Pre-Budget Submission

Australian Hydrogen Council

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Submission to the Australian Government

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AUSTRALIAN HYDROGEN COUNCIL

Contents

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About the Australian Hydrogen Council

The Australian Hydrogen Council is the peak body for the hydrogen industry, with 47 members from across the hydrogen value chain.

Our members are at the forefront of Australia's hydrogen industry, developing the technology, skills and partnerships necessary to build Australia's hydrogen economy.

The importance of the hydrogen economy

The hydrogen industry has enormous potential to benefit Australia, through new export markets, decarbonising the economy and supporting energy security. Hydrogen also enables energy to flow between the electricity, gas and transport systems. This sector coupling capability makes hydrogen incredibly valuable.

Work for the National Hydrogen Strategy (NHS) estimated potential benefits to Australia could be as high as $26 billion a year in additional GDP and 16,900 new jobs by 2050.[1]

Australia is particularly well-positioned to play a key role in the hydrogen export market with its abundant renewable resources, existing bilateral trade relationships with Japan, Korea and China and low sovereign risk.

However, the window of opportunity will not exist forever. Competing hydrogen producers across the globe seek a share of the export pie and are scaling up hydrogen production in their respective countries to supply the Japan, Korea and China markets as soon as 2025.[2] These competitors include Brunei, Qatar, UAE and Norway, and in the longer-term, market entrants such as the United States, Brazil, Chile and New Zealand.

Many of these countries enjoy the inherent strengths that Australia has for hydrogen production, including abundant renewable resources, access to low-cost gas for blue hydrogen production, depleted oil wells that can be utilised for carbon capture and storage, large areas of land for solar installations, and proximity to key hydrogen export markets.

A major focus of the NHS is the need for the emerging Australian industry to achieve scale because projects to produce and deliver hydrogen are not yet commercially viable.

Since the development of the NHS, it has become apparent that the speed of industry development is accelerating faster than anticipated (particularly for exports). Asian customers are looking for product as early as mid-2020s and states like Western Australia have bought forward their hydrogen plans by years.

Getting to scale is also a focus of the Australian Hydrogen Council. Industry requires governments as partners to share risk and commercialise projects to scale. We need to bring down the cost of hydrogen so that it can more effectively compete with existing carbon-emitting (and often subsidised) energy/fuel sources.

A real opportunity exists to build on the success of the renewables revolution in Australia and channel funding towards developing a hydrogen industry.

The 57 actions in the NHS have been endorsed by the Australian Government and each state and territory. The challenge is now to flesh out the detail of the NHS and take action to implement the actions.

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[1] Deloitte (2019) *Australian and global hydrogen demand growth scenario analysis*; COAG Energy Council – National Hydrogen Strategy Taskforce, November, p 1, http://www.coagenergycouncil.gov.au/sites/prod.energycouncil/files/publications/documents/nhs-australian-and-global-hydrogen-demand-growth-scenario-analysis-report-2019_1.pdf

[2] ACIL Allen consulting (for ARENA) (2018), *Opportunities for Australia from Hydrogen Exports*, page 15.

Given the economic downturn associated with the 2019/20 bushfire season and COVID-19 crisis, investing in hydrogen infrastructure projects represents a tangible means of stimulating and rebuilding the economy, especially in regional communities, whilst helping secure our energy future and positioning Australia as a world leader in hydrogen.

Summary of recommendations

Recommendation 1

The Australian Government extends ARENA's function for at least 10 years past its current end date of June 2022, with a budget for hydrogen of at least $2 billion.

The Australian Government also increases ARENA's existing funding for hydrogen by at least $200 million per year for the next two financial years.

Recommendation 2

The Australian Government investigates further opportunities to form arrangements with the states and territories to support regional hydrogen offtake.

Recommendation 3

The Australian Government encourages private investment in hydrogen through the tax system, where the existing tax laws are largely in place and could be tailored relatively easily to capture hydrogen projects of national significance, such as:

