



26 July 2024

Committee Secretary
Senate Standing Committee on Economics
Parliament House
Canberra ACT 2600

**SUBMISSION ON THE FUTURE MADE IN AUSTRALIA BILL 2024 [PROVISIONS] AND THE FUTURE
MADE IN AUSTRALIA (OMNIBUS AMENDMENTS NO. 1) BILL 2024 [PROVISIONS]**

Dear Committee Members,

Hysata welcomes the opportunity to make a submission to the Senate Economics Legislation Committee in support of the *Future Made in Australia Bill 2024* (FMIA Bill).

Our submission seeks to provide strategic and constructive recommendations to the Committee to further improve the FMIA Bill. We seek to ensure that the Australian Government's Future Made in Australia agenda captures a large share of the economic and social value afforded by a future green hydrogen and clean energy manufacturing sector.

We are the proud inventors of the world's most efficient hydrogen electrolyser which will deliver lowest-cost green hydrogen. Starting as researchers at the University of Wollongong, we are now validating and commercialising this homegrown innovation and building our first production line in Port Kembla.

We are dedicated to building a sustainable future for clean energy manufacturing in the Illawarra, having already created approximately 100 high-tech jobs, with plans to scale manufacturing and create hundreds more in the future. With capacity reservations and conditional orders from global blue-chip customers in hard-to-abate sectors such as steel production, this Australian invention is positioned to become a leader in the field.

Australia stands to establish itself as an important manufacturer of electrolysers globally, leveraging breakthrough technology to redefine the economics of green hydrogen. For Australia to realise the social and economic benefits of renewable hydrogen, green metals, low carbon liquid fuels and clean energy manufacturing – all of which are priority sectors under the proposed National Interest Framework – it will require a mix of urgent public policy and private capital support to commercialise our know-how and strengthen local supply chains.

As the only Australian-invented electrolyser manufacturer, Hysata is strongly aligned with the objectives of the FMIA Bill, notably by:

- Leveraging A\$30 million in foundational government support, through ARENA and the CEFC, to unlock over A\$220 million in private and international capital for technology development and manufacturing in the Illawarra;



- Maximising the economic benefit of the energy transition for Australia through sustained investment in regional economies, including creating high-skilled clean jobs in an emissions intensive region;
- Commercialising highly differentiated, innovative Australian technology backed by a pipeline of global green hydrogen customers in the hard-to-abate sectors such as steel, chemicals, and energy export; and
- Strengthening domestic supply chains for renewable hydrogen, low carbon liquid fuels, and green metals – three of the five priority sectors of the National Interest Framework – by committing to manufacture electrolyzers in the Illawarra.

The Hydrogen Production Tax Incentive announced in the Budget assumes that Australia is likely to produce at least 3.3 million tonnes of green hydrogen by 2040¹. To support that demand, Australia will need approximately 4 GW of electrolyzers by 2035.² In AEMO’s green energy export scenario – which accounts for export of green hydrogen as ammonia and green steel production – this forecast rises to about 23 GW of electrolyzers.^{3,4}

In simple terms, the Australian Government is planning for at least 800 and up to 4,600 electrolyser units to be operational in the next 10 years⁵. Based on the concentration of the electrolyser supply chain today, Australia will procure nearly all these overseas.⁶

To deliver enduring social and economic value from the energy transition, the FMIA Bill needs to enable commercialisation of Australian technology and build stronger local supply chains. To quote Prime Minister Anthony Albanese,

“Australia should not be the last link in a global supply chain built on an Australian invention.”

Media Release, March 28, 2024

To avoid establishing an industry devoid of Australian invention, Hysata recommends the following clarifications in the FMIA Bill:

1. Include cornerstone technologies like hydrogen electrolyzers within the “clean energy manufacturing” priority sector of the “economic resilience and security stream” under the National Interest Framework. The FMIA Bill Explanatory Memorandum makes specific mention of solar and battery manufacturing but makes no reference to the value of domestic electrolyser manufacturing.

¹ The Federal Budget estimates A\$6.7B in tax credits provided by 2040 at A\$2/kg H₂, totalling 3.3 million tonnes

² An average of A\$1.1B (550,000t H₂) per year for the Hydrogen Production Tax Incentive is budgeted for FY 2034-35. Assumes an electrolyser efficiency of 47.6kWh/kg H₂ based on AEMO’s 2024 ISP estimates.

