

Beyond green energy – The broader benefits of offshore wind development in Aotearoa

# It begins and ends with Partnerships



**“By working as one, we pursue the best solutions”**

# Haumoana: Offshore Wind Capacity Building report – Nov 21

In November '21 Energy Estate, Elemental Group and BlueFloat Energy, published **Haumoana** - a report which highlighted New Zealand's untapped potential for offshore wind development

Key themes covered in Haumoana include:

## **Fostering regional & national economic development**

- Facilitate trans-Tasman collaboration in manufacturing & establishing world-class expertise and training
- Long term employment opportunities for locals + transfer of complimentary technical expertise & skills from offshore oil, gas & marine industries
- Establish a broader ecosystem of regional economic development

## **Delivering broader benefits for Aotearoa and its communities**

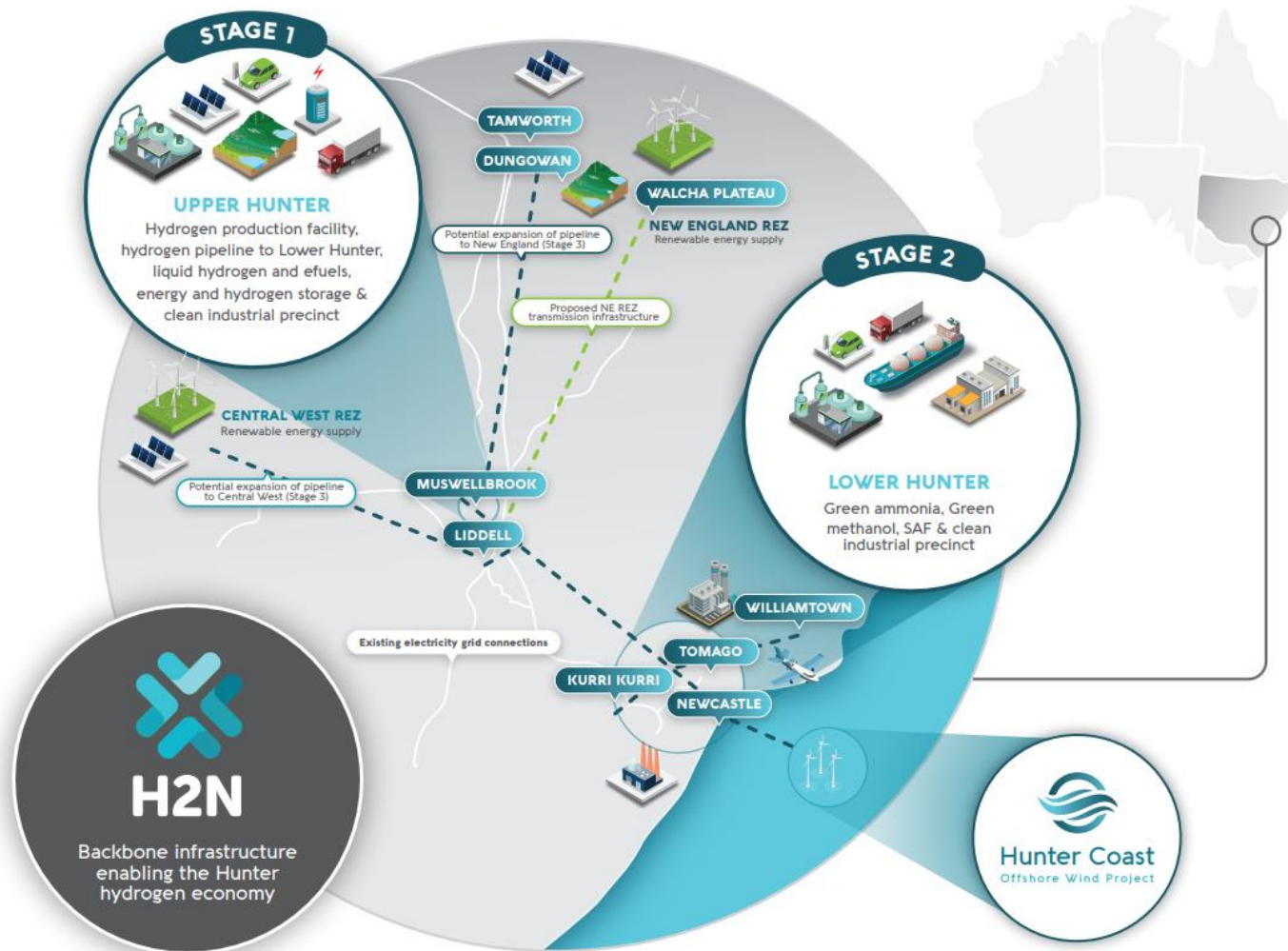
- Opportunity to design the regulatory framework & development standards so as to deliver wider benefits to Iwi & local communities
- Accelerate NZ's progress towards achieving its net zero target
- Re-purpose existing infrastructure (such as offshore oil & gas infrastructure, ports)
- Build close to demand centres & reduce the dependency on SI generation