- Treating any grant funding from ARENA as assessable over the life of the project rather than in the year the grant funding is received.
- Providing tax credits/incentives for investing in export hydrogen production and distribution where any Research, Development or Demonstration (RD&D) is undertaken – this is aligned to a concept proposed by the CSIRO.
- Reducing tax write-off periods for hydrogen infrastructure (perhaps 1-3 years). Alternatively, an investment allowance (say 50%) could be granted without changing tax depreciation schedules.
- Increasing the effective rate of tax offsets (from the current rate of 8.5% to 20%) and expenditure thresholds (beyond the A$100 million cap to A$500 million).
- Legislating for the immediate tax deductibility for all salary and wage costs for the construction of hydrogen production and distribution projects. These are a significant expense and requiring them to be capitalised for tax purposes acts as a disincentive to employment and infrastructure development.
- Treating front-end engineering design costs for hydrogen projects as immediately deductible under Division 40-730 of the Income Tax Assessment Act, 1997, rather than being capitalised.
- Adapting the excise regime over time to apply a levy to fuel consumed in Australia based on its carbon content. Initially (say over a 5-year period), credits for businesses could be phased out to allow for a transition to new energy technologies. This is on the presupposition it is business rather than the consumer that are best placed to invest in new energy technologies.

Recommendation 4

The Australian Government creates and funds a Hydrogen Coordinator-General which is:

- Authorised to deliver the NHS on behalf of the Australian and jurisdictional governments.
- Explicitly tasked to develop an implementation plan, including allocating work to state and territory governments as reasonable and necessary.
- Resourced to allocate federal funding to state and territory governments to deliver as reasonable and necessary, or to direct and track other governments' work to deliver the NHS.
- Sufficiently resourced to deliver on the plan, including delivering greater transparency on timeframes and decision-making.

Recommendation 5

The Australian Government considers a new direct compensation measure to replace diesel standalone power systems.

Recommendation 6

The Australian Government sets a natural gas blending target of 10% and instructs the Australian Energy Market Commission to investigate possible rule changes to allow for and value hydrogen blending into natural gas networks.

Recommendation 7

The Australian Government implements vehicles emissions standards:

- Light vehicle CO_2 emissions standard suitable for the Australian new vehicle market.
- CO_2 emissions standard for new heavy vehicles (buses, trucks) to bring vehicles to Australia. For example, the EU target is for new heavy-duty vehicle CO2 emissions (average) to reduce by 15% in 2025 and by 30% in 2030, both relative to a 2019 baseline.
- Euro 6 noxious emissions standards for light and heavy vehicles.

Recommendation 8

The Australian Government sets a 50% zero emissions vehicle target for fleets of cars, buses and ancillary vehicles for 2030. This would include privately operated public transport fleets and government owned logistics providers.

Recommendations in detail

Supporting hydrogen infrastructure and driving demand

Until the industry has reached commercial scale, grant funding is essential; currently a funding gap exists even with the presence of concessional financing.

ARENA remains the primary source of grant funding; however, its current hydrogen remit is limited to its current $70m hydrogen funding round, which will not sufficiently close the gap on its own. Only two hydrogen projects will be supported with this amount of funding.

Further, and most importantly, ARENA is scheduled to close its doors completely in mid-2022.

Unless ARENA's life is extended Australia will lose its competitive advantage in hydrogen and investment will go overseas. This may also mean we miss out on being able to decarbonise major industrial processes – such as those relating to steel, aluminium, cement and ammonia – at scale.

Recent international announcements highlight the disparity between overseas government investment in hydrogen and the situation in Australia. For example, Germany recently launched its National Hydrogen Strategy, which includes an investment of €9 billion (A$14.75 billion): €7 billion for the market ramp-up of hydrogen technologies in Germany and a further €2 billion euros for international partnerships.[3]

Although Germany has a larger GDP than Australia this nevertheless indicates the magnitude of government support required to meaningfully activate the hydrogen industry.

To provide further context: the Hydrogen Council's *2020 Path to hydrogen competitiveness* report (supported by McKinsey analysis) estimates that US$70bn (A$100bn) of investment in hydrogen is required across the globe by 2030 to meaningfully activate the global hydrogen economy:

> Reaching the scale required will call for funding an economic gap until a break-even point is reached – an investment to offset the initially higher costs of hydrogen as a fuel and of hydrogen equipment compared to alternatives. Instead of being perceived as costs, this should be seen as an investment to shift the energy system and industry to low-carbon technology. [4]

Although US$70bn (A$100bn) by 2030 seems sizable, the report notes that this accounts for less than 5% of annual global spending on energy. In comparison, support provided to renewables in Germany totalled roughly US$30 billion (A$43 billion) in 2019.[5]

BNEF analysis goes further, estimating that US$150 billion (A$214 billion) will be needed globally until 2030 to bridge the cost gap between hydrogen and the *cheapest fossil fuels*, not just the cheapest low-carbon alternative.[6]

