



Environmental
Defenders Office

18 August 2023

Hydrogen Review Taskforce

Department of Climate Change, Energy, the Environment and Water

Submitted via: [DCCEEW Consultation Hub](#)

Dear Hydrogen Review Taskforce,

Consultation on the review of the National Hydrogen Strategy

Environmental Defenders Office (**EDO**) welcomes the opportunity to make a submission to the Review of the National Hydrogen Strategy (the **Strategy**).

EDO's work is informed by climate science, and the acknowledgement that we are now in the critical decade to limit the worst impacts of climate change. Crucially, this means Australia must act quickly to reduce domestic dependence on, and economic reliance on the export of, fossil fuels.

EDO is of the view the National Hydrogen Strategy must be reviewed in this context, with a focus on hydrogen production and use as a means to enabling a reduction in greenhouse gas emissions and assisting with the energy transition. Emissions reduction should be a priority, above the creation of a hydrogen industry as an end in itself. EDO **recommends** the Strategy focus on sectors where the most immediate, and economically viable, climate advantage can be secured.

This submission makes recommendations in relation to the following 5 issues:

- **Demand for hydrogen must be assessed against other energy alternatives.**
- **A 'technology neutral' strategy is not climate safe.**
- **Decarbonising 'grey' hydrogen markets should be a priority.**
- **Community consultation and social licence are essential for any new industry.**
- **Domestic use should be prioritised over export possibilities.**

1. Demand for hydrogen must be assessed against other energy alternatives.

The Strategy currently relies on assumptions about demand and uses of hydrogen in Australia, stating an expectation that hydrogen will contribute between 10% to 33% towards global and Australian emissions reduction.¹

¹ Department of Climate Change, Energy, the Environment and Water, National Hydrogen Strategy Review (Consultation Paper, July 2023) 1.

However, despite not being a greenhouse gas itself, hydrogen does have a global warming potential – possibly two to six times higher than previously thought.² This is an important consideration in light of the urgent decarbonisation imperative. Moreover, hydrogen may only play a limited role in the longer term, alongside more cost-effective electrification and energy efficiency solutions. Green hydrogen incurs significant energy losses at each stage of the value chain, and in many sectors, such as domestic heating or land transport, direct electrification is cheaper and more efficient than converting electricity to hydrogen.³ Given the amount of renewable energy which will be needed to power the energy transition across all sectors, inefficiency in use of green hydrogen appears an ineffective alternative to electrification or energy efficiency solutions. When assessing demand for the product, the Strategy must take into account that in many cases, green hydrogen will not be the most cost effective or fastest method of decarbonisation available.

EDO **recommends** the review further consider the advantages and disadvantages of hydrogen in terms of practicality, economic, and climate benefits in comparison to other energy alternatives, before relying on assumptions about demand and use in the move to a decarbonised economy. The Strategy, and associated actions, must not create a demand for hydrogen which cannot be met by renewable hydrogen, and must not lead to an increase in greenhouse gas emissions.

2. A ‘technology neutral’ strategy is not climate safe.

The IPCC, the International Energy Agency (**IEA**), and the global scientific community are clear that no new fossil fuel reserves should be explored or exploited,⁴ and that the world must transition rapidly to renewable energy sources. EDO therefore **recommends** the Strategy clearly differentiate between types and production sources of hydrogen, and confirm that there is no place for new fossil fuel derived products.

The terminology of ‘clean’ hydrogen can serve to obscure the important difference between ‘blue’ hydrogen produced from fossil fuels with carbon capture and storage (**CCS**), and ‘green’ hydrogen made from renewable energy. Blue hydrogen may have a greater greenhouse gas footprint than burning natural gas or coal for heat, with CCS efficiency averaging below 80%.⁵ Even the “gold standard” of capture efficiency – 90% - would mean that every tonne of blue hydrogen would still produce a ton of CO₂. This means a technology neutral approach is inappropriate for developing Australia’s hydrogen industry. And given there is currently no significant hydrogen production from renewable sources globally, the updated Strategy must focus instead on promoting development of green hydrogen for specific uses.

² Ocko, I. B. and Hamburg, S. P.: Climate consequences of hydrogen emissions, *Atmos. Chem. Phys.*, 22, 9349–9368.

³ Eriko Shrestha and Tianyi Sun, Environmental Defence Fund, ‘Rule #1 of deploying hydrogen: Electrify first’ (30 January 2023) <https://blogs.edf.org/energyexchange/2023/01/30/rule-1-of-deploying-hydrogen-electrify-first/>.