## **Supporting innovation**

- Opportunity to create low-cost competitive green hydrogen & e-fuels for domestic & export markets
- Enable corporate energy users to meet their increasing demand for renewable energy
- Local businesses partner with experienced international offshore wind players to create a skill base



# Ecosystems not projects – Hunter Coast



- Hunter Valley facing rapid transition – world’s largest coal export port
- Options for port
  - Container
  - Defence
  - Clean industrial – GH2
- Closest viable onshore resources 150km+ from port
- Major coastal nodes
- Large population: 1.5m
- Skilled workforce and leading training institutions
- Large manufacturing base

# Ecosystems not projects – Bass Strait off Gippsland

Accelerating common infrastructure

- G-REZ and offshore transmission
- Reduced system costs

Repurposing of O&G assets

- onshore and offshore

Local partnerships

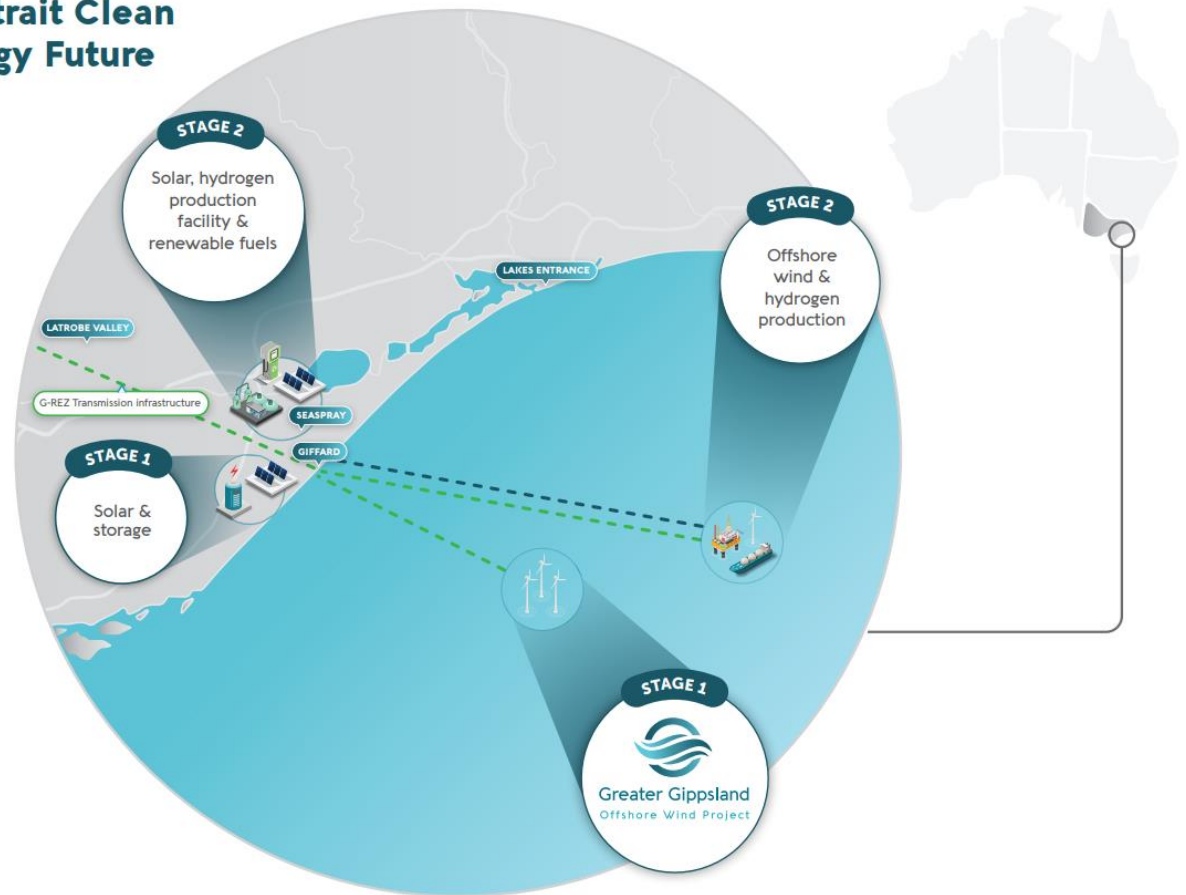
- Councils
- State Government
- Traditional owners

