

Submission on the *Interim Hydrogen Roadmap*

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Responses to questions

Section 1: Hydrogen is emerging as an important part of the future global energy system

Are there other issues we should be considering in our assessment of the strategic landscape for hydrogen in New Zealand?

- 1 The enormous and stable wind resources on and around the Campbell Plateau is a significant energy resource that should form part of the Hydrogen production strategy, provided suitable environment friendly technology is available, can be developed or utilised.
Hydrogen could be produced by converting harvested electricity on site.
There is developing technology available for this purpose.

Section 2: The role for hydrogen in New Zealand's energy transition

2 **Do you agree with our assessment of the most viable use cases of hydrogen in New Zealand's energy transition?**

Yes

Do you support some of these uses more than others?

- 3 We would focus on the export market and value add export scenarios in an early stage as these provides the largest economic benefit for New Zealand and thereby could contribute to partly cover the infrastructure investment cost of some of the other scenarios.

4 **What other factors should we be considering when assessing the right roles for hydrogen in New Zealand's energy transition?**

New Zealand is well equipped with natural resources to succeed with the domestic energy transition. New Zealand should aim on becoming a considerable contributor to the global green transition through export, by utilising harvesting wind energy at sea for Hydrogen production.

5 **Do you agree with this assessment of the potential for hydrogen supply and demand in New Zealand?**

Yes

6 **Do you agree with the key factors we have set out that are likely to determine how hydrogen deployment could play out?**

Yes

7 **What do you think needs to happen to address these factors?**

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| | <p>The government must take the lead and drive the deployment through various incentives. The nation could / should have a larger ownership to the development and processes as this is a long-term investment for the benefit of the NZ and global population</p> |
| 8 | <p>Do you have any evidence to help us build a clearer picture?</p> <p>Wind resources should be explored for hydrogen production where electricity produced is fed directly into the hydrogen production on site. New technologies are being developed to support such a scenario. for such technologies please see: https://how-energy.com/animation which is planned to be fully autonomous having capacity to store up to one month of hydrogen production on board.</p> |
| 9 | <p>Do you agree with our findings on the potential for hydrogen to contribute to New Zealand’s emissions reduction, energy security and resilience and economic outcomes?</p> <p>Yes</p> |
| 10 | <p>Do you have any insights we should consider on what is needed to make hydrogen commercially viable?</p> <p>Besides the aspects of hydrogen infrastructure and future prospects of energy prices in general to name a few, the main factor in the end as for commercial viability is a stable and efficient production of scale that derives from a mixture of different hydrogen solutions adapted to the various resources, that being the various wind resources of New Zealand as far as we see it in terms of green hydrogen.</p> <p>When Norway faced the opportunity back in the 60s to become an oil producer based on discoveries made in the North Sea it soon turned into a Norwegian technology driven business. Deep water, harsh environment and high pressure/high temperature reservoirs made it necessary to develop technology and unconventional solutions for tapping the resources in the safest and most commercially viable way. This proved very successful in the long run. Key also was the establishment of the national oil fund to make sure the new wealth is enjoyed by Norway’s entire population and business community. We believe the high wind resources of New Zealand is of a similar opportunity. Unconventional technology will be key to tap the unique high wind resources of New Zealand.</p> |
| 11 | <p>Is there any further evidence you think we should be considering?</p> <p>New Zealand should consider how to remain in control of the nation's natural resources, both when it comes to development, exploration and long-term income.</p> |
| <p>Section 3: Government position and actions</p> | |
| 12 | <p>Do you agree with our policy objectives?</p> |

Yes. It would however be wise to speed up development of a regulatory framework for offshore renewable energy, as we consider offshore wind to have the highest untapped energy potential, especially for the export and export + value add scenarios.

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Do you agree with our positioning on hydrogen’s renewable electricity impacts and export sector?

Yes

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Do you agree with the proposed actions and considerations we have made under each focus area?

Yes. We would however consider utilising the vast wind energy resources for offshore hydrogen production on site.

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Is there any evidence we should be considering to better target actions in the final Hydrogen Roadmap?

The need for unconventional solutions for harvesting **high** wind resources (10 m/s +) should be addressed in the roadmap. The energy potential should be visualized based on metocean data from the Campbell Plateau. The **high** wind resources of NZ should be handled as a category of its own and actions targeted specific to this category within its own specific framework.

The evidence lies within our statement above about the similar situation when Norway faced the opportunity and the challenges of becoming a major energy exporter based on our offshore oil & gas resources.

General comments

We strongly believe that exploration of the strong and stable wind resources at the Campbell Plateau must be part of the energy strategy. These wind resources are unique for New Zealand and a long-term national resource of large scale. Any exploration / production here should be addressed specifically in the national energy roadmap.

It is required to utilise unconventional technology to unlock the potential of this unique resource. A “fleet” of floating LH2 factories equipped with a 45-60MW wind turbine could really be a game-changer in the green energy roadmap.

For additional information, please see PDF file attached to submission e-mail

or

<https://how-energy.com/animation>