



Monday 5 June, 2025

Webinar Series



Dr Ingrid Burfurd
Carbon Pricing and Policy Lead

A Green Iron Plan webinar series

Session 1 - Today

Australia's \$400 billion green iron opportunity



Dr Ingrid Burfurd
Carbon Pricing and Policy Lead, TSI

*Session 2 - Wednesday 11 June**

The technological path to Australian green iron



Chris McMahon
Technical Lead for Green Iron, TSI

Session 3 - Thursday 19 June

Modelling green iron production in five Australian regions



Chris McMahon
Australian Director, Bivios



Ben Scott
Economist, TSI

Mission

The Superpower Institute is a not-for-profit organisation dedicated to helping Australia seize the extraordinary economic opportunities of the post-carbon world.

The global shift to net zero is Australia's opportunity.

TSI specialises in practical research and policy development to support the policy settings and market incentives necessary for making Australia a green export superpower to support global development in a post-carbon world.

Our role is to embed climate ambition in a broader economic context and to change the public narrative, so that decision-makers are comfortable adopting the required policies and incentive structures that will unlock the Australian superpower.



Dr Ingrid Burfurd

Carbon Pricing and Policy Lead, TSI

Dr Ingrid Burfurd has worked as a Senior Economist in the Victorian Public Service, a Senior Expert Advisor on UNFCCC review of the Clean Development Mechanism, a postdoc at University of Melbourne, a lecturer at RMIT University, and as a Senior Associate at Grattan Institute.

Her research is focussed on the economic foundations of policy – identifying market failures and the policies to correct them.

Ingrid has Arts and Commerce (Honours) degrees from the University of Melbourne, and a PhD in Economics from the University of Melbourne.



Overview

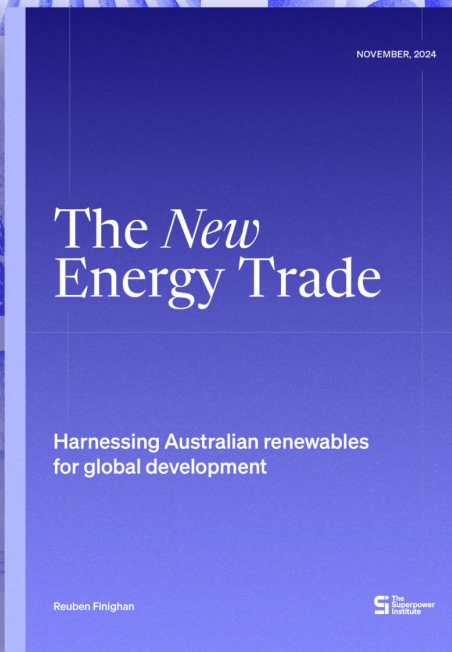
01. Why Australia's comparative advantage in green iron is a remarkable opportunity
02. How Australian iron ore can be used to produce green iron
03. Costs and competitiveness across five Australian production regions.
04. Policies to correct market failures and level the playing field

01.

Australia has a comparative
advantage in green iron

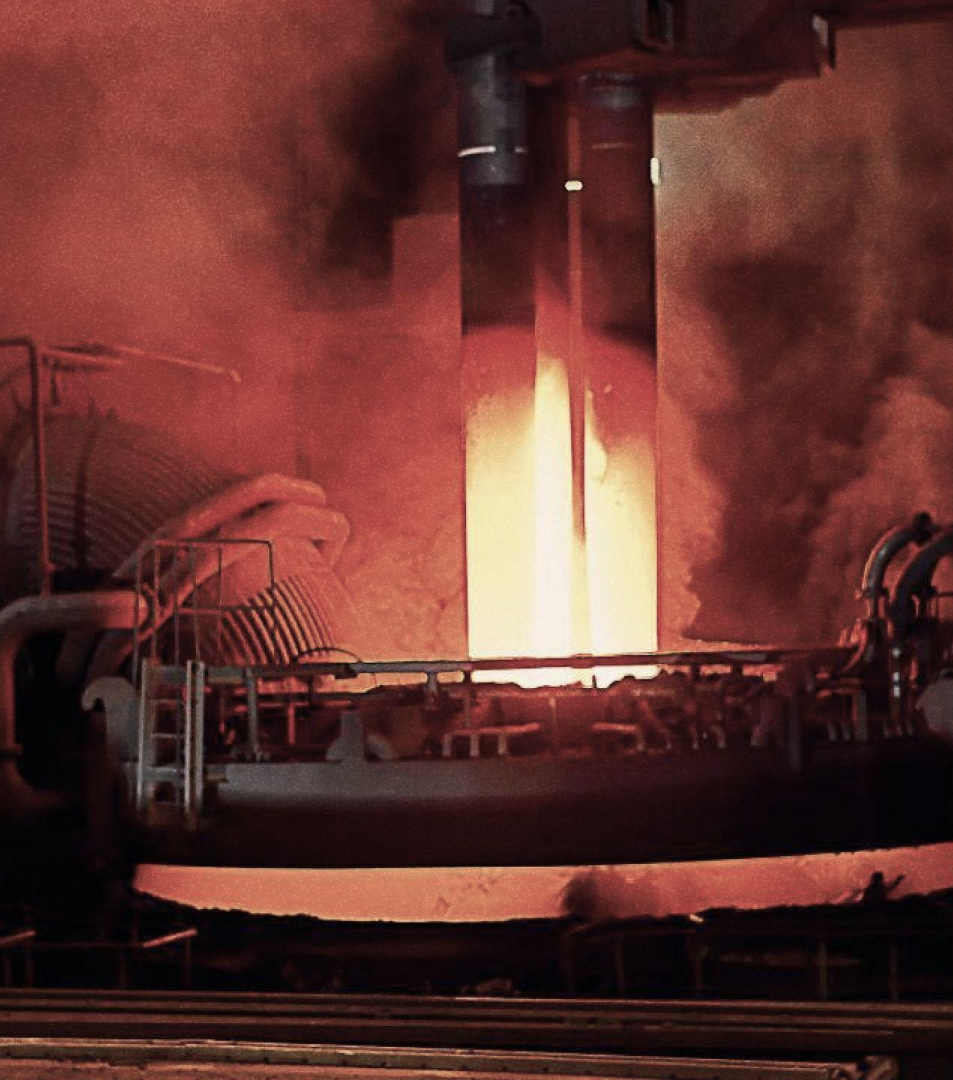
The New Energy Trade

01. Most major economies will not have enough cheap zero-carbon energy to meet their future needs. This will drive a trade in renewable energy.
02. Renewable energy is expensive and difficult to transport. Energy-intensive production will migrate to locations with abundant, cheap renewable energy.
03. Renewable energy will be traded in the form of green products.



Australia's comparative advantage in green iron is built on its *abundant renewable energy*, its plentiful *iron ore* reserves, and its *industrial experience* in mining and innovation.

There are *three reasons* that
a green iron industry would
be good for Australia...



Nearly
\$400 billion

Potential annual export
value of green iron by 2060



4%

Potential contribution
to global decarbonisation



\$120 billion

Value of Australia's annual fossil fuel exports, *at risk* as the world decarbonises



02.

Australian ores can be used
to make green iron.