Collaboration and co-ordination

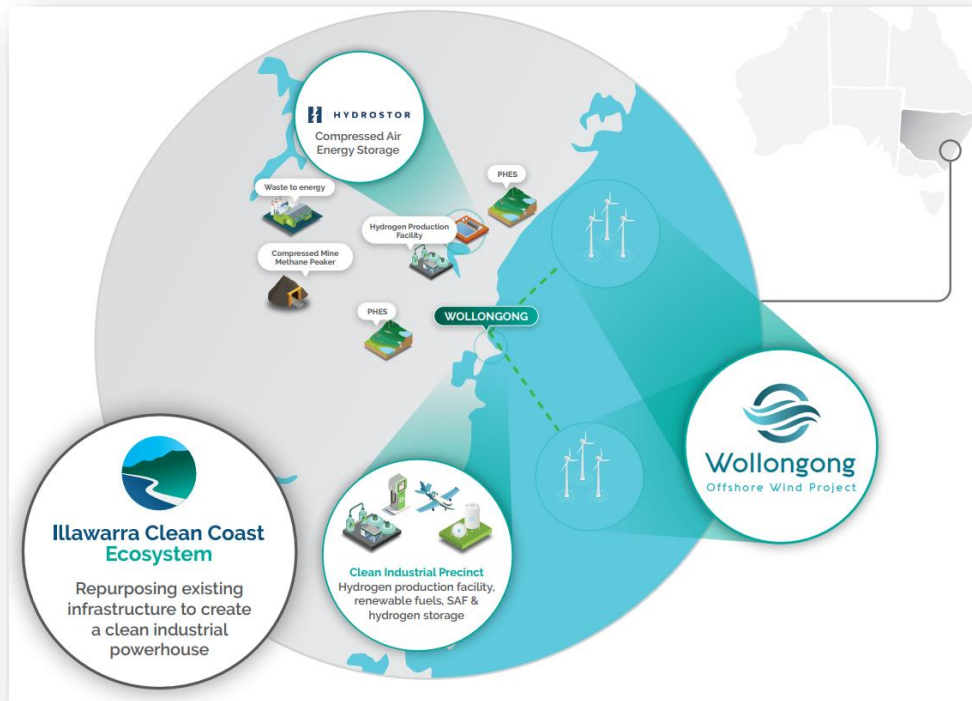
- sequencing of projects
- focus on supply chain & infrastructure

