

18 September 2025

Leveraging ARENA funding

ARENA's role in industrial decarbonisation

Industrial Net Zero Conference



Australian Government
Australian Renewable
Energy Agency

ARENA

Presentation by

Peter Haenke | Technical Lead, Industrial Decarbonisation | Business Development & Transactions



ARENA acknowledges the Traditional Custodians of Country across Australia and their continuing connection to land, sea and community. We pay our respects to Elders past and present.

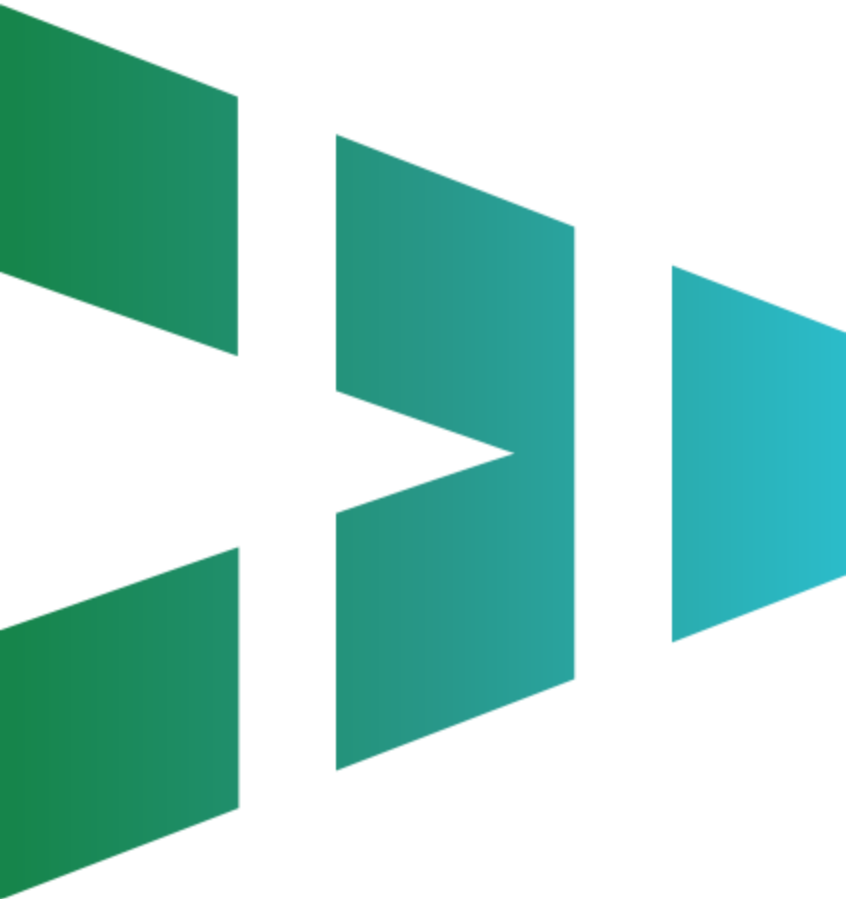


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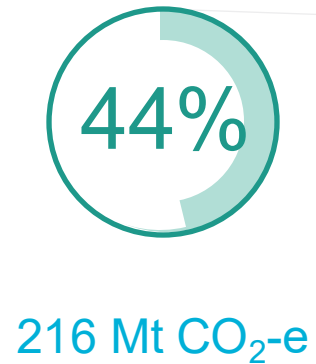
ARENA support for industrial decarbonisation

- The industrial decarbonisation challenge
- ARENA funding support
- Next steps: How to access support

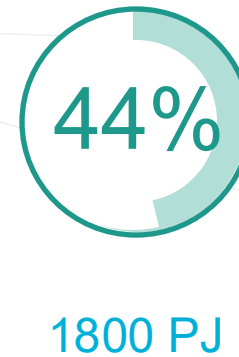


The industrial decarbonisation challenge

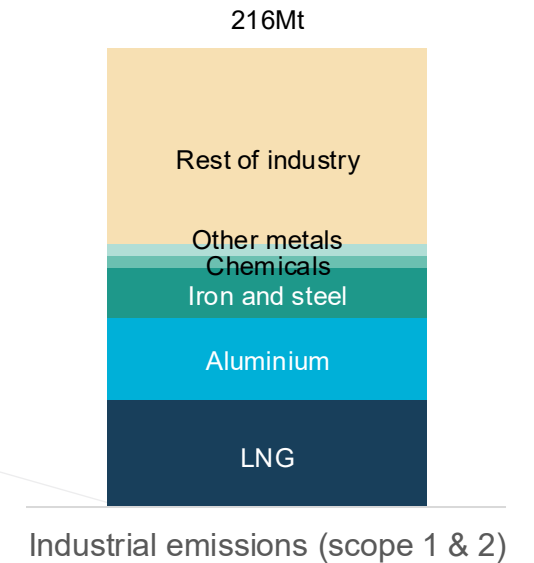
Key to emissions goals



Key to energy end use



Broad range of sectors



Tackling decarbonisation across Australian industry is key to emissions reduction goals, securing our manufacturing base and setting up as a renewable energy superpower.

Significant value at stake

Getting industry on track with decarbonisation opportunities can:



Play its part in helping reduce domestic emissions by 43 per cent by 2030 and net zero by 2050.