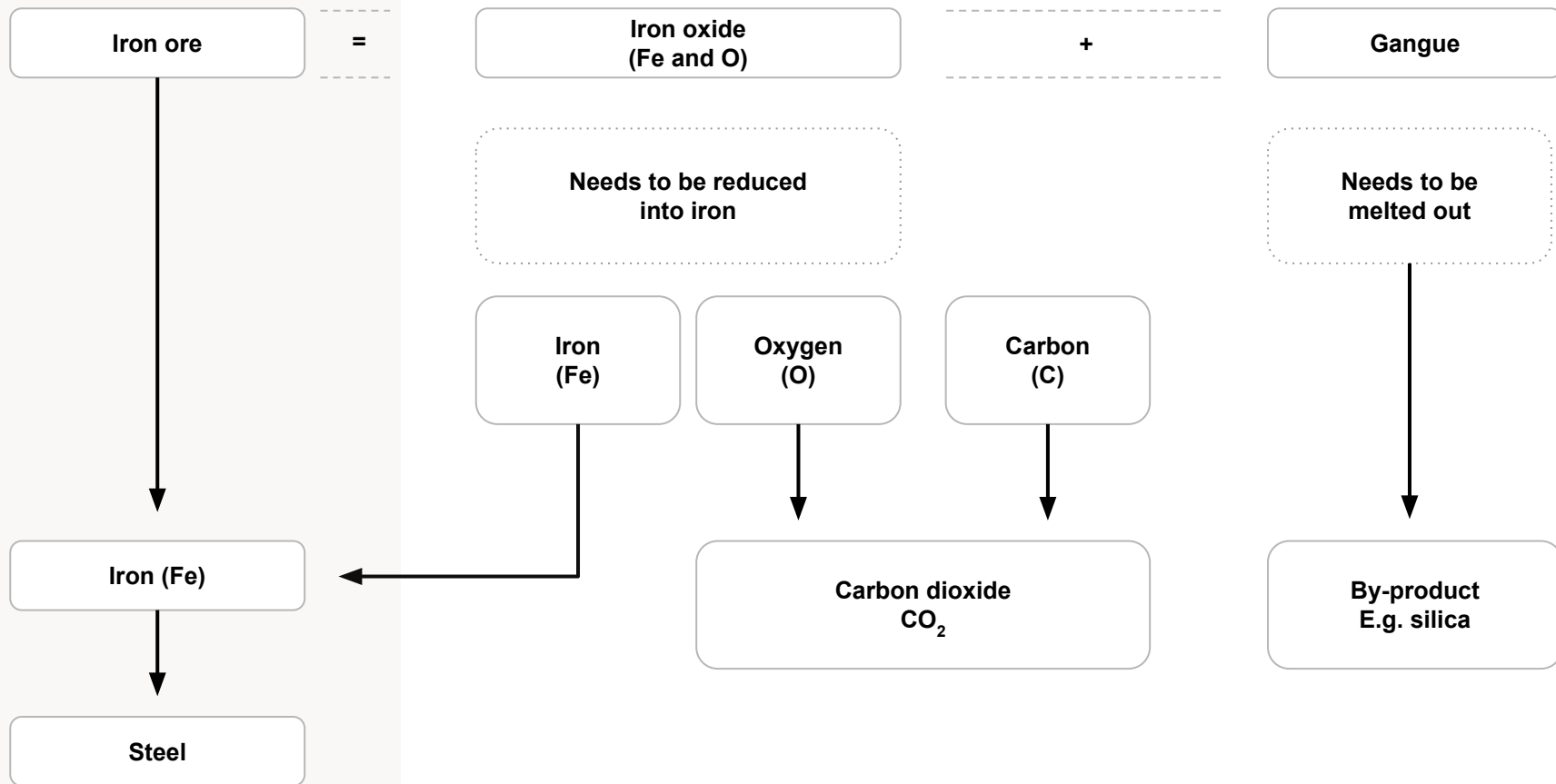
Iron ore

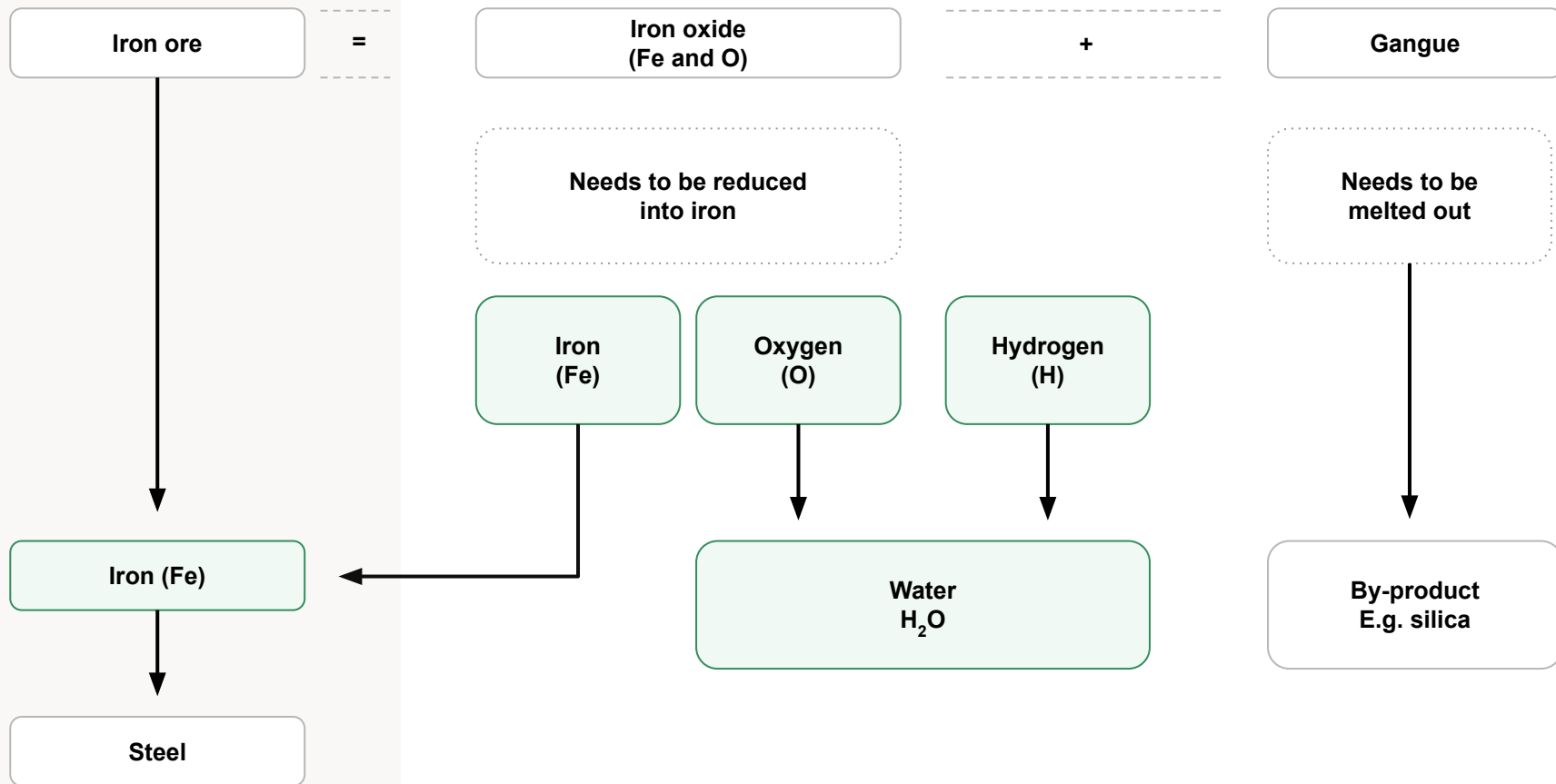


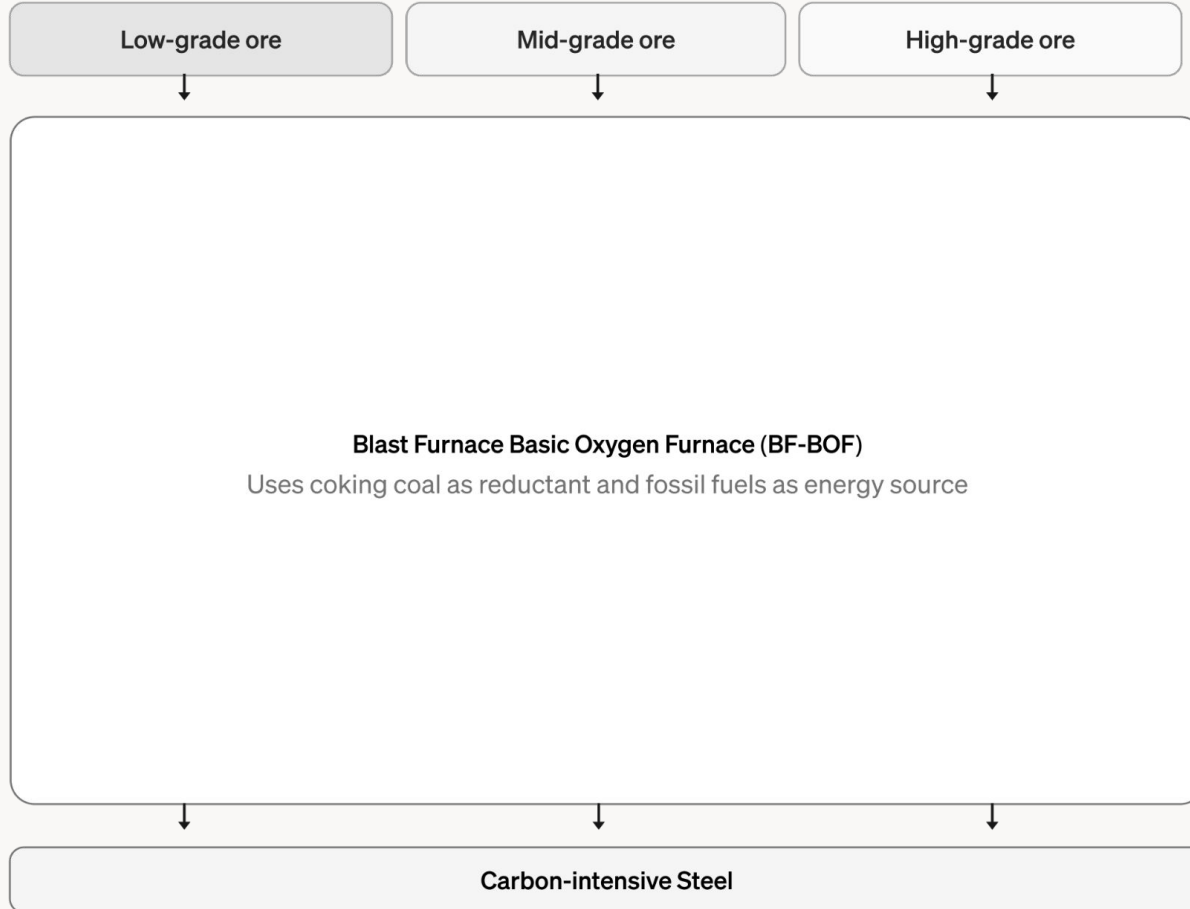
Iron (Fe)