Leaving legacy infrastructure

## Bass Strait Clean Energy Future



# Ecosystems not projects – Illawarra and Woody Clean Coast

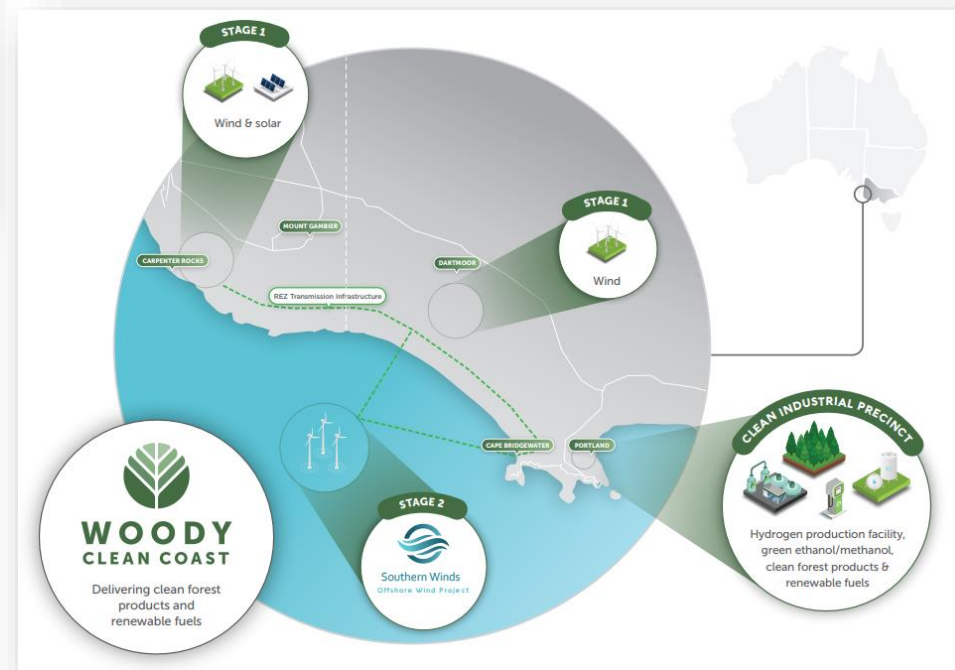


## Woody Clean Coast – Green Triangle

- World class onshore and offshore wind
- Aluminium smelter
- Export port
- Decarbonising forestry industry
- Industrial workforce

### Illawarra Clean Coast Ecosystem

- Pt Kembla steelworks
  - Decarbonisation/green steel
  - OW and wider RE supply chain
- Limited access to onshore resources
- Support transition of metcoal industry
- Port precinct revitalisation
- Partnerships with universities and unions
- *Coastal community ownership models*



# Fostering regional economic development

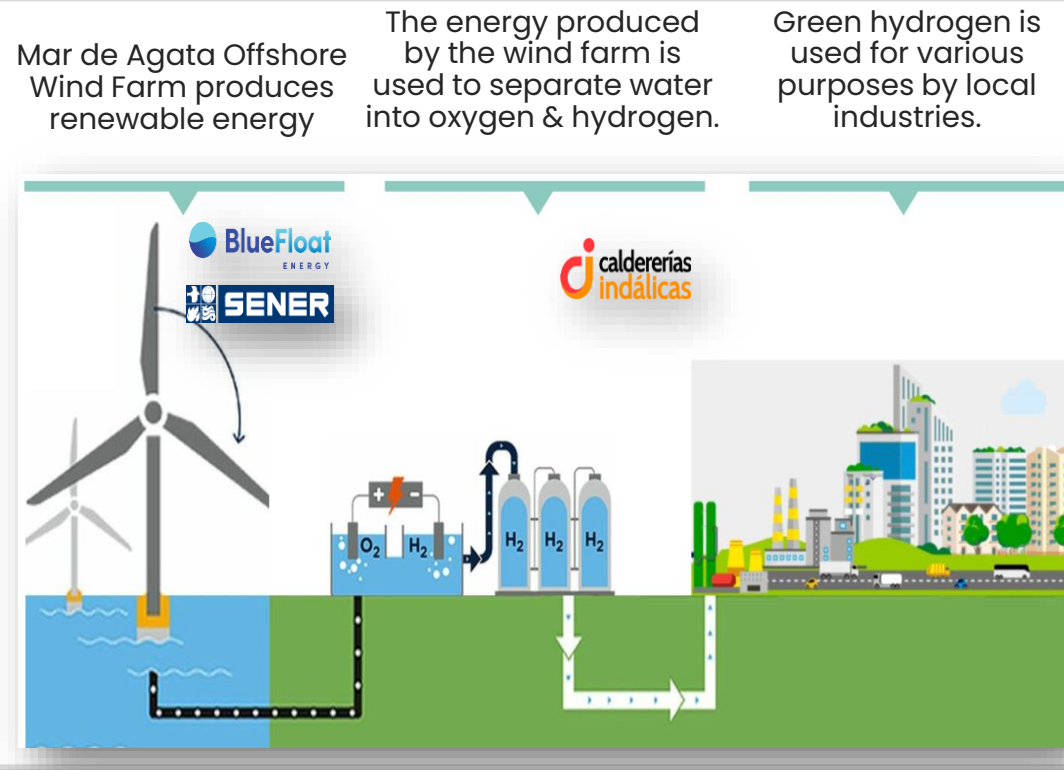
## Case study: From black to green in Almeria – Mar de Agata Offshore Wind Farm

BlueFloat Energy and SENER are developing a 300MW floating offshore wind farm off the coast of Almeria (Andalucia, Spain) named Mar de Ágata.

