinery	Goldfields	Operating
IGO	Nova nickel-copper-cobalt mine	Goldfields	Operating until end of 2026
IGO	Cosmos nickel project	Goldfields	Suspended
Impact Minerals / Alluminous	Lake Hope high purity alumina project	Goldfields	Proposed

Liontown Resources	Kathleen Valley lithium mine and concentrator	Goldfields	Operating
Lynas Rare Earths	Kalgoorlie Rare Earths Processing Facility	Goldfields	Operating
Lynas Rare Earths	Mt Weld rare earths mine and concentrator	Goldfields	Operating
Mineral Resources	Bald Hill lithium mine	Goldfields	Operating (restarted in May 2026)
Mineral Resources/ Ganfeng	Mt Marion lithium mine	Goldfields	Operating
Wyloo	Kambalda nickel operations	Goldfields	Suspended
Panaromic Resources	Savannah Nickel Mine	Kimberley	Suspended
29Metals	Golden Grove copper, lead, silver, zinc, gold mine	Mid West	Operating
Atlantic Pty Ltd	Windimurra vanadium mine and processing plant	Mid West	Suspended
Australian Vanadium Ltd	Gabanintha vanadium project	Mid West	Proposed
Endurance Mining / Taurus Funds Management	Abra lead-silver mine	Mid West	Operating
Hastings Technology Metals / Wyloo JV	Yangibana Rare Earths and Niobium Project	Mid West	Proposed
Iluka Resources	Eneabba Rare Earths Refinery	Mid West	Committed
BHP Nickel West	Kwinana nickel refinery	Perth	Suspended
Covalent Lithium	Kwinana lithium hydroxide refinery	Perth	Operating
Tianqi Lithium Energy Australia	Kwinana lithium hydroxide refinery	Perth	Operating
Consolidated Minerals	Woodie Woodie manganese mine	Pilbara	Operating
Develop Global Limited	Sulphur Springs copper-zinc project	Pilbara	Proposed
Element 25	Butcherbird manganese project	Pilbara	Operating
Greatland Gold	Telfer gold-copper mine	Pilbara	Operating
Mineral Resources / Albemarle JV	Wodgina lithium mine	Pilbara	Operating
Pilbara Minerals	Pilgangoora lithium-tantalum mine	Pilbara	Operating
Albemarle	Kemerton Lithium Hydroxide Plant	South West	Suspended
Talison Lithium / IGO / Tianqi	Greenbushes lithium mine and concentrator	South West	Operating
Caravel Operations Pty Ltd	Caravel copper project	Wheatbelt	Proposed
Medallion Metals (ex- IGO, sold Mar 2026)	Forrestania nickel operations	Wheatbelt	Suspended
Newmont	Boddington gold-copper mine	Wheatbelt	Operating

CLEAN HYDROGEN AND AMMONIA

This list covers clean hydrogen and ammonia projects in WA, alongside the state's existing gas-based ammonia production. The existing plants are included to show the industrial base that a clean hydrogen and ammonia industry would need to decarbonise or replace, and two new gas-fed plants are listed because they are being built now, not inherited. Where a project uses gas rather than renewable hydrogen, this is noted. Projects producing hydrogen for transport, refuelling or gas-network blending are not listed: this list covers production, not use. Many announced projects have been shelved or abandoned since 2024 and are not listed — CSIRO's HyResource database has archived around sixteen WA hydrogen projects.