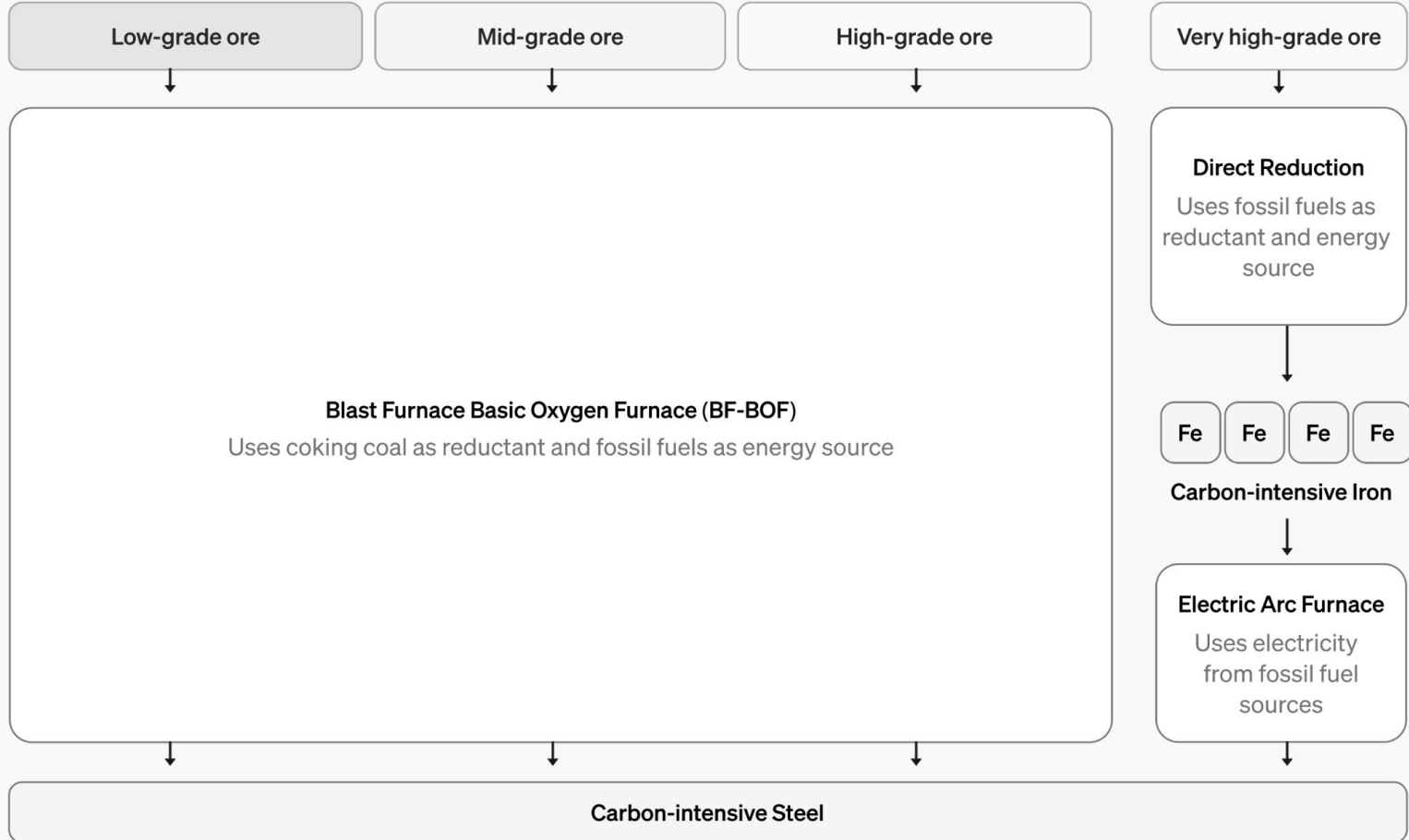


Steel







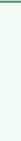


Very high-grade ore



Direct Reduction

Uses green hydrogen
as reductant and
electricity from
renewable sources



Fe

Fe

Fe

Fe