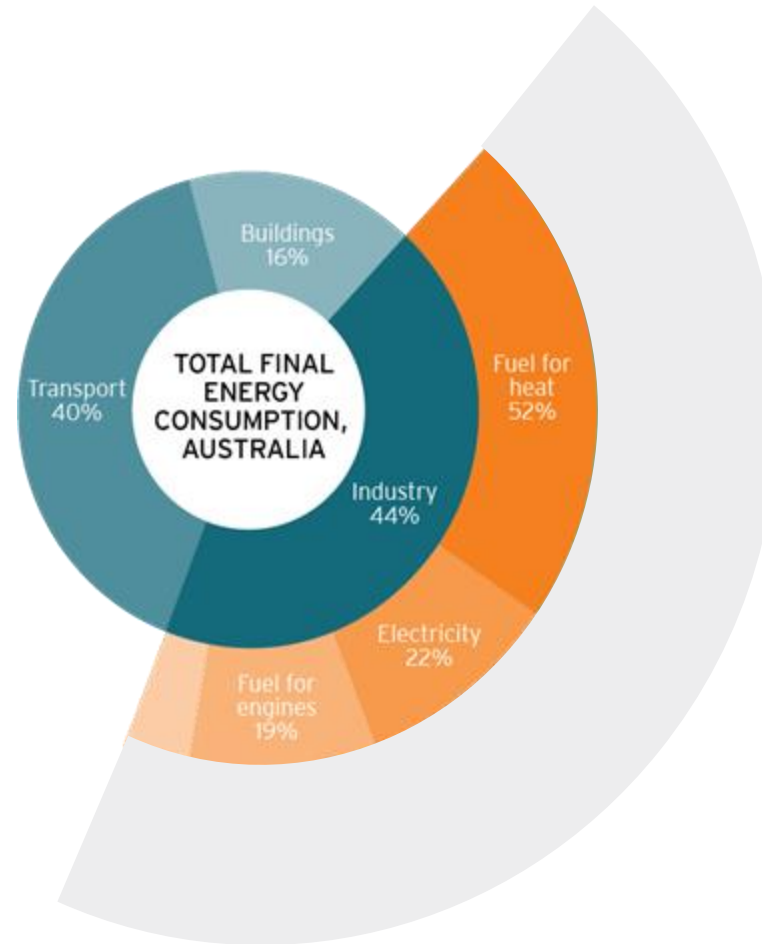
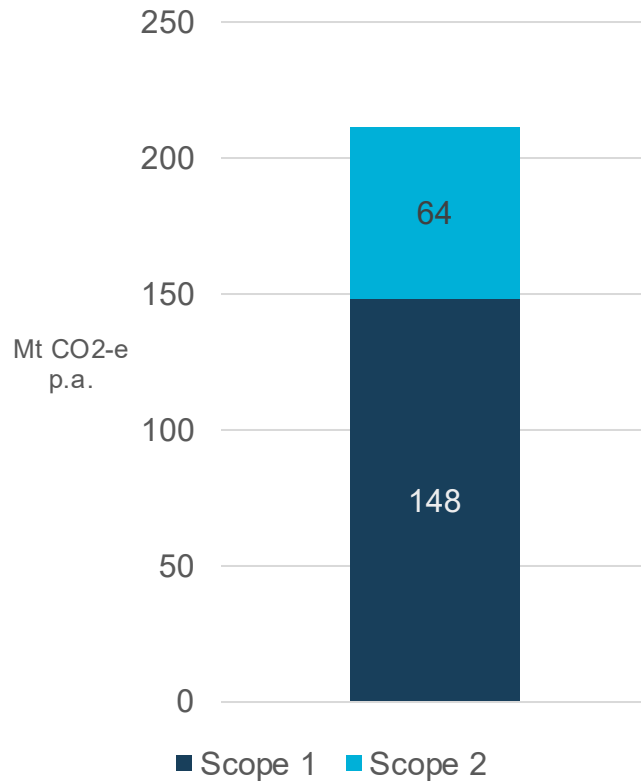
Help to maintain jobs and economic activity in our regions.



And set Australia up to capitalise on the world's shift to green products like green aluminium, green ammonia, hydrogen and critical minerals and metals.

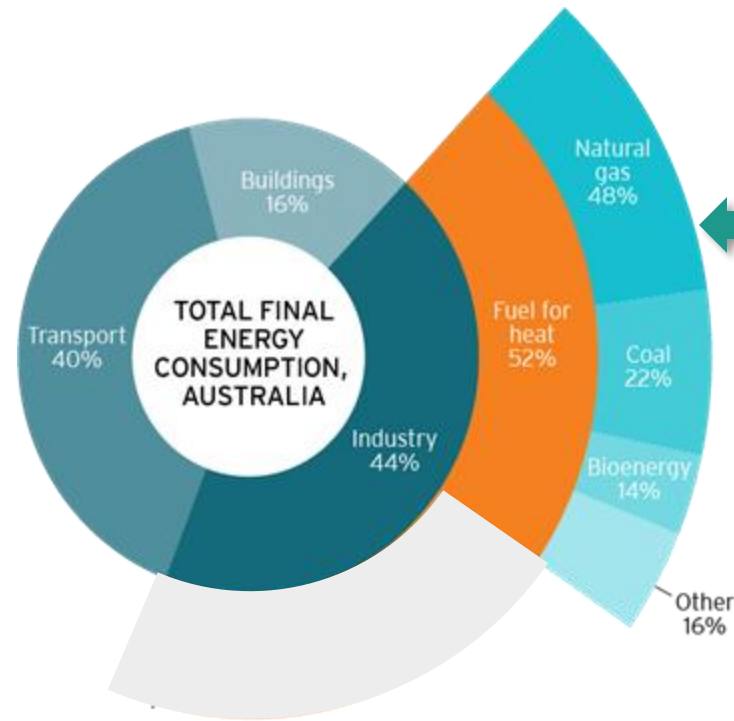
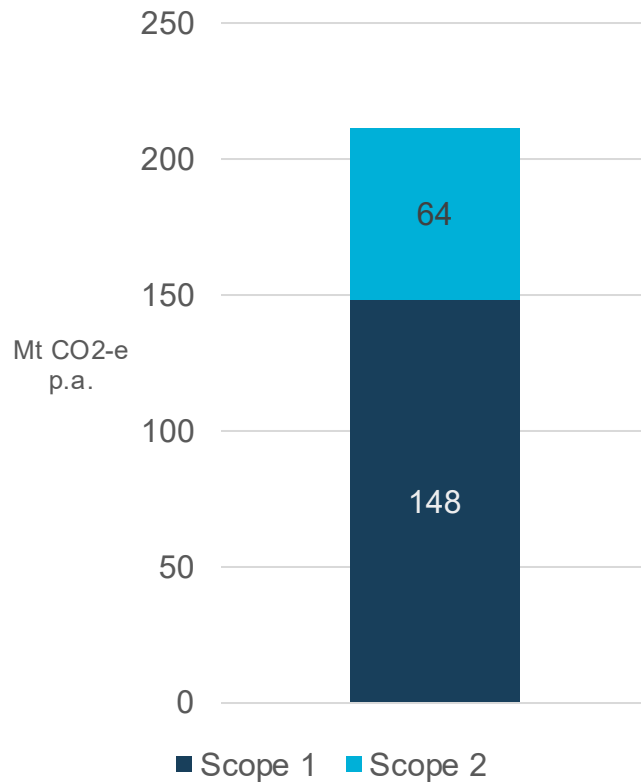
Decarbonising industry means Scope 1 – on-site fossil fuel