Project proposed in response to the closure of 1159 MW thermal power plant

MoU with Caldererías Indálicas – local steel manufacturer– to capture synergies with other local initiatives:

- Green hydrogen plant to fuel the large truck fleet exporting vegetables from Almeria to Europe
- A large-scale industrial development to manufacture locally the floating structures



# Social procurement

Table 9: Baseline requirements and stretch goals related to MC8<sup>37</sup>

Supply chain inputs criteria <i>% for supply chain inputs refers to goods and services procured from, or value added in Australia &amp; New Zealand as a percentage of total Project contract value</i>	Baseline requirements			
	Wind	Solar	Pumped hydro	Battery storage
<b>Development phase</b> <i>(everything before COD)</i>	40%	49%	66%	23%
<b>Operation and maintenance phase</b>	51%	71%	61%	35%
<b>Steel products and components using locally milled steel</b> <i>(excludes steel components integral to a component or products not available locally at the time of the Bid)</i>	10%	95%	30%	95%
Supply chain inputs criteria	Stretch goals			
	Wind	Solar	Pumped hydro	Battery storage
<b>Development phase</b> <i>(everything before COD)</i>	72%	81%	86%	78%
<b>Operation and maintenance phase</b>	76%	81%	82%	79%
<b>Steel products and components using locally milled steel</b>	95%			
<b>Investment and innovation in the supply chain</b>	<b>Baseline requirement and stretch goal</b>			
<b>Commitment related to one or combination of:</b> % of Project value in new/local facilities, % of Project value invested in innovation of supply chain, contributions to or participation in pooled investment.	For the first Tender Round, Proponents to make a voluntary but contractually binding commitment to investment and innovation. These commitments should form the basis for baseline requirement and stretch goals in future years.			
Employment, skills and knowledge transfer criteria	Baseline requirement		Stretch goal	
<b>Learning workers</b> <i>(% of total Project workforce)</i>	20%		40%	
<b>Apprentices</b> <i>(% of all trades positions on a Project)</i>	20%		30%	
First Nations participation criteria	Baseline requirement		Stretch goal	
<b>First Nations participation</b>	1.5%		10%, or the goal in the region-specific protocol under the First Nations Guidelines.	
Fair and ethical practice criteria	Baseline requirement		Stretch goal	
<b>Employment of underrepresented groups</b> <i>(women, young people)</i>	15%		25%	
<b>Environmentally sustainable procurement criteria</b>				
<b>Numerical minimum requirements do not apply. Proponents are required to respond to evidence requirements to demonstrate environmentally sustainable procurement.</b> This includes:				
<ul style="list-style-type: none"> <li>• Alignment with NSW Net Zero Plan.</li> <li>• Alignment with NSW Circular Economy Policy Statement.</li> <li>• Sourcing materials according to EN15804, Green Building Council's or other appropriate sustainability framework.</li> </ul>				





# Power of the PPA

**Bookbuild PPA** - 120MW solar farm near Wagga Wagga, NSW co-developed by Energy Estate.

- Westpac's first PPA - 10 year agreement for ~30% percent of the electricity generated by the solar farm which will meet 45% of Westpac's 100 per cent clean energy target.
- Flow Power contracted 50 % of the solar farm's output through a second PPA to provide power to (among others) The Sydney Opera House, Snack Brands and winemaker Australian Vintage.



Media Release 31 March 2021

**Bomen Solar Farm commits \$500,000 to long term partnership with Mount Austin High School in Wagga Wagga**

## What did Bomen PPAs deliver?

- Beon's 'Women in Solar' program - required by Westpac & designed to increase the number of women working in solar farm construction . The pilot project provided training and employment to 11 women - 3 single mothers, 3 Aboriginal and 5 long-term unemployed.
- Created a \$500,000, 10-year partnership between the Bomen Solar Farm and Mount Austin High School (funded by Bomen SF & Westpac) to keep girls in school longer, with support to transition into the workforce upon graduation.
- \$50,000 scholarship fund for female workers to undertake further study or training courses that will enhance their skills and assist them to continue working in the renewables industry.
- \$1 million Community Fund co-funded by Bomen SF & Westpac to fund local community initiatives
- \$250,000 for the Bomen Revegetation Project- 58 hectares of previously cleared land across 4 sites planted with more than 50,000 seedlings to help improve the region's biodiversity & provide the habitat needed to restore our native fauna populations

# How offshore wind can support Renewable Energy Zones

## We strongly support Transpower's vision for Renewable Energy Zones and Clean Industrial Clusters and encourage all market participants to play an active role in designing and implementing REZs in New Zealand

We agree with **GP01** and note that REZs should not just focus on unlocking new RE resources for Aotearoa but also focus on unlocking energy experts from New Zealand. **The scale of the developable offshore wind resources should be taken into account when designing REZs**

We do not agree with **GP02**. This is harking back to the 'market knows best' principles which underpinned the first wave of liberalization and corporatization of power markets globally. The concept of REZs must involve a strong element of system planning rather than being entirely driven by generators seeking extra capacity or users looking for low cost solutions' for their demand but which impact our energy users in the system. The focus should be on delivering low cost **secure** energy for NZ and export markets

We strongly agree with **GP03** from the perspective of ensuring that REZs benefit the local energy users. It is important the potential benefits for a region are taken into account - for example **industrial development and new dispatchable assets in the Taranaki region which benefit PowerCo and local users** should be taken into account rather than the lines company seeking to put all the costs on to the REZ as in the long term benefits should flow to the consumers through better utilisation of the existing assets and growth in the region.

