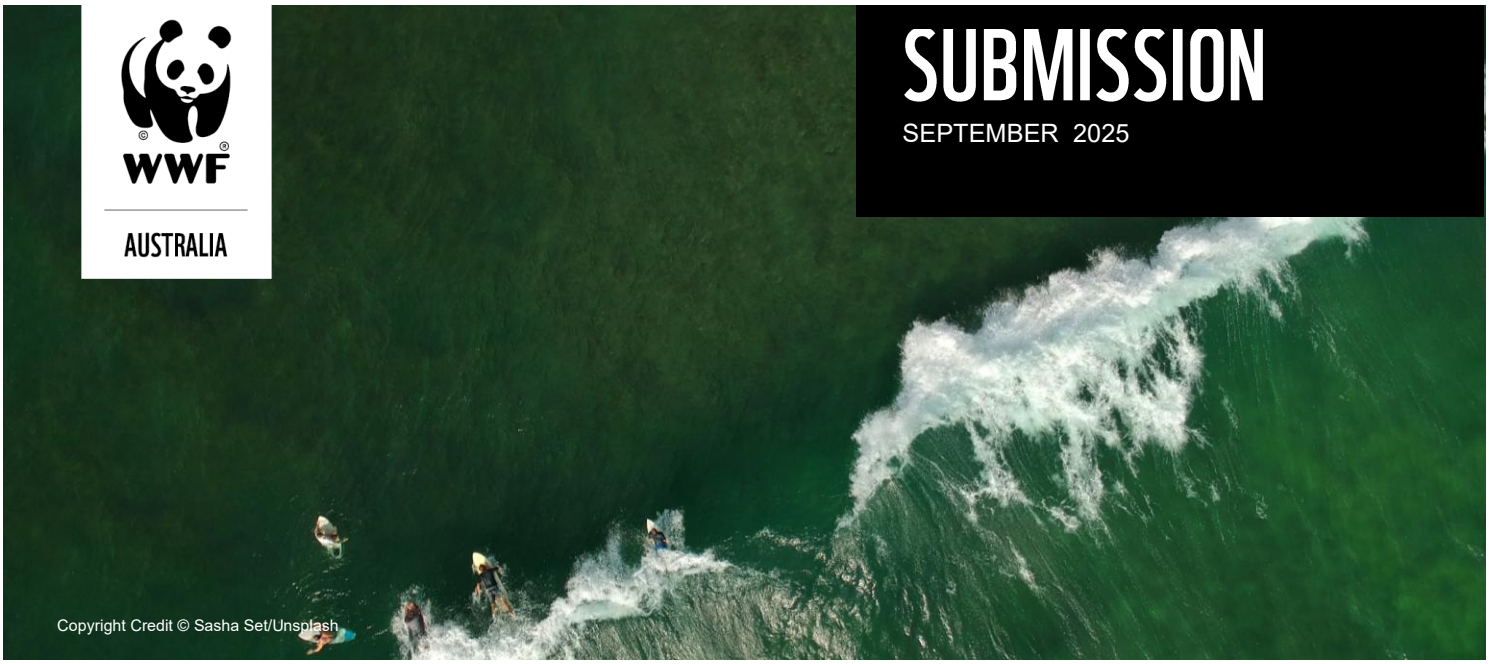

SENATE INQUIRY INTO GREENWASHING

WWF-Australia is part of the WWF International Network, the world's largest independent conservation organisation. WWF's global mission is to stop the degradation of the planet's natural environment and to build a future in which humans live in harmony with nature. WWF-Australia is one of Australia's largest and most trusted environment organisations. We work with more than two million financial and non-financial supporters to save species and protect the places we love.

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General comments

WWF-Australia welcomes this important and timely inquiry. We have substantial and longstanding concerns regarding greenwashing across a range of environmental issues. This submission focuses on the importance of establishing clear and enforceable criteria to protect the credibility and integrity of decarbonisation solutions, such as 'green' hydrogen, 'green' iron and carbon capture and storage (CCS), to:

- Achieve genuine decarbonisation, avoid lock-ins of fossil fuel use, and build public trust in climate action.
- Ensure compliance with international standards and gain access to key green trade export markets
- Provide regulatory certainty and avoid misallocation of investment capital

KEY MESSAGES

This submission highlights the urgent need for clearer definitions and verification standards around emerging climate technologies, particularly 'green' iron and carbon capture and storage (CCS).