Industrial Emissions



Decarbonising industry means Scope 1 – on-site fuel!

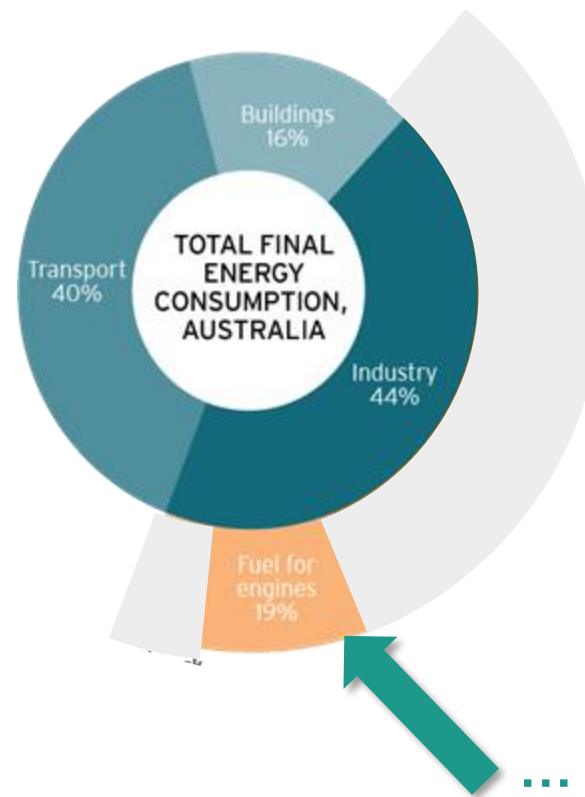
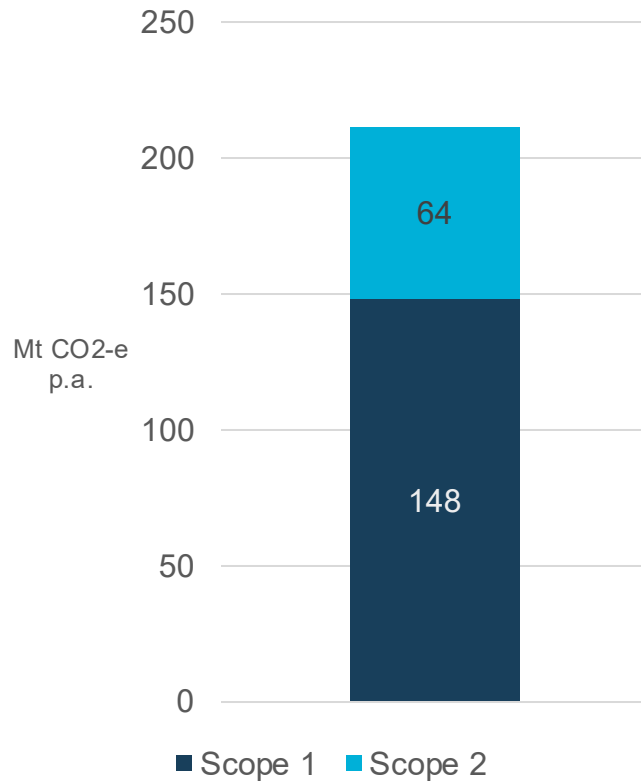
Industrial Emissions



process heat
accounts for
52% of
industrial energy
use...

Decarbonising industry means Scope 1 - onsite fuel!

Industrial Emissions



... and engines account for **19%**

How do we decarbonise industrial fuel?