Decarbonised Green Iron



Electric Arc Furnace

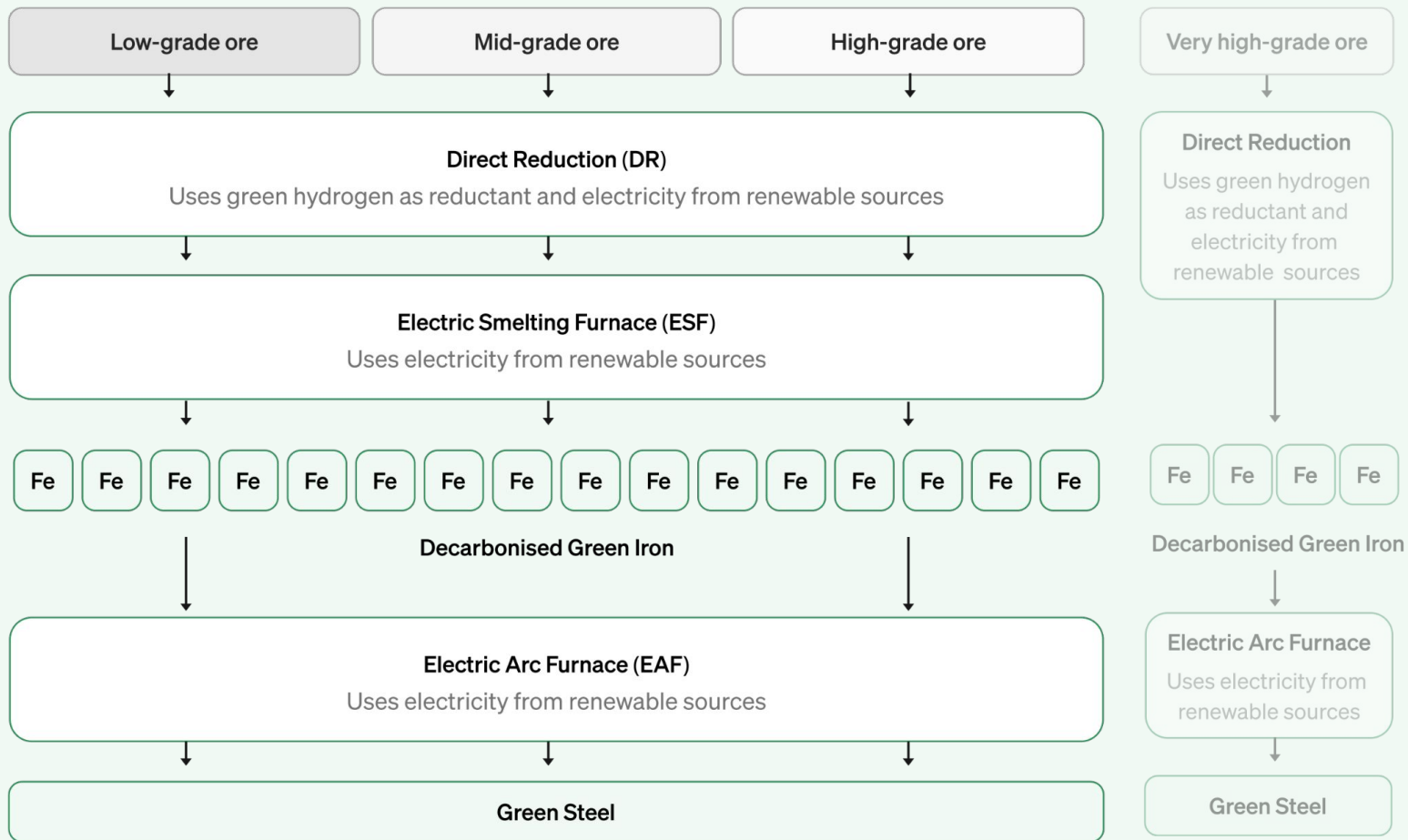
Uses electricity from
renewable sources



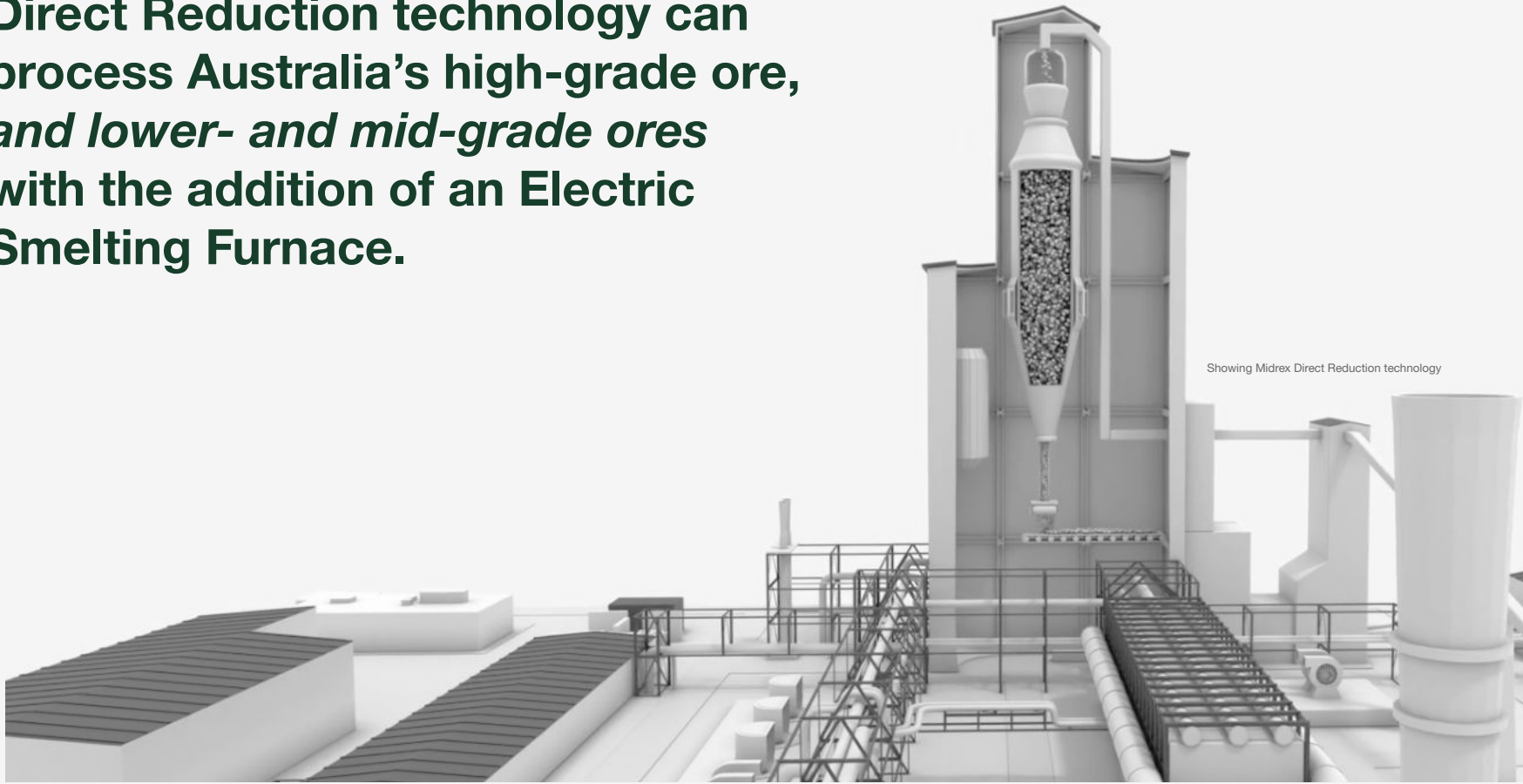
Green Steel

How can we make green iron
with *lower* and *mid-grade* ores?