- These terms are increasingly used in public, policy and investment discourse, yet their ambiguity risks misleading consumers, investors, and policymakers, undermining Australia's climate integrity and transition efforts.

RECOMMENDATIONS

- Develop standardised, clear definitions for green iron and hard-to-abate applications of CCS, and mandate their consistent use in all government communications, funding programs, and regulatory frameworks.
- Establish science-based emissions thresholds for key sectors and products.
- Exclude high-emission pathways from green certification schemes.
- Support independent verification of emissions intensity across supply chains, aligned with international standards
- Ensure transparency in public subsidies and investment incentives, with robust criteria for climate action alignment.
- Recognise the role that clear labelling plays in transitioning the economy to an inevitable low-carbon future.

- Unlock Australia's competitiveness in climate solutions and reduce investment risk by signalling long-term policy alignment with deep decarbonisation.

Credible standards are critical to Australia's success in the energy transition

Ambiguity in sustainability terminology, such as "green", "carbon neutral", "net zero" and "low-emissions" creates room for misleading claims and undermines Australians' confidence in genuine climate action. In the context of Australia's role in providing climate solutions for the energy transition, unclear definitions risk diluting the credibility of Australian products and services in emerging global markets. As global markets increasingly favour low-emissions products and introduce regulatory mechanisms that demand them, Australia must ensure its exports meet evolving international expectations. This makes credible claims a strategic trade and investment imperative to achieve Australia's goals of becoming a renewable energy superpower.

Clear labelling and credible standards are not just about transparency; they are foundational to market creation. Buyers and investors are critical market enablers, yet many struggle to assess the carbon footprint of available and planned products. Without definitions that reflect the end goal of deep emissions reduction, markets are delayed, and investment is deterred. Along with the 77% of Australians that are seeking stronger action on climate change[1], investors are seeking clear pathways and plans that lead to real decarbonisation, with greenwashing increasingly recognised as an investment killer. For example, a 2024 ACCR survey of investors across 34 countries found that over 80% believe green iron and steel should not involve fossil fuel-based processes[2]. In Western Australia, where fossil fuel-based processes remain prominent, there is a risk that misalignment with global decarbonisation expectations could deter future investment.

Credible definitions and standards are essential to:

- Enhance Australia's reputation as a supplier of high-integrity climate solutions and ensure market distortion does not disadvantage Australian products if competitors make similar claims without meeting the same standards
- Attract investment in clean manufacturing and infrastructure by reducing risk and unlocking genuine decarbonisation
- Enable participation in global green trade markets (e.g. EU CBAM, Asia-Pacific green corridors) and avoid penalisation of products that don't meet credible 'green' thresholds
- Signal long-term policy alignment with deep decarbonisation, giving investors confidence in Australia's transition pathway

Leaving it to the market to dictate the definition risks unintended outcomes and undermines the credibility of Australia's climate solutions. In this context, "credible" must mean a clear and uninterrupted path to the level of emissions reduction required to meet climate targets, not definitions shaped by current market constraints.

Defining green iron: a safeguard to Australia's integrity and competitive advantage

Australia is well-positioned to lead in the global shift to green iron, thanks to its abundant renewable energy resources, extensive iron ore reserves, technology innovation and emerging hydrogen industry. However, the term "green iron" is increasingly being used to describe a wide range of production pathways, some of which rely heavily on fossil fuels, Carbon Capture, Utilisation and Storage (CCS/CCUS) or low-integrity offsets[3]. Without

[1] Climate Council (2025). Available at: https://www.climatecouncil.org.au/resources/new-poll-shows-aussies-back-strong-climate-action-as-unnatural-disasters-dent-productivity/
[2] ACCR (2024). Available at: https://www.accr.org.au/research/ahead-of-the-game-investor-sentiment-on-steel-decarbonisation/
[3] WWF (2025). Available at: https://wwfint.awsassets.panda.org/downloads/wwf-toolkit-for-lower-emission-steel-procurement.pdf

clear definitions and standards, this ambiguity risks enabling greenwashing, undermining genuine decarbonisation efforts and Australia's competitive edge in green supply chains.