Energy efficiency



Electrification



Bioenergy



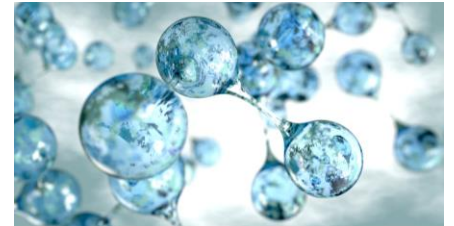
Solar thermal



Geothermal



Hydrogen



Decarbonisation is not without its challenges



Technical

**Unclear tech
choice**

Few demo's

**Complex
integration**



Resistance

Risk averse

Limited buy-in

**Resource
constrained**



Planning

**Investment signals
mixed**

Lacking incentives

Policy in progress

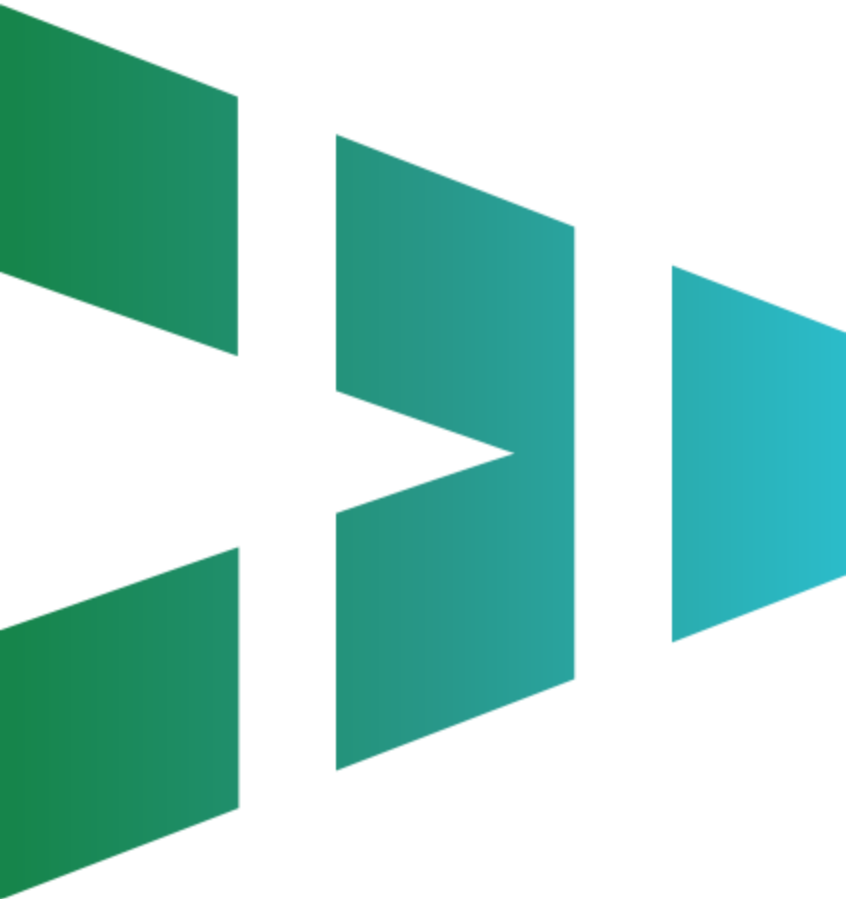


Financial

High upfront capex

**Long payback
periods**

**'Untrue' BAU
comparison**



ARENA funding support

ARENA's mission and purpose

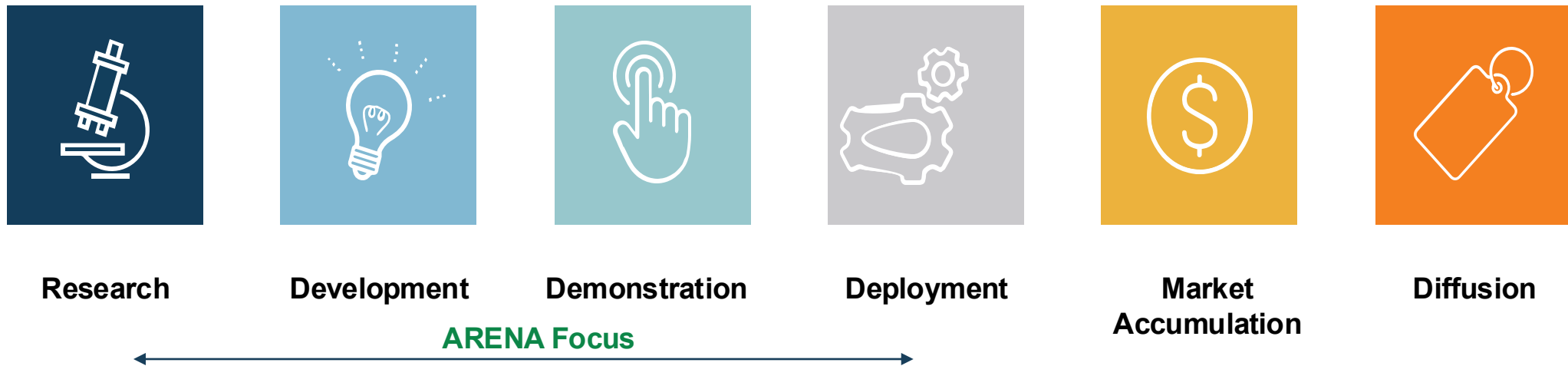
*Our **mission** is to support the global transition to net zero emissions by accelerating the pace of pre-commercial innovation, to the benefit of Australia.*

Purpose

To support **improvements** in the **competitiveness** and supply of **renewable energy** and the uptake of energy efficiency and electrification by providing **financial assistance** and **sharing knowledge**, to **accelerate innovation** that benefits all Australians, and facilitates the achievement of Australia's greenhouse gas emissions targets.



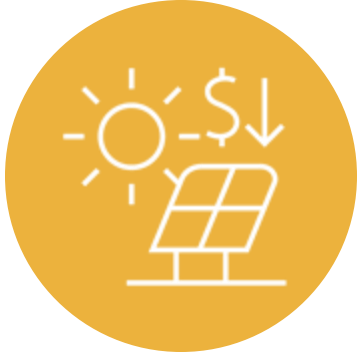
ARENA's investment approach



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Strategic priorities...set by the ARENA Board



Unlock ultra low-cost
solar



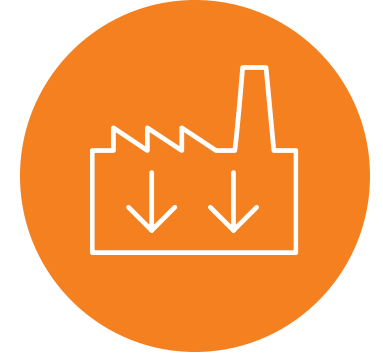
Optimise the
transition to
renewable electricity



Commercialise
renewable hydrogen



Decarbonise
transport



Support the
transition to low
emissions metals



Unlock ultra low-cost
solar



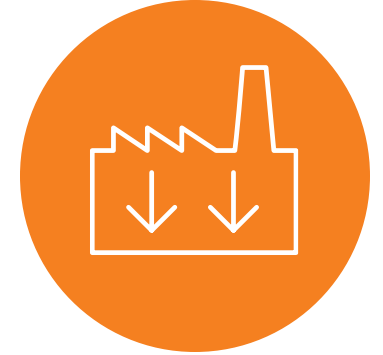
Optimise the
transition to
renewable electricity