Direct Reduction technology can process Australia's high-grade ore, *and lower- and mid-grade ores* with the addition of an Electric Smelting Furnace.



Showing Midrex Direct Reduction technology

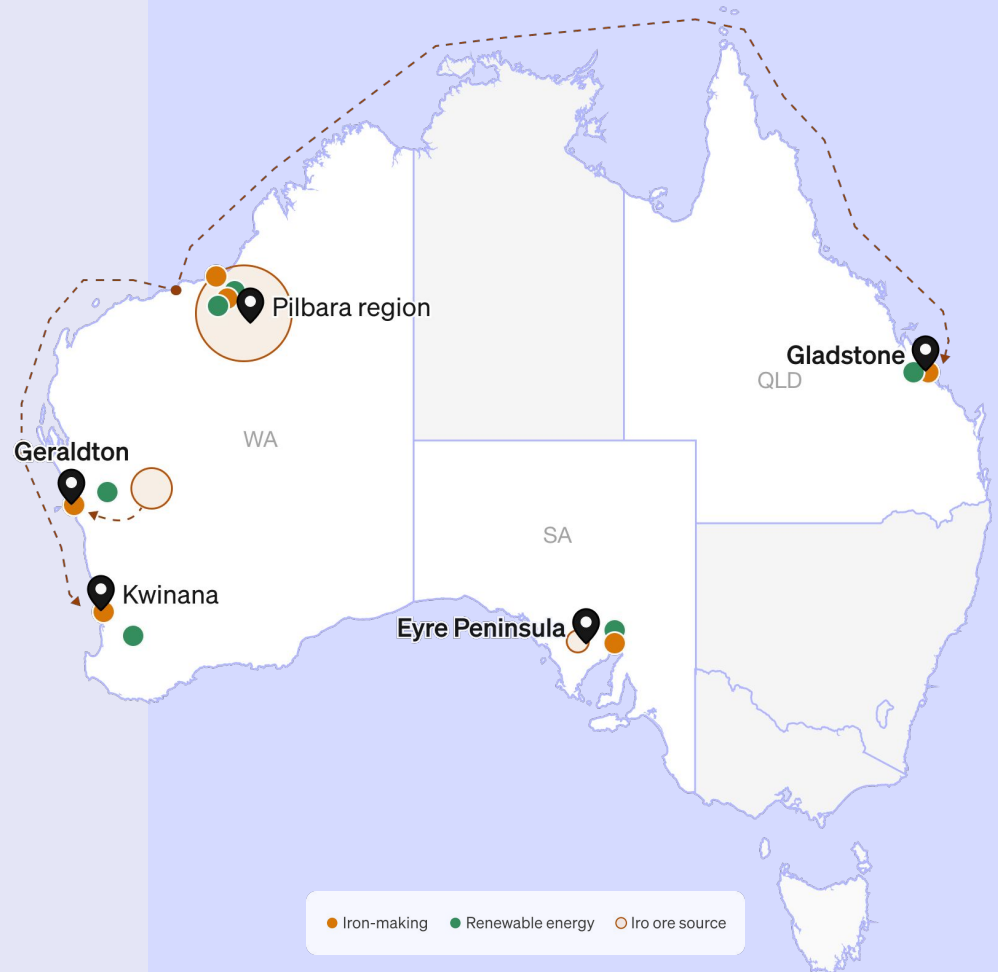
03.

Insights into an Australian green iron export industry

Modelling green iron production in Australia

Five locations, chosen for:

- Access to ore
- Access to ports
- Good renewable energy



Modelling green iron production in Australia

Five locations, chosen for:

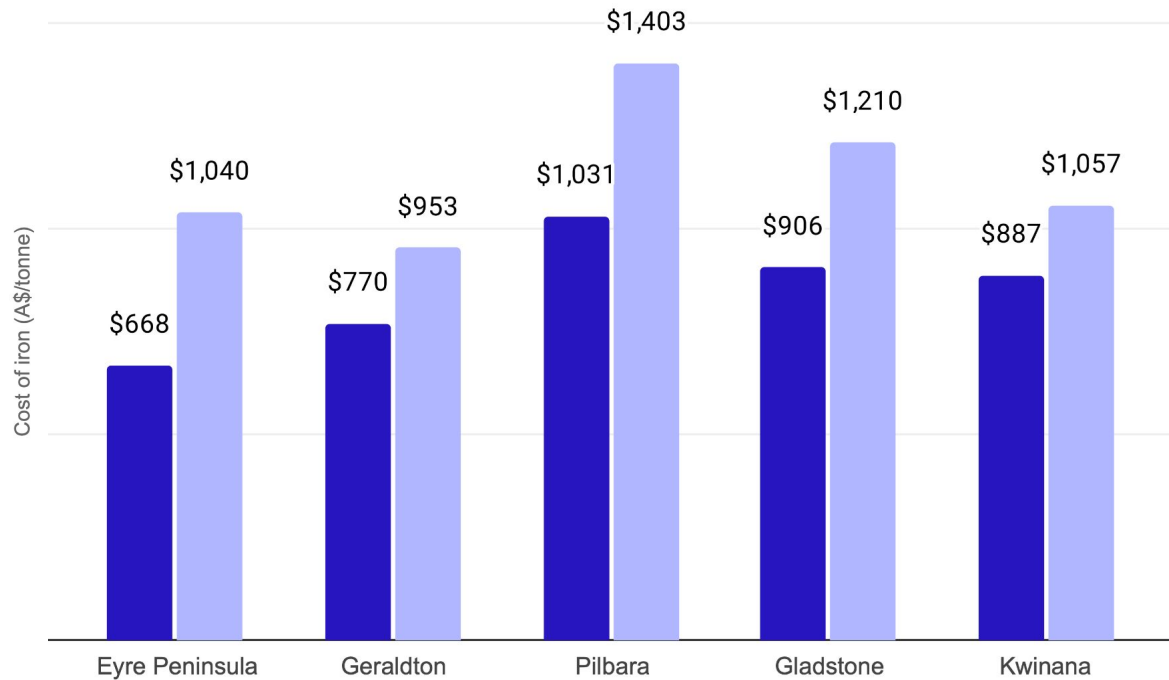
- Access to ore
- Access to ports
- Good renewable energy

Model inputs:

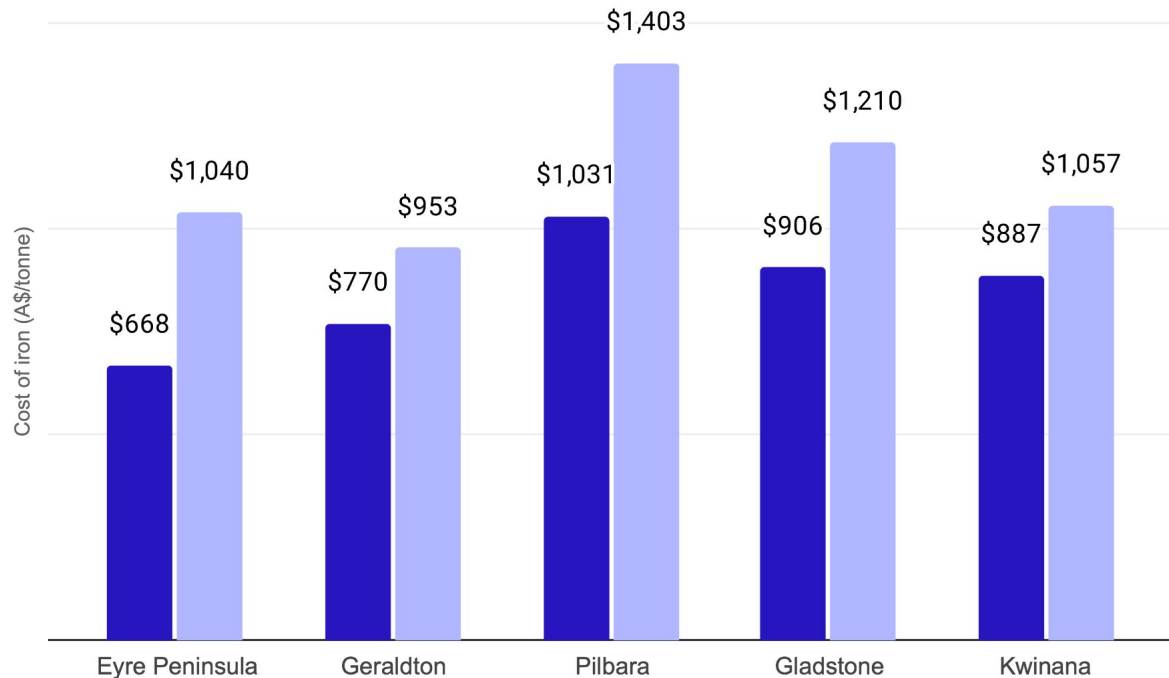
- 'Inflexible' and 'flexible' technologies
- Renewable energy capacity
- Grid connection
- Capital and operating costs



We use a dynamic optimisation model to identify the lowest-cost combinations of investments and production in each location.



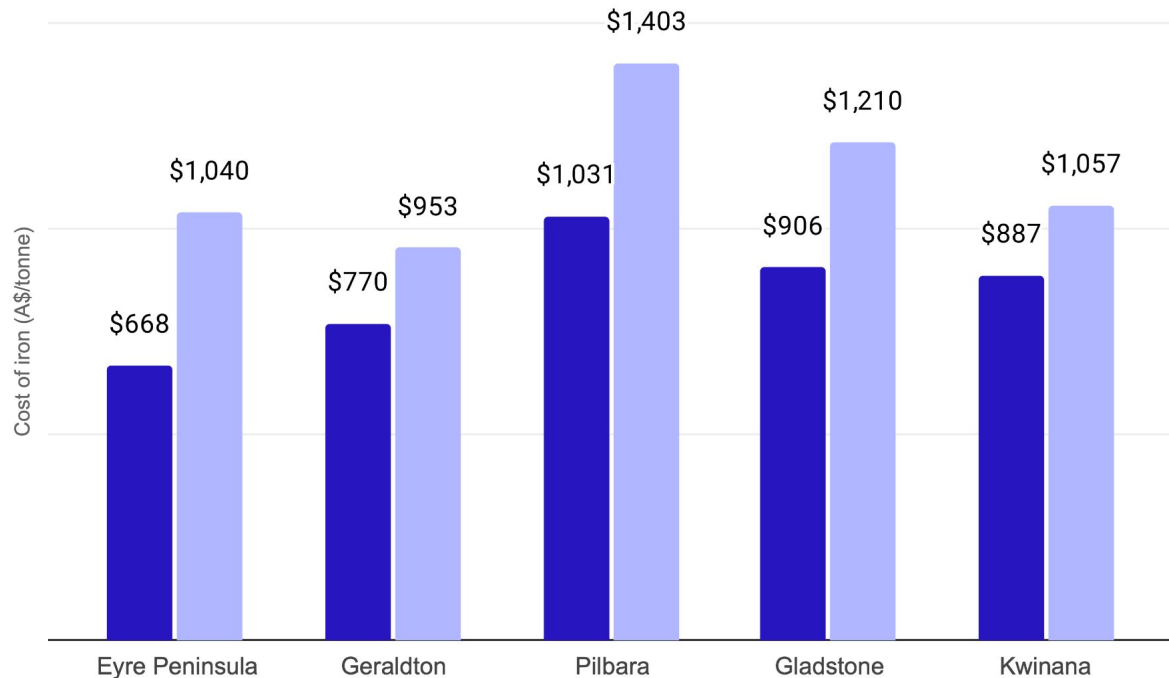
Technology flexibility matters.
The ability to ramp production will likely reduce the costs of production.



Technology flexibility matters.

The ability to ramp production will likely reduce the costs of production.

Access to an electricity market can reduce the cost of green iron.



Flexible Green HBI Inflexible Green HBI

Technology flexibility matters.

The ability to ramp production will likely reduce the costs of production.

Access to an electricity market
can reduce the cost of green iron.

Location is critical.

Existing infrastructure, ore type, renewable energy resources, and lower capital costs give some regions a cost advantage.

04.

Market failures are a barrier.
Soundly-based policies can fix them.

The market failures holding back Australian green iron

01.

Unpriced emissions from fossil fuel-based production

Green iron can't compete on a level playing field when carbon-intensive producers don't pay for their emissions.

02.

Under-provision of common-user infrastructure

Private investors won't build shared infrastructure to an efficient scale.