Credible definitions of green iron should:

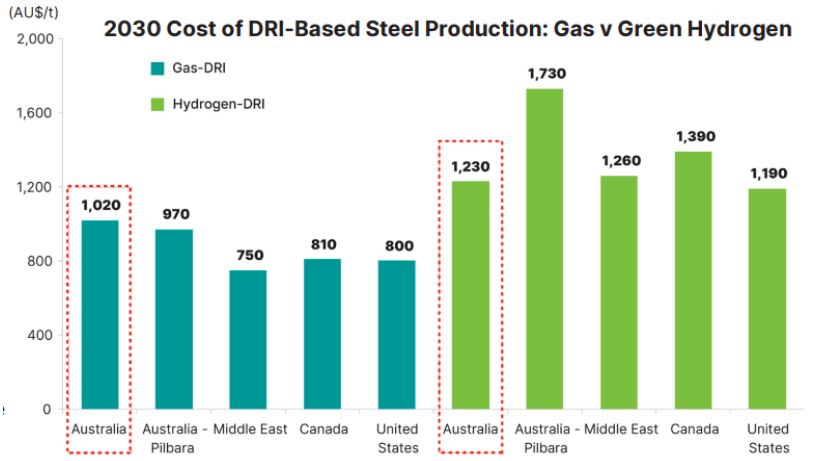
- Consider alignment with science-based targets that limit global warming to 1.5°C.
- Apply to technology pathways that demonstrate a clear and feasible route to achieving at least 90% lower emissions intensity than the current global industry average, within a timeline compatible with the Paris Agreement.
- Exclude conventional blast furnace pathways that have been shown to be incapable of achieving sufficient emissions reductions even when combined with CCS/CCUS or offsets [4] [5] [6].
- Use only renewable consumables, such as green hydrogen or sustainably sourced inputs.
- Be powered exclusively by non-biomass renewable energy sources, such as solar, wind or hydro.

Without clear parameters, the term risks being co-opted by high-emission producers seeking reputational or financial advantage without genuine decarbonisation, undermining the integrity of Australia's climate credentials.

Fossil-free iron and steel production technologies achieving over 50% emissions reductions compared to conventional methods are already commercially deployed overseas [7]. Yet in Australia, gas-powered ironmaking is sometimes positioned as a "green" solution and stepping stone for Australia to enter the green iron race[8]. While it may play a transitional role in some cases, gas-based direct reduced iron (DRI) processes proposed in South Australia and Western Australia do not meet credible definitions of green iron and will not be competitive in future low-emissions markets. Technical analysis has demonstrated that Australia's competitive advantage lies in green iron, not grey iron (see Figure 1)[9] [10]. Greenwashing gas-based DRI risks technology lock-in, which will undermine the transition to net zero and Australia's ability to compete in the global market.

[4] Bellona (2024). Net-zero Pathways for European Steel. Available at: https://network.bellona.org/content/uploads/sites/6/2025/04/Fact-Sheet-Net-Zero-Pathways-for-European-Steel.pdf
[5] Climate Action Tracker (2024). Available at: https://climateactiontracker.org/documents/1222/CAT_2024-07-09_Briefing_ParisBenchmarks_SteelSector.pdf
[6] IEEFA (2024). Available at: https://ieefa.org/sites/default/files/2024-11/BN_Steel%20CCUS%20update-%20Carbon%20capture%20technology%20looks%20ever%20less%20convincing_Nov24.pdf
[7] EnergyNews (2025). Available at: https://energynews.biz/hbis-launches-hydrogen-reduced-steel-exports-amid-eu-cbam-pressure/
[8] IEEFA (2025). Available at: https://ieefa.org/resources/australian-gas-producers-want-grey-iron-look-green
[9] WWF & Deloitte (2025). Available at: https://wwf.org.au/forging-a-greener-future-that-benefits-people-and-nature/
[10] IEEFA (2025). Available at: https://ieefa.org/sites/default/files/2025-09/IEEFA%20fact%20sheet_Grey%20iron%20will%20never%20be%20green_September%202025_0.pdf

Figure 1 - 2030 Cost of DRI-based steel production [11]



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 art furnace (EAF)-based steel production.

Countries like Sweden, Brazil, Canada, Oman and China are already investing in hydrogen-based DRI plants, while Australia risks falling behind if fossil fuel pathways are allowed to dominate.