Commercialise
renewable hydrogen



Decarbonise
transport



Support the
transition to low
emissions metals

and Budget measures... defined by the Government

Solar Sunshot

Battery Breakthrough Initiative

Future Made In Australia Innovation Fund

Regional Microgrid Program

Community Batteries

Large Scale Battery Storage

Hydrogen Headstart

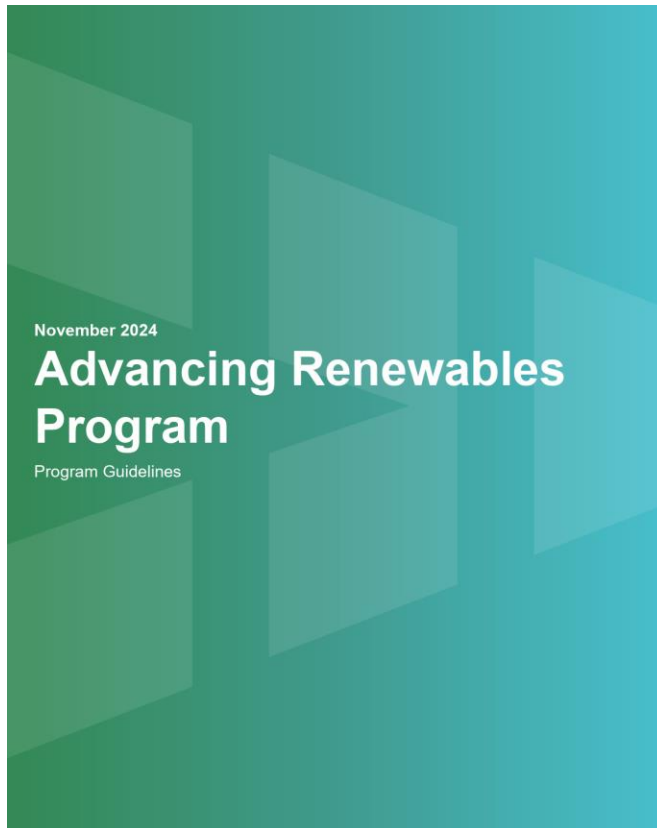
Driving the Nation

Sustainable Aviation Fuel

Industrial Transformation
Stream (Powering the Regions)

ARENA funding for industrial decarbonisation

Strategic priorities



Budget Measures



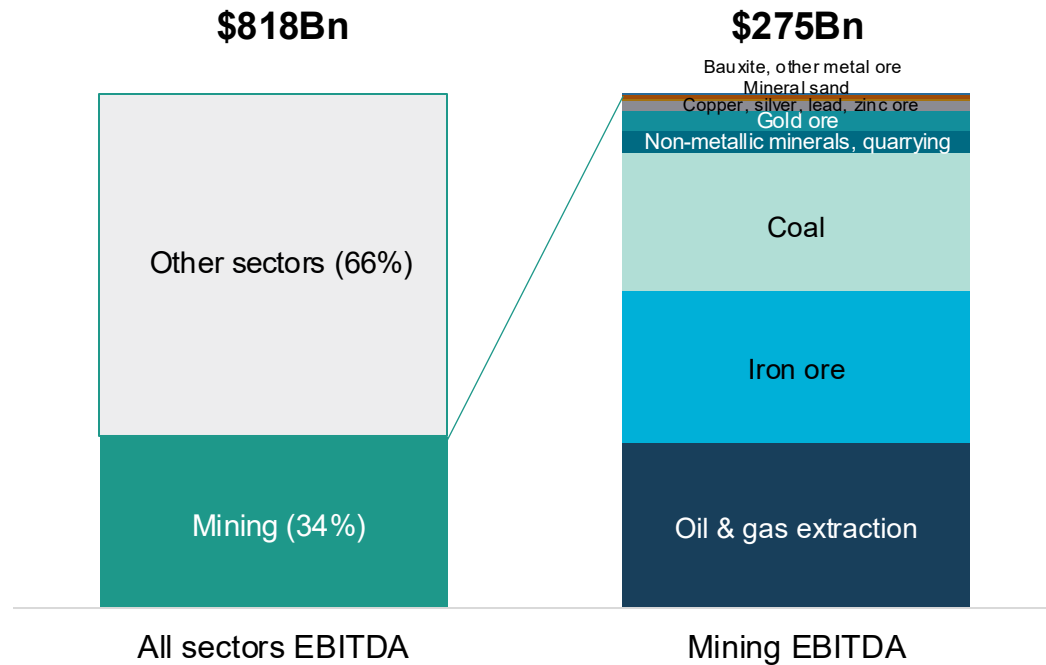


Advancing Renewables Program: Low Emissions Metals

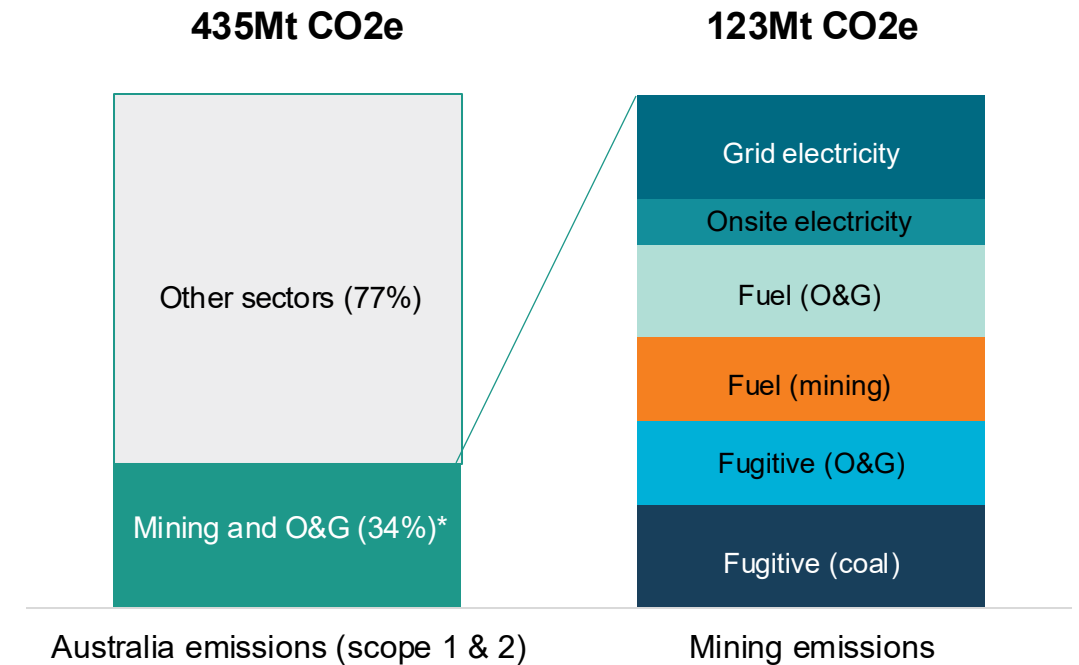
- ✓ Accelerate the transition to a low emissions steel value chain; including zero emissions mining.
- ✓ Accelerate the transition to a low emissions aluminium value chain.
- ✓ Support the development of low emissions critical energy mineral value chains; including pre-processing and processing of ores



