



# Fact Sheet

## “Grey iron” will never be green



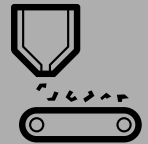
Gas is not a long-term alternative to green hydrogen for iron production in Australia



Gas-based iron is emissions-intensive, and CCUS cannot make it green



Gas is in short supply and comes at a high cost in Australia



Australia has no competitive advantage in gas-based iron production

There is growing Australian interest in the prospect of producing “green iron” for export. This could add significant value to Australia’s largest export as iron ore demand in China enters structural decline.

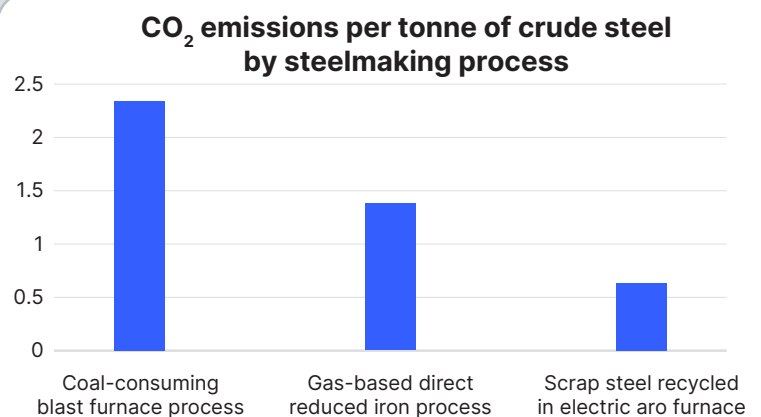
Green iron is made using green hydrogen by reducing iron ore in a direct reduced iron (DRI) process. But DRI can also run on gas – iron produced using gas can be described as “grey iron”. Green hydrogen is currently more expensive than gas, and several projects are considering using gas first, potentially locking in gas use for an undetermined period. This presents high risks for Australia.

### Gas-based iron production is emissions-intensive

Iron and steel made using gas has lower emissions than using coal, but at 1.4 tonnes of carbon dioxide (tCO<sub>2</sub>) per tonne of steel, it remains very emissions-intensive.

A fleet of Australian DRI plants running on gas would significantly increase the nation’s emissions.

You can’t make green iron with gas.



### Carbon capture, utilisation and storage (CCUS) can’t make grey iron green

- ▶ CCUS has an established track record of **underperformance and failure**.
- ▶ The world’s only commercial-scale CCUS facility for steelmaking **captures about 25%** of the plant’s emissions – the steel produced cannot be considered ‘green’.
- ▶ Technical challenges that have long plagued CCUS also drive up costs. Costs at the Gorgon CCS project have **blown out to over AU\$200/tCO<sub>2</sub>**, more than three times the theoretical cost.

READ  
MORE



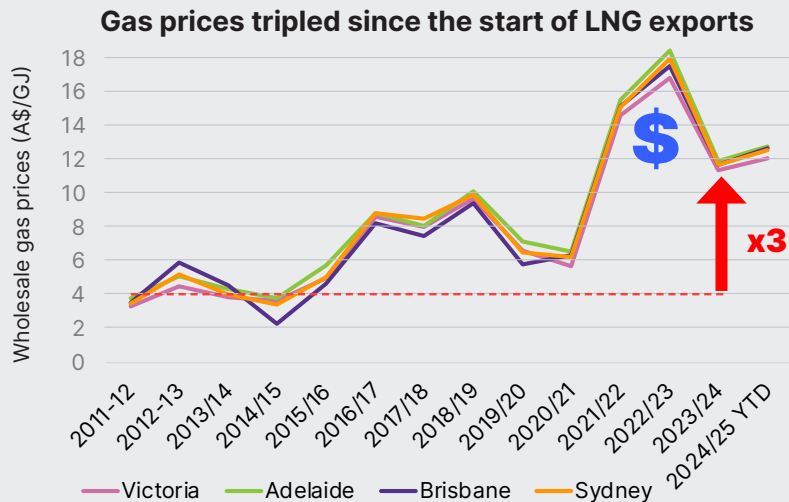
South Australia: Long-term reliance on gas for iron and steelmaking faces significant risks



Carbon capture for steel?