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[3] Amelang, S. (2020) 'Germany's national hydrogen strategy', *Clean Energy Wire*, 10 June, https://www.cleanenergywire.org/factsheets/germanys-national-hydrogen-strategy.
[4] Hydrogen Council (2020) *Path to hydrogen competitiveness: a cost perspective*, p.66, https://hydrogencouncil.com/en/path-to-hydrogen-competitiveness-a-cost-perspective
[5] Ibid.
[6] BNEF (2020) *Hydrogen Economy Outlook: key messages*, March 30, pp. 4-5, https://data.bloomberglp.com/professional/sites/24/BNEF-Hydrogen-Economy-Outlook-Key-Messages-30-Mar-2020.pdf

Public investments and policies to fill the gap can then unlock several times their value from the private sector. For example, the RBA notes that the:

> Clean Energy Finance Corporation (CEFC) and the Australian Renewable Energy Agency (ARENA) have played an important role in helping developers obtain finance by directly financing projects and encouraging private investment. These agencies have directly invested around $8.5 billion in clean energy-related projects since inception. They estimate that this investment has encouraged a further $25 to $30 billion of additional private sector investment. [7] [8]

These data were from ARENA and CEFC's 2018-2019 Annual Reports. On its website, ARENA currently advises that since 2012, it has:

> supported 538 projects with $1.58 billion in grant funding, unlocking a total investment of almost $5.96 billion in Australia's renewable energy industry.[9]

Assuming all else is equal, these figures suggest that government funding in hydrogen might be expected **to unlock at least three times as much private investment**.

We also note that private sector financing can also be incentivised through governments acting as offtakers to hydrogen projects. While these arrangements usually sit with the states and territories, the Australian Government can play an important role. The NSW Energy Package MOU from January 2020 is an excellent example, where the two governments are funding over $2 billion in energy and emissions reduction initiatives to help NSW meet its target of net zero emissions by 2050.

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The Australian Government also increases ARENA's existing funding for hydrogen by at least $200 million per year for the next two financial years.

Recommendation 2

The Australian Government investigates further opportunities to form arrangements with the states and territories to support regional hydrogen offtake.

[7] De Atholia, T., Flannigan, G. and S. Lai (2020) 'Renewable energy investment in Australia', Reserve Bank of Australia https://www.rba.gov.au/publications/bulletin/2020/mar/pdf/renewable-energy-investment-in-australia.pdf

[8] If we take advice from the Hydrogen Council across two recent reports, a similar expectation of the ratio of public to private funds emerges: the 2020 report says around US$70 billion is required from government, and in a 2017 report the Council states that 'building the hydrogen economy would require annual investments of [US]$20 to 25 billion for a total of about [US]$280 billion until 2030' (p. 66). See Hydrogen Council (2017) *Hydrogen Scaling Up: A Sustainable Pathway for the Global Energy Transition*, November, https://hydrogencouncil.com/en/study-hydrogen-scaling-up/

[9] See https://arena.gov.au/about/

Recommendation 3

The Australian Government encourages private investment in hydrogen through the tax system, where the existing tax laws are largely in place and could be tailored relatively easily to capture hydrogen projects of national significance, such as:

- Treating any grant funding from ARENA as assessable over the life of the project rather than in the year the grant funding is received.
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Resourcing and coordination

There is significant work required to coordinate and implement the actions under the NHS, and we have some concern that this workload has not been reflected in departmental resourcing to date. There needs to be a strong advocate for the NHS through government, where the body has been appropriately authorised and resourced to deliver the NHS with some urgency.

Recommendation 4:

The Australian Government creates and funds a Hydrogen Coordinator-General which is:

- Authorised to deliver the NHS on behalf of the Australian and jurisdictional governments.
- Explicitly tasked to develop an implementation plan, including allocating work to state and territory governments as reasonable and necessary.
- Resourced to allocate federal funding to state and territory governments to deliver as reasonable and necessary, or to direct and track other governments' work to deliver the NHS.

- Sufficiently resourced to deliver on the plan, including delivering greater transparency on timeframes and decision-making.

Replacing diesel in remote applications

Diesel is currently used extensively in mining and agriculture, and to power remote communities. Developing hydrogen remote area power systems (RAPS) can reduce Australia's reliance on imported diesel and support decarbonisation in these sectors and communities. The development of hydrogen remote applications would also generate jobs in the design, construction and operation of hydrogen systems and provide a much-needed training ground to develop local knowledge and experience in the industry.