Proponent	Project description	Region	Status
InterContinental Energy, CWP Global, Mirning Green Energy (KEPCO)	Western Green Energy Hub	Goldfields	Proposed
Aboriginal Clean Energy Partnership	East Kimberley Clean Energy Project	Kimberley	Proposed
Copenhagen Infrastructure Partners	Murchison Hydrogen Renewables project	Mid West	Proposed
Gascoyne Green Energy	Boolathana green hydrogen project	Mid West	Proposed
Horizon Power	Denham hydrogen demonstration plant	Mid West	Pilot
Mitsui E&P Australia	Low-carbon ammonia feasibility study (blue, CCS)	Mid West	Proposed
Oakajee Energy + Samsung C&T	Oakajee green hydrogen and ammonia project (Stage 1)	Mid West	Proposed
Pilot Energy + Samsung C&T; K-Consortium	Mid West Clean Energy Project	Mid West	Proposed
Warradarge Energy	Warradarge green hydrogen project (Boooloogoo)	Mid West	Proposed
ATCO	Clean Energy Innovation Hub	Perth	Pilot
CSBP (Wesfarmers Chemicals, Energy and Fertilisers)	CSBP Kwinana ammonia plant	Perth	Operating (not yet decarbonised)
CSBP (Wesfarmers Chemicals, Energy and Fertilisers)	CSBP Ammonia Expansion Project	Perth	Proposed (gas-fed)
Hazer Group	Hazer commercial demonstration plant	Perth	Pilot
Woodside Energy	H2Perth blue hydrogen and ammonia project	Perth	Proposed
InterContinental Energy	Australian Renewable Energy Hub	Pilbara	Proposed
NH3 Clean Energy	WAH2 clean ammonia project	Pilbara	Proposed
Perdaman Commercial Developments	Helios green hydrogen project supplying Project CERES	Pilbara	Proposed
Perdaman Commercial Developments	Project CERES urea plant, Burrup	Pilbara	Committed (gas-fed)
Yara Pilbara Fertilisers	Yara Pilbara ammonia plant, Burrup	Pilbara	Operating (not yet decarbonised)
Yuri SPV (ENGIE lead + Mitsui 28%); Yara offtake	Yuri renewable hydrogen to ammonia project	Pilbara	Pilot

GREEN IRON

This list covers projects producing iron without coal-based reduction, including electric smelting furnace, direct reduced iron and electrochemical routes. Every project remains at pilot or proposal stage; no commercial-scale project has reached a final investment decision. Some projects, such as the NeoSmelt electric smelting furnace pilot, will start using fossil gas as a feedstock before transitioning to hydrogen over time.

Proponent	Project description	Region	Status
Athena Resources, Warradarge Energy, Fenix Resources	Mid West Green Iron Project	Mid West	Proposed
Progressive Green Solutions	Geraldton green iron project	Mid West	Proposed
BlueScope, BHP, Rio Tinto, Woodside, Mitsui	NeoSmelt electric smelting furnace pilot	Perth	Pilot
Calix + Rio Tinto	ZESTY green iron (hydrogen DRI) demonstration plant	Perth	Pilot
Element Zero	Element Zero green iron commercial project	Pilbara	Proposed
Fortescue	Christmas Creek Green Metal Project	Pilbara	Pilot
Port Hedland Iron Pty Ltd; POSCO-backed	Port Hedland Iron Project	Pilbara	Proposed

GREEN ALUMINA

Western Australia has three alumina refineries, none of which has yet decarbonised its operations. No new refinery is proposed. As of August 2026, South32 was in the process of selling its Worsley refinery to Alcoa.

Proponent	Project description	Region	Status
Alcoa	Pinjarra Alumina Refinery	Southwest	Operating (not yet decarbonised)
Alcoa	Wagerup Alumina Refinery	Southwest	Operating (not yet decarbonised)
South32	Worsley Alumina Refinery	Southwest	Operating (not yet decarbonised)

ADVANCED MANUFACTURING

This is the broadest category, covering manufacturing that supplies the clean energy transition: battery and clean-tech materials, clean energy equipment, transport manufacturing, and circular operations that recover or remanufacture materials. Collection-only businesses without reprocessing are not included, nor is general or defence manufacturing that is not specific to the transition. Projects by WA-headquartered companies whose facilities are located outside WA are also excluded. This list includes several small businesses developing niche solutions, so it is possible we have missed companies that fall within the boundaries defined. Two entries are government-led sites rather than manufacturing businesses. The Advanced Manufacturing and Technology Hub at Picton and a proposed facility at Forrestfield are State investments in serviced industrial land, intended to manufacture components for the electricity network as coal-fired generation retires. Neither yet has a manufacturer committed to it.