To protect Australia's net zero ambition and export potential, it is essential that:

- Green iron is clearly defined in legislation, certification schemes, and integrated into national and international schemes to ensure consistent emissions accounting and transparency
- Emissions thresholds are established for iron and steel production, that require progressive decarbonisation over time
- Fossil fuel-based pathways are excluded from 'green' labelling
- Language used in marketing and policy reflects the true climate impact of production methods

Robust standards will ensure that Australia's green iron industry is built on integrity, supporting genuine decarbonisation, attracting investment, and securing Australia's place in the global clean economy.

The limitations of Carbon Capture and Storage

Carbon Capture and Storage (CCS) refers to a broad suite of technologies and processes aimed at capturing and storing carbon dioxide emissions. While CCS is not new and has had a long history of development and underperformance in the oil and gas sectors[12], it is recently being proposed as a tool to address climate change. CCS must not be misrepresented as a broad-scale climate solution. Global analyses caution that while CCS may have a narrow and conditional role in certain hard-to-abate sectors, it is being promoted to prolong oil and gas production[13][14]. Projects often fall outside the scope of credible climate pathways outlined by the Intergovernmental Panel on Climate Change (IPCC) and the International Energy Agency (IEA), adopting these processes risks undermining Australia's climate integrity and clean export ambitions. Notably, CCS forecasts in both IPCC and IEA scenarios have been revised downward over time, reflecting growing recognition of its technical, economic and deployment limitations[15]. CCS' role in the transition to net zero must be carefully defined and limited.

[11] WWF & Deloitte (2025). Available at: https://wwf.org.au/forging-a-greener-future-that-benefits-people-and-nature/
[12] IEEFA (2024). Available at: https://ieefa.org/sites/default/files/2024-04/Carbon%20capture%20for%20steel-April24.pdf
[13] Center for International Environmental Law - CIEL (2024). Available at: https://www.ciel.org/reports/deep-trouble-the-risks-of-offshore-carbon-capture-and-storage-november-2023/
[14] Tyndall Manchester (2021). Available at: https://foe.scot/wp-content/uploads/2021/01/CCS_REPORT_FINAL.pdf
[15] IEEFA (2024). Available at: https://ieefa.org/resources/ccs-hype-and-hopes-sinking-fast

Across state and federal governments there are many differing definitions of hard-to-abate applications of CCS, often framed as necessary for emissions reductions. The Commonwealth DCCEEW does not explicitly define 'hard-to-abate' yet references examples including broad industries with high heat applications, agriculture, transport and chemical processing[16]. Similarly, Geoscience Australia has a much broader definition and includes natural gas processing and blue hydrogen production[17]. Several government programs are funding CCS projects with references to emissions reductions but are not restricting CCS to hard-to-abate, or do not trace the origin of the carbon captured and whether that meets a robust definition of hard-to-abate[18]. The proposed offshore guidance on CCS under the *Environment Protection (Sea Dumping) Act 1981* refers to hard-to-abate CCS but does not provide a framework to assess the origin of the carbon being proposed for storage in offshore waters. Similarly, the Carbon Capture and Storage methodology under the Emissions Reduction Fund does not explicitly refer, nor constrain, to hard-to-abate applications and therefore allows for offsets to be generated for fossil fuel processing[19].

CCS could play a narrow and conditional role in supporting the transition away from fossil fuel dependency, but only if it is very clearly defined and implemented under strict sustainability criteria and in applications for which its efficacy has been demonstrated[20]. CCS is not a single technology, different applications and processes have differing environmental and social risk profiles, and varying potential to address emissions reductions. In cases where no other viable emissions reduction option exists, CCS may serve as a temporary bridging solution in hard-to-abate sectors. However, defining what is 'hard-to-abate' must be subject to ongoing monitoring and evaluation, informed by the emergence of alternative technologies and broader environmental considerations.

Currently this would apply to chemical/metallurgical industrial processes such as cement and lime production and in some instances waste incineration. CCS should not be prioritised over other proven approaches such as electrification, energy efficiency and renewable energy. Instead, it may be considered as a last-resort option, applied on a case-by-case basis for specific niche applications and only where it does not compromise the global shift to renewable energy.