Fundamental to the Australian economy



But contributing major emissions



Decarbonisation, focused on the electrification of mining operations, is key to a sustainable AU future

Source: EBITDA - ABS, Australian Industry EBITDA 2022-23 financial year; Emissions - ABS, Net greenhouse gas emissions 2022; Climate Change Authority, Sector pathways review 2024 (data as at 2022). Excludes Scope 3 (which can be 80% of a companies' overall carb footprint), DCCEEW National inventory 2022. Note: (*) Mining emissions include 99Mt Scope 1, 24Mt Scope 2.

Iron & steel: Next era of the ‘lucky country’?

Today: #1 supplier “dig and ship”

\$124 billion p.a. in export value

~5% total AU CO₂e

Future: secure position, add value?

- **Secure AU iron ore future**
- **Capture ~\$85bn¹** GDP value green iron opportunity
- **Decarbonise domestic steelmaking** to meet AU targets.
- **Establish scale hydrogen offtake²**

Integral to the Australian economy, but critically hard to abate.

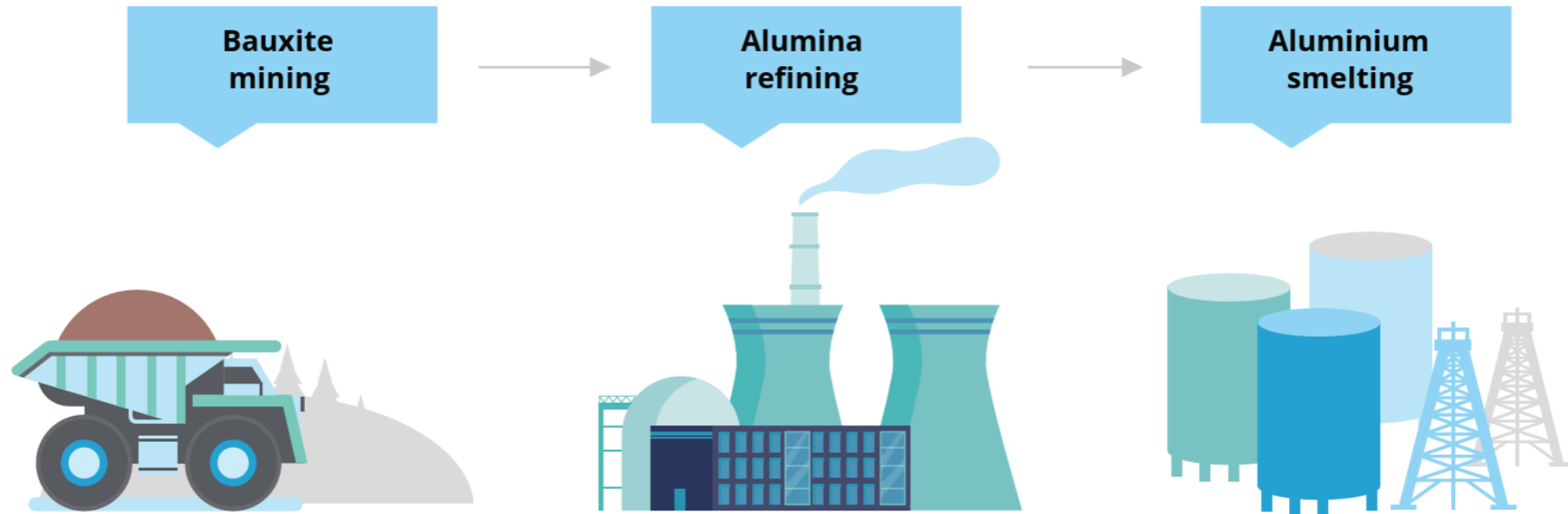
Sector specific: Capital intensive, complex, long asset life, nascent technologies, brownfield retrofits.

Inter-dependencies: Firmed renewable energy capacity, transmission, storage, low-cost hydrogen at scale.

Green premium: Significant cost gap (compared to incumbent technologies).

Source: DISR Resources & Energy quarterly (22-23); Aus Industry ETI: Pathways to industrial decarbonisation (2023). (1) MRIWA: Western Australia’s Green Steel Opportunity (development scenario 1: green iron in the form of HBI – value forecast to 2050), (2) Wood Mackenzie reports nearly half the 200 projects in their 2024 decarbonisation tracker are linked to hydrogen-based steelmaking and ~25% of steel production will be hydrogen based in their NetZero 2050 scenario.

Alumina and aluminium



Global producer	#2	#2	#7
Global exporter	#2	#1	

Australia is at the leading edge of alumina decarbonisation

Deloitte.