### 4.1 Guiding principles for developing Renewable Energy Zones

01

REZs are built to harness and unlock renewable energy resource, storage and efficient network infrastructure to support the long-term decarbonisation and energy needs of Aotearoa, as well as the region hosting the REZ.

02

REZs are customer driven and are only built where there is clear demand from generation or load developers. This will help to ensure that a REZ is developed in line with the market, decreases the risk of investing significantly in infrastructure that may be underutilised or local consumers having to cover the incremental cost of network investment.

03

Local consumers will be no worse off as a result of developing a REZ. Our intent is to define a funding model that ensures new generation connections or demand developers cover the cost of the network investments required so that the additional costs associated with a pilot REZ in the Northland region do not fall on local consumers. The funding model needs to align with transmission and distribution pricing regulation.

04

REZs are developed through partnerships and collaboration with local iwi and stakeholders to ensure that regions hosting a REZ receive a net benefit from the development.

05

REZs deliver net benefits to Aotearoa's electricity system where existing connection processes cannot. For example, by increasing competition in the wholesale market to potentially lower regional electricity prices, increasing diversity or supporting reliability or security of supply.

06

REZ location and REZ participant selection are done via a transparent methodology to ensure potential regions and REZ participants are given the opportunity to build their case, including demonstration of any wider social, economic or environmental costs and benefits to the region.

07

REZs are enabled with minimal changes to the existing electricity regulatory framework. Large changes to the regulatory framework can take a significant amount of time to undertake and can have wide reaching implications to existing connected customers.

**GP04** is one of the key guiding principles for our joint venture. If NZ fails to move to new ownership models for transmission and new generation this is a lost opportunity taking into account, the precedents already established in the geothermal sector and the global examples such as Fort McMurray to Edmonton in Alberta. [www.atco.com/en-ca/about-us/news/2019/122488-indigenous-communities-acquire-40-per-cent-interest-in-award-win](http://www.atco.com/en-ca/about-us/news/2019/122488-indigenous-communities-acquire-40-per-cent-interest-in-award-win).

We agree with **GP05** and note that one of the benefits of developing REZs is increasing global interest in the NZ energy sector which brings in new sources of capital (**such as BlueFloat Energy and other offshore wind players**) and can increase delivery capacity (a major limiting factor for NZ which is currently seen as having high construction and delivery risk and costs)

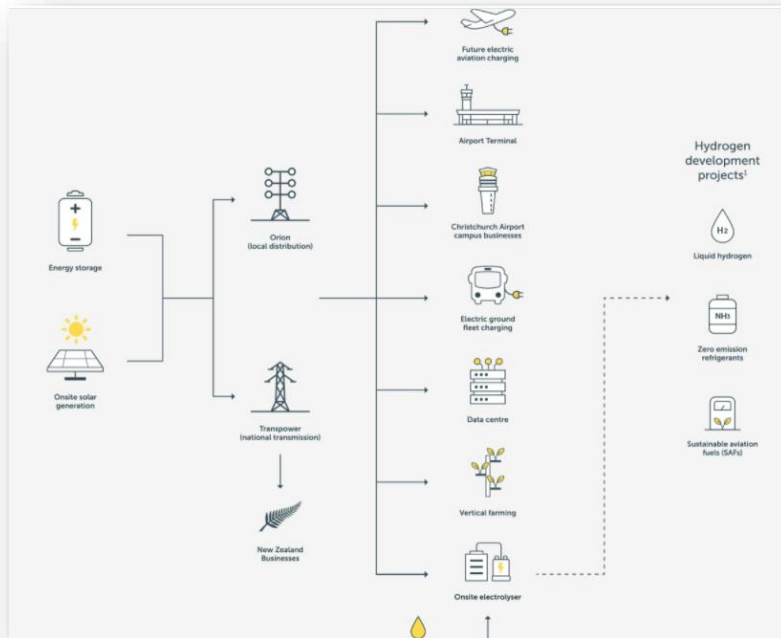
We strongly agree with **GP06**. The original ISP in Australia is a good example of REZ selection which involved too much desktop analysis and insufficient stakeholder engagement. There is no point locating a REZ based on abundant RE resources if the host communities are adamantly opposed to the designation. **This is why we submit offshore wind resources should be taken into account at the outset rather than as an afterthought**

We agree with the sentiments of **GP07** but note that tinkering with market design when power prices are consistently high and NZ is facing new pressures from climate change, decarbonisation and energy security may require more holistic changes in the energy system regulation in the near future.