⁴ See e.g., IEA, ‘Net Zero by 2050: A Roadmap for the Global Energy Sector – Summary for Policymakers’ (May 2021), 11, https://iea.blob.core.windows.net/assets/7ebafc81-74ed-412b-9c60-5cc32c8396e4/NetZeroBy2050-ARoadmapfortheGlobalEnergySector-SummaryforPolicymakers_CORR.pdf; Hoesung Lee et al., ‘Synthesis Report of the IPCC Sixth Assessment Report (AR6)’ (2023) IPCC, Figure 3.5, 56, https://report.ipcc.ch/ar6syr/pdf/IPCC_AR6_SYR_LongerReport.pdf.

⁵ Howarth, RW, Jacobson, MZ. How green is blue hydrogen? *Energy Sci Eng.* 2021; 9: 1676–1687.

EDO **recommends** that all hydrogen products should be assessed for their full life-cycle greenhouse gas emissions, with preference given to no-emissions technology or by ensuring high emissions hydrogen is excluded from funding or incentive programs.⁶ The nascent Guarantee of Origin scheme may play an important role in differentiating between hydrogen production pathways, and identifying zero emissions/green hydrogen.

3. Decarbonising ‘grey’ hydrogen markets should be a priority.

The majority of hydrogen produced today is from fossil fuels (‘grey’ hydrogen), and therefore must be phased out in line with IPCC recommendations and commitments under the Paris Agreement to keep global temperature increase to below 1.5C. Given the amount of renewable energy which will be needed to simply decarbonise grey hydrogen, the Strategy should actively prioritise the areas where green hydrogen can most effectively be used.

The highest value uses of renewable hydrogen are likely to be in industry, where processes are otherwise hard to electrify (and emissions therefore hard to abate). EDO **recommends** the Strategy identify priority grey hydrogen markets, and support and accelerate the shift to green hydrogen in industrial applications where hydrogen is already used, such as refining and the production of ammonia and methanol. Green iron and steel also present opportunities for domestic industry and decarbonisation efforts.

4. Community consultation and social licence are essential for any new industry.

The Review states that much of the anticipated hydrogen industry growth will occur in remote and regional areas. This means capacity building, community consultation and sharing of co-benefits is critical.

Any new hydrogen related project must involve consultation with First Nations Peoples that is early, iterative, and culturally appropriate that adheres to the standard of free, prior and informed consent (**FPIC**). The principle of FPIC is enshrined in articles 19 and 32 of the *United Nations Declaration on the Rights of Indigenous Peoples*, and is the right of Indigenous Peoples to give or withhold consent to any project that may affect them or their lands, and to negotiate conditions for the design, implementation and monitoring of projects. First Nations Peoples must be empowered and resourced to engage in the design, delivery and benefits of policies and laws relating to hydrogen projects, as they see fit.

More broadly, fulsome community consultation and participation in decision-making is essential for all development, but particularly important to build and retain the social licence of renewable energy infrastructure, including hydrogen. EDO **recommends** the decision maker responsible for assessing and approving individual projects and developments should undertake best practice community consultation in seeking local community’s social licence to operate. This includes early iterative, culturally appropriate consultation, which should complement principles relating to FPIC of First Nations Communities.

⁶ International Renewable Energy Agency (IRENA), Green Hydrogen: A guide to policymaking (2020) https://www.irena.org/-/media/Files/IRENA/Agency/Publication/2020/Nov/IRENA_Green_hydrogen_policy_2020.pdf, 8.

5. Domestic use should be prioritised over export possibilities.

The building of a hydrogen export industry relies on the presumption that the technical hurdles encompassing the large-scale transport of hydrogen are resolved. The export of hydrogen (as opposed to hydrogen products) is not expected to be economically viable without large public subsidisation, and should not be expected to generate returns similar to oil or gas exports.⁷ EDO **recommends** the updated Strategy focus on building hydrogen production and capacity for use domestically, in industries where it will be of highest economic and climate value, prior to the creation of an export industry.

Conclusion

The updated National Hydrogen Strategy must be framed in response to the global climate crisis: to reduce emissions, not to drive demand for hydrogen production irrespective of the climate impacts. Rather than simply focusing on hydrogen development and uptake, to be truly fit for purpose, the Strategy must take account of where hydrogen products are best placed to contribute to economy-wide decarbonisation in the most cost-effective manner possible, with the most benefit for emissions reduction efforts.

For further information, please contact rachel.walmsley@edo.org.au or (02) 9262 6989.

Yours sincerely,

Environmental Defenders Office



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⁷ IRENA, Geopolitics of the Energy Transformation: The Hydrogen Factor (Summary for Policymakers, 2022) <https://www.irena.org/Digital-Report/Geopolitics-of-the-Energy-Transformation>.