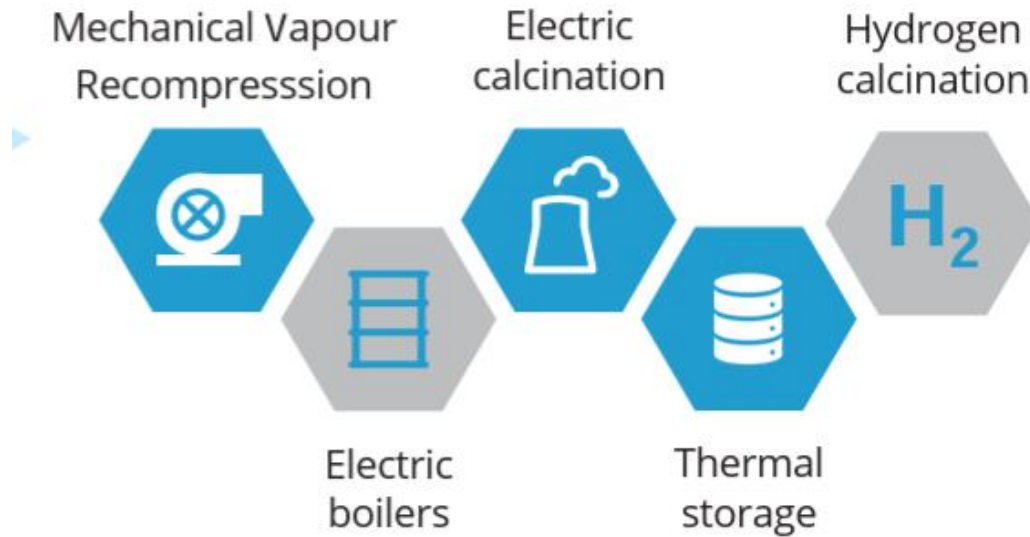


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A Roadmap for Decarbonising Australian Alumina Refining

In collaboration with the Australian Renewable Energy
Agency, and in consultation with participants Alcoa, Rio
Tinto and South32
November 2022



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Innovate quickly, invest strategically

Open tech questions need to be answered by 2030 to lay the foundation for scale-up

> **Capital support for technology pilot/demonstration**
(by 2030-35):

- Innovative R&D
- Technology viability/cost
- Customer confidence/investor appetite
- AU skills base

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But policy choices are important now to signal investment opportunity

- > **Sector strategy, supply chain roadmaps/targets**
- > **Enabling policy**
- > **Supply side incentives**

And critical dependencies need scale

> **Low cost, firm energy supply**

- Large-scale renewables deployment
- Storage/Demand management

> **Transmission infrastructure**

> **Commercial green hydrogen**

- <\$3/kg¹ supply

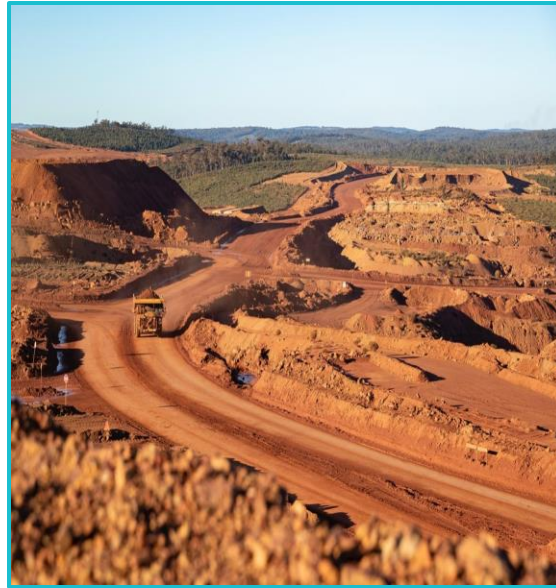
ARENA Low emission metals investment highlights

Rio Tinto Hydrogen Calcination Pilot



Location: Queensland
Project Cost: \$111.3 million
ARENA Grant: \$32.1 million

South32 Steam Electrification



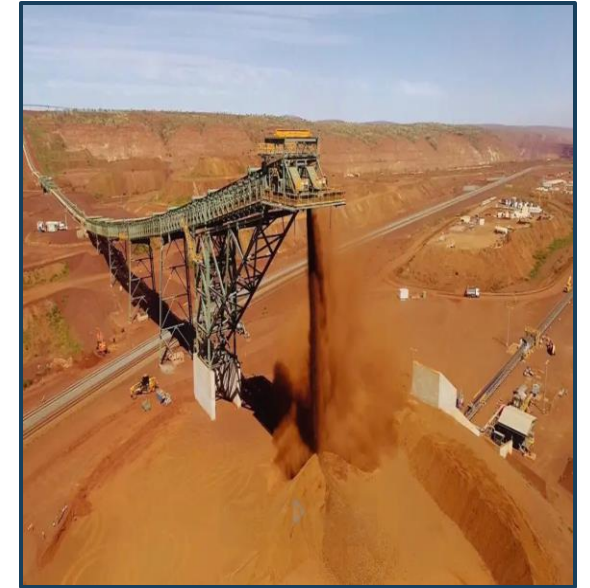
Location: Western Australia
Project Cost: \$8.6 million
ARENA Grant: \$4.3 million

Calix ZESTY Demo Plant



Location: New South Wales
Project Cost: \$89.9 million
ARENA Grant: \$44.9 million

Project NeoSmelt



Location: Western Australia
Project Cost: \$48.9 million
ARENA Grant: \$19.8 million



Industrial Transformation Stream

- ✓ Support industrial facilities in regional Australia to reduce emissions
- ✓ Improve technology readiness and commercial readiness of renewable energy technologies, energy efficiency technologies and electrification technologies
- ✓ Encourage technology demonstration, collaboration and knowledge sharing across industry and/or regions.
- ✓ Support upskilling of existing industrial workforce in new decarbonisation activities.



ITS Round 3 expected to open soon. Open until funds exhausted

1. Innovation in industrial decarbonisation

Highly innovative, first-of-a-kind technologies and solutions to reduce industrial emissions.

Development/demonstration in new industrial use cases.

Examples may include, but are not limited to:

- ✓ Novel industrial processing routes and / or equipment, (e.g electrification and / or replacement of fossil fuels used as heat or reductant) in new use cases in Australia
- ✓ Advanced thermal energy storage

2. Advancing commercial deployment

Accelerate commercial deployment of technologies and solutions relevant to industrial decarbonisation.