³ Australian Energy Market Operator (AEMO) 2023, *2023 IASR Assumptions Workbook*, AEMO, viewed 24 July 2024, <https://aemo.com.au/energy-systems/major-publications/integrated-system-plan-isp/2024-integrated-system-plan-isp/current-inputs-assumptions-and-scenarios>

⁴ Uses AEMO’s hydrogen demand forecast for 2035-36 and forecast electrolyser efficiency of 47.6kWh/kg H₂

⁵ Assuming each electrolyser module is 5 MW

⁶ Assuming an electrolyser price of A\$750/kW by 2035. A\$3B for 4 GW, \$17.25 B for 23 GW



2. Provide direct domestic manufacturing support for electrolysers, initially through grants to support emerging technologies become commercial and bankable, and later through highly concessional finance mechanisms to support rapid scale-up.
3. Incentivise proportional use of domestically developed or manufactured goods in Australian clean energy and manufacturing projects that benefit from government policies, notably production tax incentives for hydrogen, green metals, and low carbon liquid fuels.

Specific Comments on Key Provisions of the Bill

A National Interest Framework

Hysata is supportive of a National Interest Framework, including the intention to establish two streams. Hysata is particularly supportive of the inclusion of protected intellectual property as a comparative advantage, as well as the inclusion of global emissions within the definition of emissions reduction. These inclusions incentivise the commercialisation of Australian R&D and support value-add industries like green steel. Furthermore, we welcome the recognition of over-concentration in supply chains and the need for diversification.

Sector assessments

Hysata is supportive of the sector assessment process. We would recommend that electrolyser manufacturing be assessed within the clean energy manufacturing or the renewable hydrogen sector for support through the FMIA Bill.

The Australian Government has already taken steps to strengthen supply chains in areas such as solar manufacturing and critical mineral processing⁷. The Government has also recognised new industries of strategic national importance such as quantum computing. Electrolysers, however, have not received this recognition despite being the cornerstone technology needed to produce green hydrogen. Hysata urges the Government to use the FMIA Bill to recognise that electrolyser manufacturing is becoming an increasingly concentrated sector, but there is an opportunity to ensure Australia is home to the world's best technology and be a low-cost producer of hydrogen.

The geographical concentration of the electrolyser manufacturing capacity is following the trend of the solar cell supply chain. In 2010, China accounted for 59% of solar cell manufacturing capacity, rising to 64% by 2015, and 85% by 2021⁸. Meanwhile, in the electrolyser industry, China accounted for 44% of global manufacturing capacity in 2021 and rose to 68% by 2023⁹. However, unlike the solar supply chain, almost all of China's capacity is committed to inferior technology⁹ largely unchanged since the 1950s, unlike Hysata's.

⁷ Notably through the A\$1B Solar Sunshot program and A\$4B Critical Minerals Facility

⁸ International Energy Agency (IEA) 2023, *Special report on solar PV global supply chains*, IEA, p. 18, viewed 24 July 2024, <https://iea.blob.core.windows.net/assets/d2ee601d-6b1a-4cd2-a0e8-db02dc64332c/SpecialReportonSolarPVGlobalSupplyChains.pdf>

⁹ BloombergNEF 2024, *Electrolyzer Manufacturing 2024: Too Many Fish in a Tiny Pond*
95% of China's stack assembly is for low-efficiency alkaline technology.



To address this concentration of manufacturing, other countries are setting their own clean energy domestic content requirements¹⁰ and providing dedicated electrolyser manufacturing support. In the case of electrolysers, manufacturers in Europe, the US, and Asia are consistently receiving levels of grants¹¹, loans¹², and subsidies¹³ unavailable in Australia.

Without a mechanism to incentivise Australian hydrogen projects to use domestic supply chains, developers will be more likely to use international suppliers who have benefited from substantial government subsidies to drive down costs.

Electrolyser manufacturing presents a unique opportunity to support Australian regions impacted by the energy transition. The recent surge in electrolyser manufacturing in the US underscores the economic value of this sector to national and regional economies.

Since 2018, approximately A\$2.5 billion in electrolyser manufacturing projects have been announced in the US¹⁴ supported by A\$710 million in public funding. This investment has resulted in a 2.8:1 ratio of private to public investment and the creation of more than 3,000 jobs.¹⁵ Across US clean manufacturing, in FY2023, public investment incentivised a fivefold level of private investment.^{16,17} This highlights the substantial social and economic benefits that a robust electrolyser manufacturing industry can bring to Australia and should be reflected in the FMIA Bill.

Community benefit principles

Hysata is supportive of the community benefit principles listed under the FMIA Bill as they can be effective tools for growth in Australian supply chains. Hysata would support expanding these benefits to make value creation across the domestic supply chain, particularly in innovative and domestically developed or manufactured goods, a priority.

¹⁰ See Taiwan's Industrial Relevance Program for Offshore Wind, and the US' 48E IRA tax bonus.