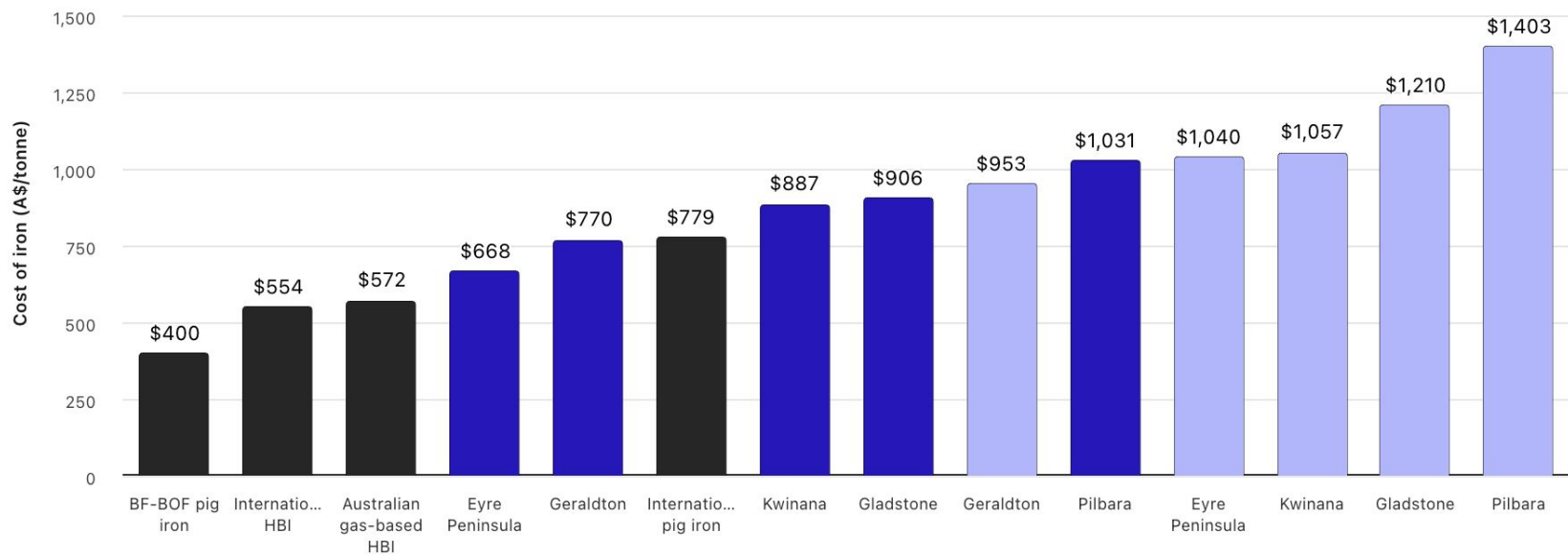
03.

Innovation spillovers and early-mover risk

Early producers bear the costs of innovation and learning, which benefits later producers.

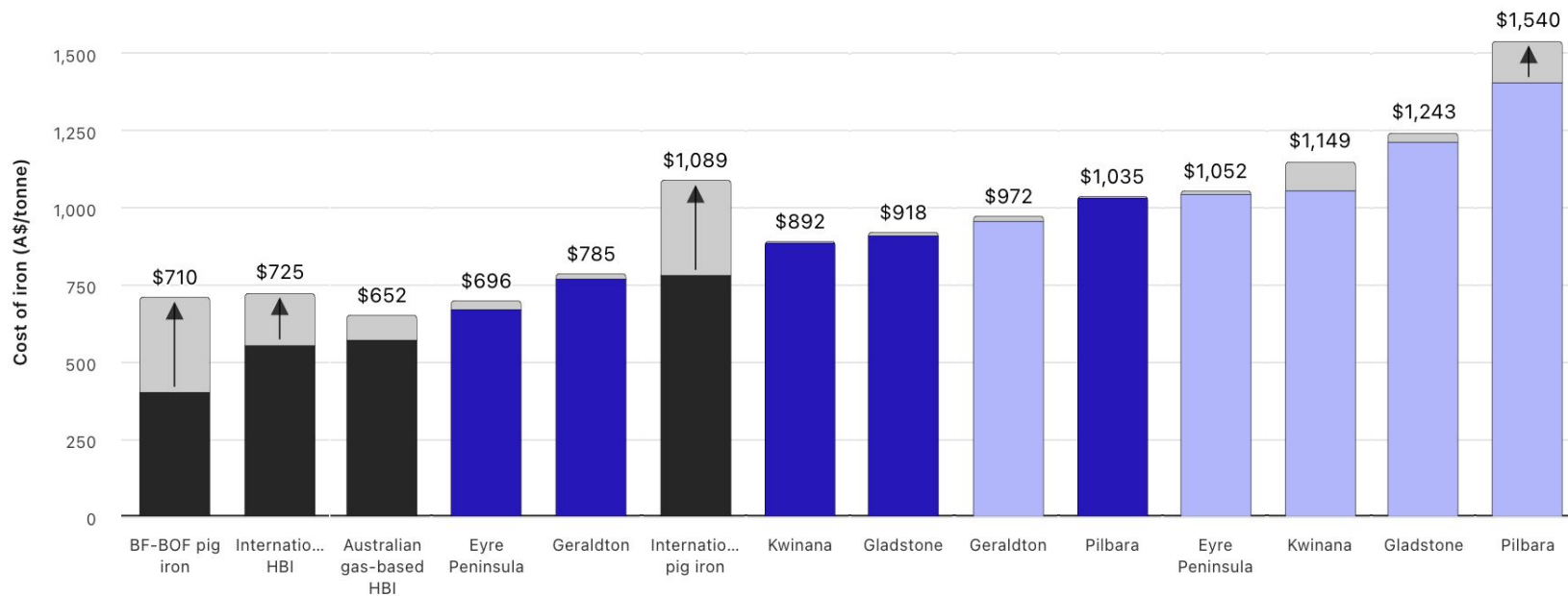
No Policy Action

Cost of green and carbon-intensive iron



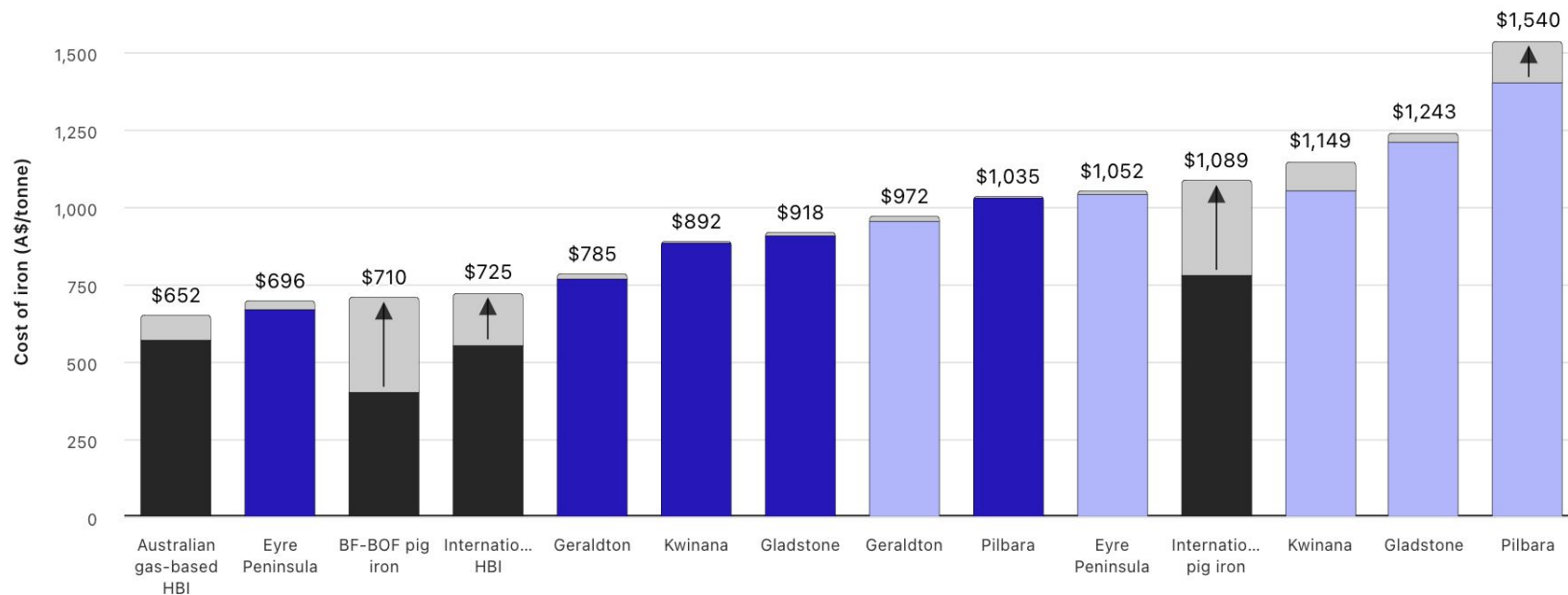
\$155/tonne carbon price

Cost of green and carbon-intensive iron



\$155/tonne carbon price (Reordered)