Demonstrating operational performance, accelerate investment decisions and bring forward full decarbonised solutions.

Examples may include, but are not limited to:

- ✓ Electric technologies such as heat pumps, mechanical vapour recompression, electric boilers, infrared, induction, microwave etc. for industrial heat and solar thermal energy
- ✓ Deployment of electrified equipment / vehicles solutions in new use cases or at unproven scale
- ✓ Alternative financing / capital light business models (e.g. heat as a service)

Minimum \$500k funding; at least matched contribution. Funding for studies and demo / deployment.

Future Made in Australia Innovation Fund

“FMA is focused on maximising the economic and industrial benefits of a move to net zero and securing Australia’s place in a changing global and economic strategic landscape”

FMA Focus:

- Attracting and enabling **investment**
- Making Australia a **renewable energy superpower**
- Value adding to our **resources** and strengthening **economic security**
- Backing Australian ideas: innovation, digital, science
- Investing in **people and places**

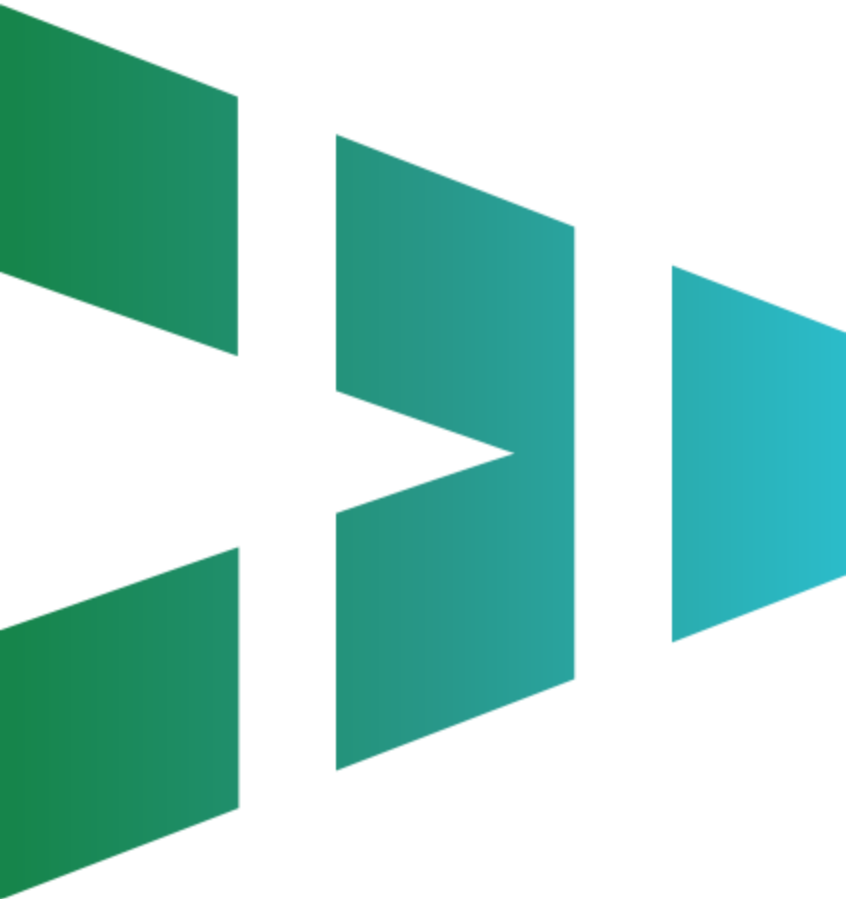
FMA Priorities:

- Green metals
- Low carbon liquid fuels
- Renewable energy technology manufacturing

FMA Innovation Fund:

\$1.5 billion to support **pre-commercial innovation and deployment** of technologies and facilities linked to the priority industries

FMA will help to build a stronger, more diversified, and more resilient economy powered by clean energy



How to access support

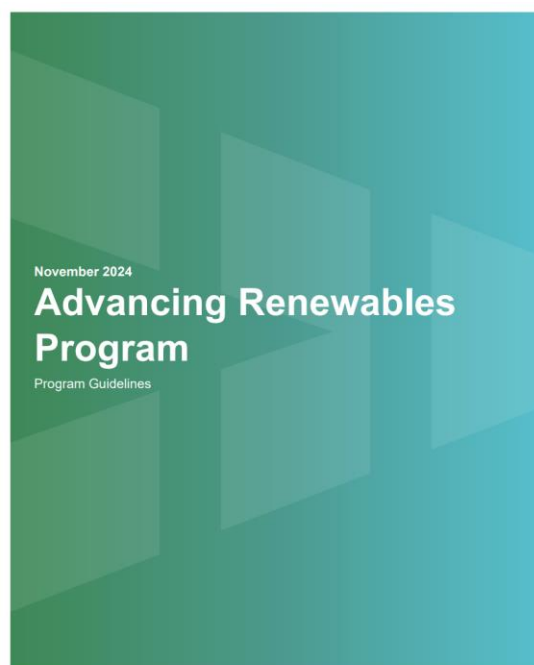
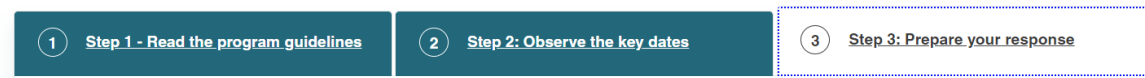
Testing a project concept with ARENA



Find out more

All material can be found on the **website** “Prepare your Response”

How to apply for funding



- Check open programs on the ARENA website under ‘Funding’
- Check eligibility and merit criteria in the Program Guidelines
- ‘Tell us about your project’ (under ‘prepare your response’)
- Draft a short ARENA ‘pitch’ (e.g. 5pgs.)
- Discuss over a concept call
- On ARENA’s recommendation, prepare a formal ARENA ‘EOI’ submission



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