



Wellington, November 1, 2023

Energy and Resource Markets Branch
Ministry of Business, Innovation and Employment
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Attention: Interim Hydrogen Roadmap Submissions

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Tēnā koe,

Parkwind Submission to the Interim Hydrogen Roadmap Discussion Document

Thank you for the opportunity to submit on the Interim Hydrogen Roadmap. This letter provides our general feedback on the Interim Hydrogen Roadmap.

We commend the New Zealand government for its forward-thinking approach to the hydrogen landscape, as outlined in the Interim Hydrogen Roadmap. It's evident that hydrogen, particularly green hydrogen, holds immense potential to play a pivotal role in New Zealand's energy transition, emissions reduction, economic growth, and energy security.

Parkwind supports the paper and further work being done on the economic viability and uses of hydrogen, particularly as industrial feedstock in hard-to abate/hard-to-electrify sectors, transport, sustainable aviation fuel and "power to X". We acknowledge the current economic and technical challenges presented by hydrogen and these will require further work in order to accommodate them.

We believe New Zealand is at a turning point in its broader energy system, and this is a time for vision and a multi-faceted approach. There are strong similarities, in a different context, with the establishment of the gas industry in New Zealand: the government enabled the gas industry through strategic policy decisions, ownership stakes, investment in projects, contractual agreements, deregulation, and supportive regulatory frameworks. These measures aimed to promote growth, provide a reliable gas supply, and align with the country's energy and economic objectives. The same

could occur again, in a net zero context, with large-scale renewable generation and export of hydrogen or ammonia.

About Parkwind:

Parkwind is a Belgian-based company that develops, finances and operates offshore wind farms. Our submission is made from the perspective of an experienced offshore wind developer who has developed, financed and operated offshore for over 10 years. Parkwind and its parent company JERA have built and operate seven offshore wind farms off the Belgian, German, UK and Taiwanese coasts, with one of Japan's first offshore wind farms (Ishikari Bay) currently under construction.

Parkwind was recently acquired by JERA, one of the world's largest power generation companies, which operates an entire supply chain, from upstream fuel and procurement to project development and power generation. JERA has a strong appetite for importing low carbon fuels such as green ammonia to Japan to help meet its ambitious carbon neutrality target by 2050. JERA's plans include using a 20% ammonia fuel mix at all its coal-fired power plants by 2035, and to develop technology to use 100% ammonia in the 2040s. Parkwind sees exciting export opportunities for offshore wind resources to be used in the generation of electricity and/or production of low-carbon fuels. Green hydrogen, and its derivatives, can serve as a route to market for offshore wind.

Parkwind aspires to build 500MW to 1GW of offshore wind in New Zealand operational by 2032, acting in partnership with relevant iwi, hapū, local communities and selected experienced energy sector participants. As Parkwind progresses its preliminary discussions and investigations, it is conceiving of a range of strategic alliances that will benefit the eventual offshore project or projects in which it invests for the long-term benefit of Aotearoa New Zealand. An example is the memorandum of understanding (MOU) Parkwind signed with Meridian Energy to explore offshore wind generation in New Zealand waters. Efforts will focus principally on the Taranaki coast and build on work already undertaken by Parkwind, including engagement with stakeholders as well as the iwi of Taranaki.

Section 1: Hydrogen as a Global Energy Solution:

1. Collaboration with Hydrogen Importers: We note with interest Japan's Green Growth Strategy, emphasising the importance of fuel ammonia in achieving carbon neutrality. Given this, New Zealand should explore further collaboration with Japan and other countries on fuel ammonia production and trade. We suggest that New Zealand should continue to actively participate in international dialogues to promote fuel ammonia's significance and seek avenues for partnership.

Section 2: The Role for Hydrogen in New Zealand's Energy Transition:

2. Identifying Key Use Cases:

We believe the focus should be on those key areas where electrification is otherwise difficult, as well as on export markets. In particular, further work should be done to examine the following applications:

- Industrial Feedstocks: New Zealand's hard-to-abate industrial sectors can significantly benefit from green hydrogen integration to decarbonise processes like fertilisers, steel, and chemicals. This also supports critical economic activities in the country.

- Transport Applications: Hydrogen shows promise in sectors such as heavy road transport, aviation, and marine transport, which are challenging to electrify. It is crucial to focus hydrogen use specifically where its advantages outweigh the alternatives.

3. Energy Security: Hydrogen can contribute to NZ's energy security, particularly as a means of storing energy to assist with intra-fuel/intra-seasonal variability and increase regional resilience, and as a means of providing demand response (as a better alternative than large industrials being paid not to consume and hence not produce).

Bulk green hydrogen export would help stabilise the grid and enable local hydrogen use.

Government should consider the potential of stored ammonia as thermal power for wind energy firming. Recognising hydrogen's potential to contribute to emissions reduction and enhance energy security is a positive stance.

4. Factors to Consider: When assessing hydrogen's role, the government must incorporate factors such as energy return on investment (EROI), full life cycle carbon accounting, and the potential for creating a sustainable transportation network that minimises GHG emissions.

High-temperature heating and industrial feedstock applications align well with hydrogen's potential. It's essential to prioritise use cases where hydrogen's exergy (energy quality) closely matches the demand.

5. Hydrogen Production Efficiency: Hydrogen production efficiency, especially in terms of green hydrogen, can be optimised. One approach is to establish electrolyzers on-site, closely integrated with renewable electricity sources, thus reducing losses associated with long-distance transport and distribution.

6. Renewable energy development: To harness the potential of hydrogen effectively, New Zealand must invest significantly in renewable energy build-out. The expansion of large-scale renewable energy sources is pivotal to establishing a green hydrogen market in the country.

Section 3: Government Position and Actions:

7. Export Focus: New Zealand should take advantage of the global interest in green hydrogen, especially from countries like Japan, which are willing to support the economic deficit associated with hydrogen production. We recommend further exploration of large-scale export opportunities for hydrogen derivatives, like green ammonia. We encourage more work being done by officials and government in Phase 2 on hydrogen supply and demand and how the "missing market" problem is addressed. The green hydrogen export industry could be instrumental in creating the necessary market for hydrogen within New Zealand.

Parkwind sees a substantive role for government in enabling a thriving export market. It should not be left solely to private interests to promote this. The government's role can take different forms, from diplomatic and trade promotion to regulatory enablers and through to outright government support in a financial sense. If technical challenges can be mitigated, we see the clear scope for hydrogen to fill a significant role in facilitating the demand side of the offshore wind and large-scale renewable energy equation.

8. Government Support: To bridge the price gap between existing fossil fuels and hydrogen, we encourage the government to consider financial support mechanisms, incentives, or subsidies for early-stage hydrogen projects that align with the national interest.

Developing strong diplomatic relations with hydrogen-importing countries will be integral to making hydrogen successful.

9. **Coordination Body:** The establishment of a government and sector coordination body is vital to ensure a streamlined approach to hydrogen development. This body should facilitate coordination between various stakeholders, and we express our willingness to contribute to its initiatives.