# Gas is in short supply and comes at a high cost in Australia

“ Operating a DRI production facility with output similar to Port Kembla Steelworks would require 30 to 40 petajoules (PJ) of natural gas per year, equivalent to seven per cent of natural gas demand on the Australian east coast in 2024...  
Bluescope



Source: Australian Energy Regular, Gas market prices; IEEFA

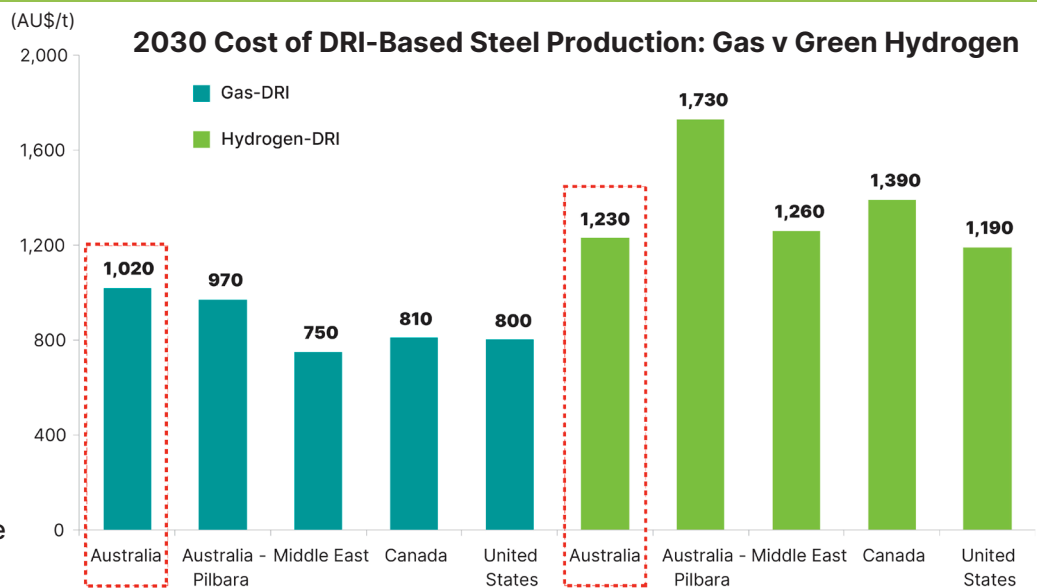
DRI uses a lot of gas, when gas shortages are forecast on both sides of Australia. A key way to prevent those shortages is reducing household and industrial demand, but gas-based DRI would be a shift in the opposite direction.

Gas is not cheap in Australia's east coast market – especially in the southern states – gas prices have already tripled in the last decade. Additional demand could exacerbate this.

## Australia's competitive advantage lies in green iron

Australia is expected to be globally competitive for the production of iron from green hydrogen, due to its vast resources of low-cost renewables.

However, the costs of producing iron from gas in Australia are expected to be significantly higher than global competitors such as the Middle East and North America.



Source: Deloitte Green Value Chain Explorer - Iron and Steel, 2024. Note: Cost of steel production comparing gas-DRI and green hydrogen-DRI in Australia (Pilbara), Australia (outside Pilbara, for example in South Australia), Canada, the USA and the Middle East. Includes raw material and energy inputs, transport, and electric arc furnace (EAF)-based steel production.

A gas-DRI lock-in risks seeing Australia miss out on the green iron export opportunity as other nations like Brazil, Canada and Oman eye running new DRI plants on green hydrogen.

In Sweden, Stegra will begin producing green iron and steel at commercial scale from next year.

Subsidies for Australian green hydrogen need to be smarter. Support should be focused on projects with a realistic end use, such as iron and steel production.

## About IEEFA

The Institute for Energy Economics and Financial Analysis (IEEFA) examines issues related to energy markets, trends and policies. The Institute's mission is to accelerate the transition to a diverse, sustainable and profitable energy economy.

[www.ieefa.org](http://www.ieefa.org)