¹¹ US Department of Energy 2024, *Applicant self-disclosed 48C projects*, viewed 24 July 2024, <https://www.energy.gov/mesc/applicant-self-disclosed-48c-projects>

¹² US Department of Energy 2024, *LPO announces conditional commitment to Plug Power to produce and liquify clean hydrogen*, viewed 24 July 2024, <https://www.energy.gov/lpo/articles/lpo-announces-conditional-commitment-plug-power-produce-and-liquify-clean-hydrogen>

¹³ Hydrogen Insight 2024, *India's second electrolyser manufacturing auction oversubscribed with bids for nearly double the cap*, viewed 24 July 2024, <https://www.hydrogeninsight.com/electrolysers/indias-second-electrolyser-manufacturing-auction-oversubscribed-with-bids-for-nearly-double-the-cap/2-1-1676342>

¹⁴ Rhodium Group & MIT CEEPR 2024, *Clean Investment Monitor*, viewed 24 July 2024, <https://www.cleaninvestmentmonitor.org/database>

¹⁵ Based on media releases

¹⁶ Rhodium Group & MIT CEEPR 2024, *Clean Investment Monitor: Q4 2023 Update*, Clean Investment Monitor, p. 11, Figure 7, viewed 24 July 2024, <https://www.cleaninvestmentmonitor.org/reports/clean-investment-monitor-q4-2023-update>

¹⁷ Rhodium Group & MIT CEEPR 2024, *Clean Investment Monitor, Actual Manufacturing Investment by Technology*, viewed 24 July 2024, <https://www.cleaninvestmentmonitor.org/database>



Future Made in Australia plans

Hysata is supportive of requiring recipients to provide a Future Made in Australia Plan, particularly the need to outline how recipients would support community benefits. Hysata would support requiring these plans to outline how recipients are using domestically manufactured goods.

Future Made in Australia supports

Hysata is supportive of the definition of Future Made in Australia support, particularly the Bill's allowance of grants, loans, and tax incentives. Hysata would welcome the tax incentive mechanism be expanded to target the expansion of manufacturing facilities for key pieces of clean energy equipment, like the United States' 48C tax credit, and for domestic content bonuses to be included in already announced programs like the Hydrogen Production Tax Incentive.

Delivering on the broader Future Made in Australia agenda

Hysata supports the expansion of Export Finance Australia's remit to support domestically focused investments. This expansion will help to ensure that companies are able to source financial support as they reach a meaningful scale and unlock export revenue for Australia. Hysata also supports the amendments to the ARENA Act, which will improve its ability to administer the Innovation Fund.

Background on Hysata

Hysata is the most advanced Australian-born electrolyser manufacturer, poised to become the world-leading electrolyser manufacturer. We are headquartered in Port Kembla, New South Wales and are commercialising the world's most efficient electrolyser, achieving a system efficiency of 95% (41.5 kWh/kg) in converting electricity (kWh) to hydrogen. This compares with a maximum efficiency of approximately 75% for incumbent technology. Our innovative technology also exceeds the International Renewable Energy Agency's 2050 electrolyser efficiency target.¹⁸

Our technology will deliver lowest cost green hydrogen. 95% efficiency saves hydrogen producers on their electricity costs, and our modularised design uses easily available materials, which can be installed rapidly to further lower total installed costs.

Following a highly successful Series B capital raise of A\$172 million¹⁹ that included investment from the largest brands across energy (bp, Vestas) and steel (POSCO), we are currently scaling up our manufacturing capacity in Port Kembla, New South Wales, commencing with a 100 MW production line.

The 100 MW line will produce electrolysers to deliver early commercial units as part of our capacity reservations and conditional orders pipeline. These agreements are targeted for use in hard-to-abate sectors where green hydrogen presents a huge decarbonisation and commercial opportunity.

¹⁸ International Renewable Energy Agency (IRENA) 2020, *Green hydrogen cost reduction: Scaling up electrolysers to meet the 1.5°C climate goal*, IRENA, p. 65, Table 6, viewed 24 July 2024, https://www.irena.org/-/media/Files/IRENA/Agency/Publication/2020/Dec/IRENA_Green_hydrogen_cost_2020.pdf

¹⁹ Hysata 2024, *Hysata announces \$111M USD Series B investment round*, viewed 24 July 2024, <https://hysata.com/news/hysata-announces-111m-usd-series-b-investment-round/>



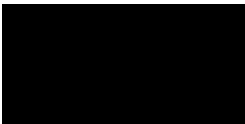
These are sectors such as steel, chemicals, and low carbon liquid fuels and ammonia export – all where Australia has the chance to be a globally competitive “electro-state.”

This production line will help us be “bankable” to investors and customers and serve as a blueprint for future giga-factories, i.e. those that can produce more than 1 GW of electrolyzers annually.

Within three years, Hysata has created about 100 high-tech, highly paid, direct jobs, most of which are based in the Illawarra; and sourced approximately \$20 million in goods and services locally. We forecast employing over 600 full-time employees by 2028, with hundreds more indirectly created in the manufacturing supply chain.

In conclusion, Hysata is grateful for the opportunity to comment on the FMIA Bill and is available to clarify or discuss our recommendations with the Committee.

Sincerely,



Paul Barrett

CEO

Hysata