Cost of green and carbon-intensive iron

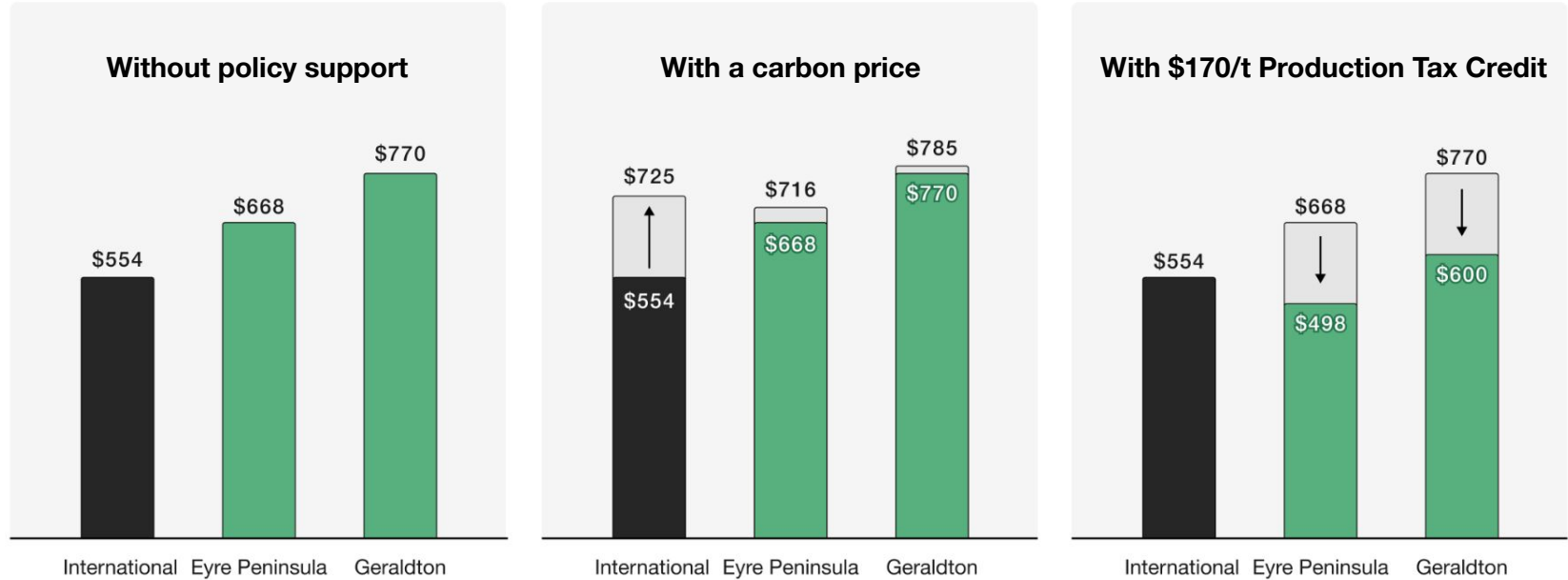


With *efficient support*, more
Australian green iron producers
would be able to compete in more
segments of the iron market.

Recommendations

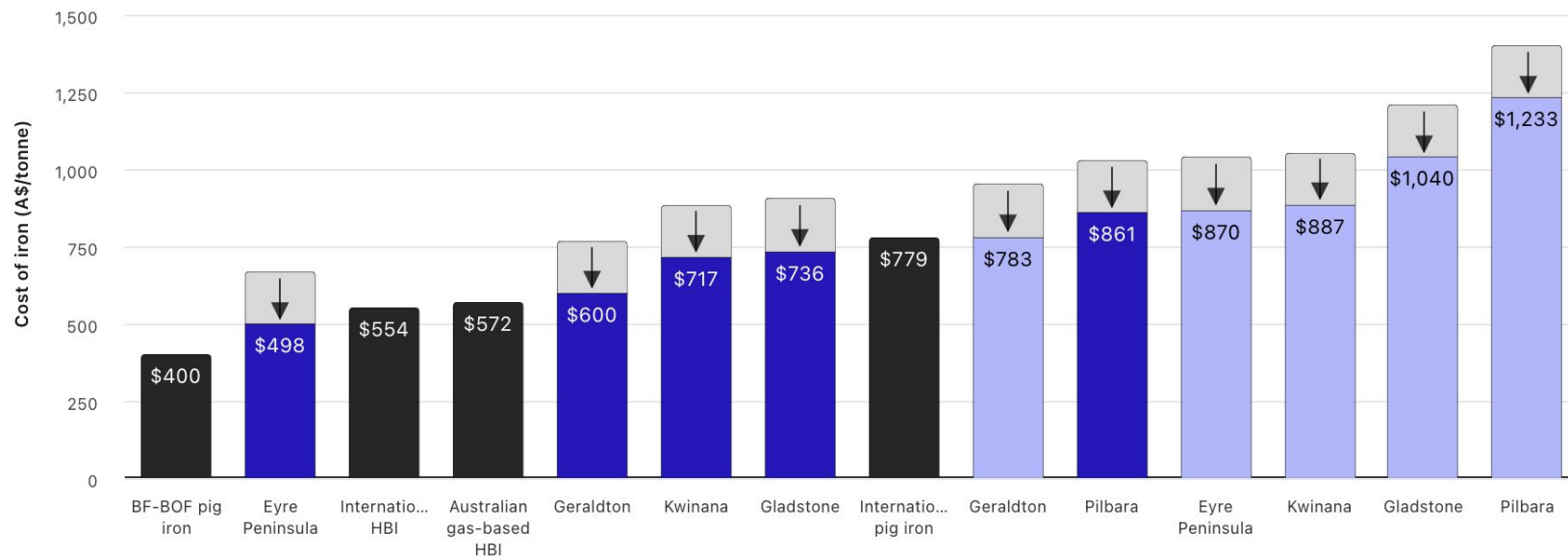
Address the missing international carbon price: \$170 PTC for green iron, inclusive of the Government's HPTI for hydrogen-based production and equivalent support for other technologies.

Cost comparison



\$170/tonne Production Tax Credit

An efficient green iron production tax credit would mean **more Australian green iron producers can compete in more segments of the iron market**



Recommendations

Address the missing international carbon price: \$170 PTC for green iron, inclusive of the Government's HPTI for hydrogen-based production and equivalent support for other technologies.

Provide capital support for early producers, worth up to 30 per cent of capital costs and capped at \$500m per project.

Support shared infrastructure to ensure it is provided at an efficient scale and to unlock private investment.

Create an Australian green hydrogen certification scheme to support green production in low-cost location.

Engage in international diplomatic efforts that create demand for Australia's green iron.

With *efficient policy supports*,
Australia can enjoy an era of *productivity
and growth* on the back of its comparative
advantage in green iron.



Thank you



Q + A