From a cost comparison perspective, hydrogen can replace diesel as a fuel right now. However, the issue remains how to replace existing infrastructure (including vehicles, which we return to below) and how to produce the hydrogen at scale in a pre-commercial environment.

Hydrogen is also competing against a heavily subsidised fossil fuels industry. A 2019 International Monetary Fund paper calculated Australia's post-tax fossil fuel subsidies in 2015 as US$19 billion (A$28 billion), or US$1,198 per capita (A$1745).[10] Post-tax subsidies were defined as the differences between "actual consumer fuel prices and how much consumers would pay if prices fully reflected supply costs plus the taxes needed to reflect environmental costs and revenue requirements".[11]

This supported further by the work of the Organisation for Economic Co-operation and Development (OECD). It has been found that 70% of energy-related CO_2 emissions from advanced and emerging economies are entirely untaxed.[12] This indicates there is scope for policy reform to make a meaningful impact. Recommendation 4 can be seen as complementary to Recommendation 2 above.

Recommendation 5

The Australian Government considers a new direct compensation measure to replace diesel standalone power systems.

Replacing natural gas

Besides the obvious benefits of decarbonising Australia's gas use, the use of hydrogen in the natural gas networks can provide important domestic offtake support to the emerging hydrogen export industry. This can also occur without significant additional investment in infrastructure.

However, explicit government policy support is required, as the gas networks cannot effectively make rate cases to their regulator without policy endorsement for expenditure. The most valuable support at this stage is for the Australian Government to set targets for hydrogen blending into the gas distribution networks. This is a 'pen ready' market stimulus opportunity.

Also, the current national regulatory framework does not account for hydrogen, which has created uncertainty for gas networks seeking to pursue hydrogen blending.

[10] Coady, D., Parry, I., Le, N-P., and B. Shang (2019) *Global Fossil Fuel Subsidies Remain Large: An Update Based on Country-Level Estimates*, IMF Working Paper, Fiscal Affairs Department, WP/19/89.
[11] Ibid., pp. 7-8.
[12] OECD (2019) *Taxing Energy Use 2019 – Using Taxes for Climate Action*, October.

Recommendation 6

The Australian Government sets a natural gas blending target of 10% and instructs the Australian Energy Market Commission to investigate possible rule changes to allow for and value hydrogen blending into natural gas networks.

Transport applications

Decarbonisation of Australia's transport sector is becoming increasingly urgent. Transport is Australia's second largest emitter, making up 19% of current greenhouse emissions.

Decarbonising transport will only occur with a mix of batteries and hydrogen fuel cells. While both can be used for light vehicles, hydrogen has particular value in the heavy transport sector. As noted in the NHS, hydrogen fuel carries significantly more energy than the equivalent weight of batteries. This is particularly useful for buses, trucks and ships that carry heavy loads and can travel long distances. Even with improvements battery efficiency the heavy transport sector remains very hard to decarbonise without clean molecules like hydrogen.

As with gas blending opportunities, transport also provides significant hydrogen offtake potential. Transport uses are more piecemeal than gas blending but have the advantage of having a public profile and can also replace diesel now.

Hydrogen can also bring new design and manufacturing opportunities to Australia in fuel cell technologies, to be used in the automotive, mining, aviation and marine industries.

Governments can provide the right signals by setting targets and reducing unnecessary barriers to uptake for vehicles. They can help create the demand that will draw through private investment in vehicles and infrastructure. This will give certainty to manufacturers and investors in the early stages.

Recommendation 7

The Australian Government implements vehicles emissions standards:

- Light vehicle CO_2 emissions standard suitable for the Australian new vehicle market.
- CO_2 emissions standard for new heavy vehicles (buses, trucks) to bring vehicles to Australia. For example, the EU target is for new heavy-duty vehicle CO2 emissions (average) to reduce by 15% in 2025 and by 30% in 2030, both relative to a 2019 baseline.
- Euro 6 noxious emissions standards for light and heavy vehicles.

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The Australian Government sets a 50% zero emissions vehicle target for fleets of cars, buses and ancillary vehicles for 2030. This would include privately operated public transport fleets and government owned logistics providers.

Conclusion

Considering the current economic conditions and the opportunity that hydrogen presents, the 2020/21 budget presents an excellent opportunity for the Australian Government to implement the recommendations outlined in this submission in order to reap the benefits of a local hydrogen industry.

The Australian Hydrogen Council would welcome the opportunity to provide further detail about any of the recommendations made in this submission via CEO Dr Fiona Simon who can be contacted by email on fsimon@H2council.com.au or telephone 0474 028 740.