Proponent	Project description	Region	Status
WA Government (DEED)	Kalgoorlie vanadium flow battery, 50 MW / 500 MWh, requiring WA-manufactured technology and locally processed vanadium	Goldfields	Proposed
Alstom / METRONET	C-series electric passenger railcar assembly	Perth	Operating
Australian Flow Batteries	Flow battery manufacturing feasibility study	Perth	Operating

Australian Vanadium Ltd / VSUN Energy	Wangara vanadium electrolyte facility	Perth	Operating
Austvolt	Kwinana precursor cathode active material facility	Perth	Proposed
Boundary Power	Utility-grade stand-alone power system manufacturing	Perth	Operating
Cadoux Ltd (formerly FYI Resources)	Kwinana high purity alumina production plant	Perth	Pilot
Camco Engineering	Wind tower anchor cage manufacturing	Perth	Committed
Curtin University, CSIRO, MRIWA	Cathode precursor production pilot plant	Perth	Pilot
Cyber Recycling	Solar panel recycling facility	Perth	Operating
Echo Marine Group	Swan River electric ferry construction	Perth	Committed
EcoGraf	Battery anode material facility	Perth	Proposed
Electro.Aero	Electric aircraft charging system manufacturing	Perth	Operating
Magellan Power	Power electronics manufacturing expansion	Perth	Committed
Pacific Energy / Hybrid Systems Australia	Stand-alone power and battery storage system manufacturing	Perth	Operating
Renewable Metals	Kewdale battery recycling prototype refinery	Perth	Pilot
Volgren	Malaga electric bus manufacturing	Perth	Operating
WA Government / Western Power	Forrestfield transmission component manufacturing facility	Perth	Proposed
Generation Steel	Collie electric arc furnace to manufacture recycled steel	South West	Proposed
International Graphite	Collie graphite processing and anode material plant	South West	Committed
Magnium Australia	Collie magnesium production pilot	South West	Pilot
Tesla	Collie battery remanufacturing facility	South West	Committed
WA Government (Development WA)	AMTECH advanced manufacturing hub, Picton	South West	Proposed

BIOFUELS AND BIOCHAR

This list covers liquid biofuel production, biochar, and projects combining both. Feedstock processing without a fuel or biochar output is not included, nor are projects developed by WA companies but located outside the state. Biochar projects here serve several markets: soil amendment, and metallurgical char as a coal substitute in metals production. Where a project's primary purpose is carbon removal rather than fuel or materials, it is listed under carbon dioxide removal.

Proponent	Project description	Region	Status
Australis Biofuels	Australis Renewable Carbon Facility renewable diesel biorefinery will produce biomethane, renewable diesel, SAF and biochar. Precinct	Esperance	Proposed
Energy Farmers Australia	Small-scale regional farm biochar production	Mid West	Operating
Continual Renewable Ventures	New Rise ANZ renewable diesel and sustainable aviation fuel refinery, Kwinana site under consideration	Perth	Proposed
Perth Food Bowl Corporation Pty Ltd	Peel Agri-Bio Innovation Precinct biochar plant	Perth	Proposed
Pyrochar	Collie Net Zero Carbon Plant for magnesium production	South West	Proposed
Renergi	Collie Resource Recovery Centre producing biochar from waste	South West	Pilot

Infrastructure Asset Group / Commodity Ag	Australian Canola Oils crushing plant and biochar facility, Drome	South West	Proposed
FutureEnergy Australia	Narrogin Biorefinery	Wheatbelt	Proposed

CARBON DIOXIDE REMOVAL

This list covers technologies that remove carbon dioxide from the atmosphere and store it permanently, including direct air capture, mineralisation and biochar. Each is represented here by a single project; none is yet operating at commercial scale.

Carbon capture and storage is not included in this list, because it aims to prevent carbon dioxide entering the atmosphere, rather than removing it. Geoscience Australia's national register of carbon dioxide storage projects records ten located in Western Australian basins: four tied to gas processing, two to industrial emitters, and four storage projects with no committed source of carbon dioxide to store. Only one, Gorgon, is operating.²⁷⁶

Western Australia has 392 live projects registered under the Australian Carbon Credit Unit Scheme, spanning six activity types: vegetation, waste, savanna fire management, energy efficiency, agriculture and transport.²⁷⁷ Between them they have been issued around 19.4 million credits, about a tenth of the national total. Vegetation projects, many of which are human-induced regeneration, are the largest share of both projects and credits issued.