The risks of misrepresenting CCS as a climate solution are significant. According to analysis from the Institute for Energy Economics and Financial Analysis (IEEFA), underperforming CCS projects considerably outnumber successful ones globally, with only a handful operating close to their design capacity[21]. The report found that around 80–90% of captured carbon in the gas sector is used for enhanced oil recovery (EOR), a process that leads to further emissions. CCS and Carbon Capture, Utilisation and Storage (CCUS) is complex. The success rate is highly dependent on the process to which it is applied and particularly limited in their application to steelmaking. Importantly, major technology providers in the steel industry, such as MIDREX, have stated that CCS/CCUS has limited potential in the steel industry, noting that *"Despite being promoted as a decarbonisation tool for heavy industry, CCS has delivered limited success in practice."*[22]

In Australia, CCS is sometimes promoted as a pathway to green iron, particularly by stakeholders with interests in gas-related infrastructure[23] [24]. However, as stated in the sections above, multiple analyses caution that CCS has a poor track record in steelmaking and could divert investment away from proven low-emissions pathways, such

[16] https://www.dcceew.gov.au/climate-change/emissions-reduction/carbon-management-technologies
[17] https://www.ga.gov.au/aecr2024/carbon-capture-and-storage
[18] https://business.gov.au/grants-and-programs/carbon-capture-use-and-storage-development-fund
[19] https://consult.dcceew.gov.au/carbon-capture-and-storage-method
[20] WWF (2025). Available at: https://wwfint.awsassets.panda.org/downloads/ffpo_ndc_english.pdf
[21] IEEFA (2022). Available at: https://ieefa.org/articles/carbon-capture-decarbonisation-pipe-dream
[22] Midrex (2025). Available at: https://www.midrex.com/story/is-ccs-a-solution-for-iron-and-steel-only-in-the-right-conditions
[23] Santos (2024). Available at: https://www.santos.com/news/santos-signs-mou-to-support-green-steel-transformation-of-whyalla-steelworks-in-south-australia/
[24] Woodside (2025). Available at: https://www.woodside.com/what-we-do/new-energy/lower-carbon-services/neosmelt-project

as hydrogen-based direct reduced iron (DRI), which are critical for Australia's global competitiveness in iron making (see Figure 1)[25].

Recommendations

To ensure the responsible adoption of climate solutions, the following key actions should be prioritised:

1. Develop standardised, clear definitions for green iron and hard-to-abate applications of CCS, and mandate their consistent use in all government communications, funding programs, and regulatory frameworks.
2. Establish science-based emissions thresholds for key sectors and products.
3. Exclude high-emission pathways from green certification schemes.
4. Support independent verification of emissions intensity across supply chains, aligned with international standards like the Steel Standards Principles.
5. Ensure transparency in public subsidies and investment incentives, with robust criteria for climate action alignment.
6. Recognise the role that clear labelling plays in transitioning the economy to an inevitable low-carbon future.
7. Establish a clear definition of 'hard-to-abate' sectors, excluding fossil fuel generation and processing, informed by international climate pathways (e.g. IPCC, IEA), and subject to regular review based on technological progress and environmental criteria. This will prevent the misuse of CCS as a blanket solution and ensure its application is limited to genuinely necessary contexts.

While this submission highlights green iron and CCS as key examples, these recommendations apply similarly to other abatement technologies such as green cement, aluminium, ammonia, hydrogen, etc.

A future made *with* Australia

Australia has an opportunity to lead in high-integrity climate solutions for the net zero transition. A successful transition is not a zero-sum game, and it is not a simple quick fix. Australians, along with our key Asia-Pacific trading partners, must be assured that the transformation is a collaborative and mutually beneficial process, undertaken with them, not imposed upon them.

In this context, the integrity of environmental and sustainability claims is paramount. Greenwashing undermines trust, distorts markets, misallocates capital, and risks alienating the very communities and partners we seek to bring along in the transition. Done right, credible climate solutions can strengthen Australia's economic competitiveness, create good jobs, and enhance energy security both nationally and regionally.

Australia has the technical expertise, culture of innovation, and abundant renewable energy resources needed to power a fast, ecologically sound, and socially just energy transition. To realise this potential, we must ensure that our climate solutions, particularly those underpinning clean exports such as green hydrogen, green iron, and low-carbon fuels, are backed by robust definitions, transparent standards, and science-based emissions thresholds. This inquiry is a critical step toward restoring clarity in our climate transition. By embedding climate integrity and credibility into our industrial policy, we can support communities, neighbouring countries, and economies to adapt and build resilience to the unavoidable impacts of climate change.

[25] IEEFA (2025). Available at: https://ieefa.org/resources/carbon-capture-delusion-risks-diverting-south-australia-green-iron-and-steel

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