Proponent	Project description	Region	Status
Arca/ BHP	Mount Keith mine tailings carbon mineralisation	Goldfields	Pilot
Pilot Energy / Capture6	Dongara direct air capture demonstration (Project Wallaby)	Mid West	Pilot
Biomass Projects / Carbonfuture / Residual	Mardie biochar project using invasive mesquite weed	Pilbara	Proposed

DATA CENTRES

This list covers large-scale artificial intelligence and high-performance computing facilities. Western Australia also has an established fleet of enterprise and colocation data centres serving local business and government, which are not listed individually: they lease space and connectivity to local users rather than forming an export-scale industry, and WA's largest operating data centre is 20 MW, while the largest AI campus proposed below is more than 200 MW. There is no authoritative public register of data centres in Western Australia. Commercial directories including Data Center Map, Baxtel and RenewMap list between 14 and 32 facilities in the state, depending on how campus sites and small server rooms are counted. GreenSquareDC's proposed facility was withdrawn in May 2026 and is not listed.

Proponent	Project description	Region	Status
Gingerah Energy	Project Meridien data centre 240 MW	Kimberley	Proposed
DUG Technology	Geraldton high-performance computing campus	Mid West	Proposed
Vantage	Oakajee data centre	Mid West	Proposed
CDC Data Centres	Maddington data centre campus 200 MW across four data halls	Perth	Committed
Stack Infrastructure	PER01B Wangara data centre	Perth	Proposed

Appendix D: Principles for good decarbonisation policy

Decarbonising and diversifying WA's economy will require almost every tool government has, including regulation, tax, spending, and market design.

This report can't settle every policy question that will arise between now and net zero. The principles below guide the thinking behind specific positions presented in this report, including the eight policy priorities identified in Chapter 5. They also offer a consistent way to judge whatever comes next.

- 1 Coherence and consistency:** A policy suite should hang together. Instruments should not contradict each other, and new policy must work with what's already in place, not assume a blank slate. Government rarely gets to start from scratch.
- 2 Certainty and credibility:** Long-lived, capital-intensive projects, such as those in WA's clean energy pipeline, only get built if investors trust a policy will still be there over the life of the asset, not unwound on the next change of government or budget cycle. Where policy does need to change, it should happen through planned, visible review points set out in advance, not sudden reversal.
- 3 Evidence, lived experience and social capital:** Good policy draws on real evidence, such as data, modelling, and policies that have worked elsewhere, and on the people living the problem, whose knowledge can't be captured by data alone. Policy impact also relies on trust and social licence; policymakers and politicians must navigate, and attempt to correct, declining institutional trust.
- 4 Transparent evaluation:** Ongoing learning and improvement should be built into policy. Outcomes should be monitored, checked against what they were meant to achieve, and adjusted when the evidence says so. This is course-correction toward a fixed destination, not policy flip-flopping, which is what makes it compatible with the certainty investors need, not a threat to it. Doing this openly is accountability in action, where the public and parliament can see not just what was decided, but whether it worked.
- 5 Carrots, sticks and sermons:** Governments have three basic tools: rules that require (the stick), incentives that reward (the carrot), and information that builds understanding. With growing misinformation, policy responses will increasingly need the third done well.
- 6 Proportionality:** Obligations should be scaled to the capacity of the actors on whom they fall. A small business and a major exporter don't have the same resources, and policy that treats them the same fails one or the other. Compliance is itself a cost on top of the change government is pursuing, and good policy keeps that cost as light as the job allows.
- 7 Match instruments to distinct targets:** A single instrument rarely solves two different problems at once. Growing a new clean export industry usually means pulling on demand (offtake agreements, procurement) and pushing forward supply (finance, R&D) at the same time, usually with separate levers.

Tax reform and public value capture

The principles above apply across policy areas. Decisions about how WA's finite resources are taxed raise a further set of questions, because they determine not only what government collects today, but what is left for the generations who will not have these finite resources. This issue of public benefit was the single most important concern of survey respondents.

The Bankwest Curtin Economics Centre sets out eight criteria for assessing resource revenue systems,²⁷⁸ that can be consolidated into three broad concerns. First, whether the system raises enough, and predictably enough, to fund public services through

commodity cycles and structural change. Second, whether the community receives a fair return from resources it collectively owns, including a greater share when profits are high, and something durable for the future. Third, whether it does this without distorting investment and production decisions, with risk and reward sensibly shared between government and investors.

There is no single right answer to these questions, and different people will value different outcomes. What matters is that the trade-offs are made deliberately and transparently, rather than arrived at by default.

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