# Understanding the bigger picture

CIAL has committed to the development of **Kowhai Park** – a new clean industrial precinct which will serve the airport, create new industry and support the Canterbury region. Solar Bay, an Australian clean energy asset manager, made an early commitment to invest \$100m in large scale solar, batteries and investment in the utilities.

The long term plans include up to 500MW+ of solar PV, developing and owning new large scale wind generation in Canterbury region, on-site BESS and green hydrogen and e-fuels/SAF production and refuelling facilities. Potential large new energy users include data centres, Air NZ – electric and SAF, shipping, transport, fuel switching for dairy sector and other industry, LPG substitution with synthetic propane or butane. **Potential demand (deep decarbonisation) circa 4GW.**



# Partnering with New Zealand's offshore oil and gas industry

Repurposing existing offshore platforms, pipelines, corridors and onshore facilities

Transferring jobs and providing retraining opportunities

Learning from the experience and expertise of the existing offshore industry in Aotearoa

2.

3.

# Building on our talent pool

## Skills overlap between offshore oil & gas and offshore wind

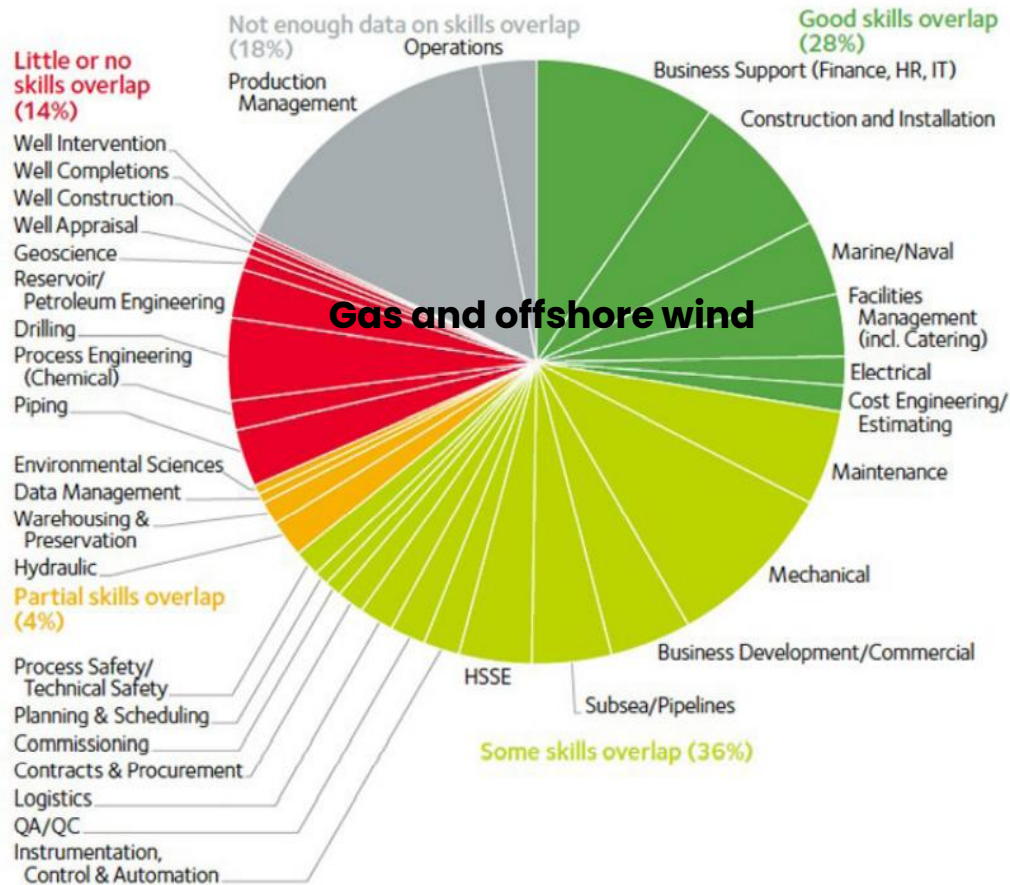


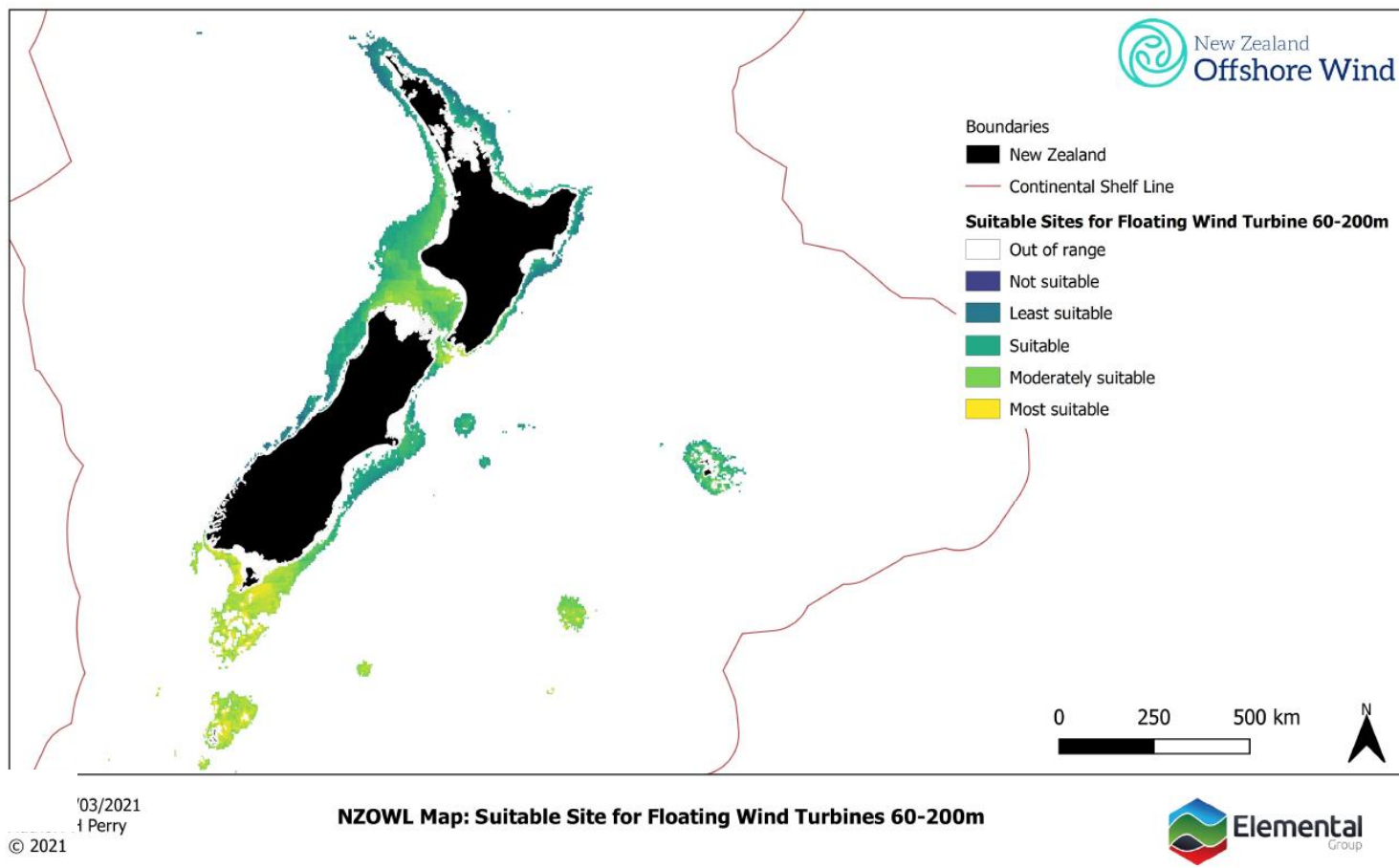
Image source: Friends of the Earth; Global Witness and Greener Jobs Alliance, 2019 – via Blue Economy CRC, 2021

### Can Aotearoa become a regional hub?

- Oil and gas skill base
- Maritime heritage
- Services
  - Engineering & Design
  - Legal
  - Digital
  - Asset and funds management
- Leadership in partnerships
- PtX – Why Not?

### But aren't we better together?

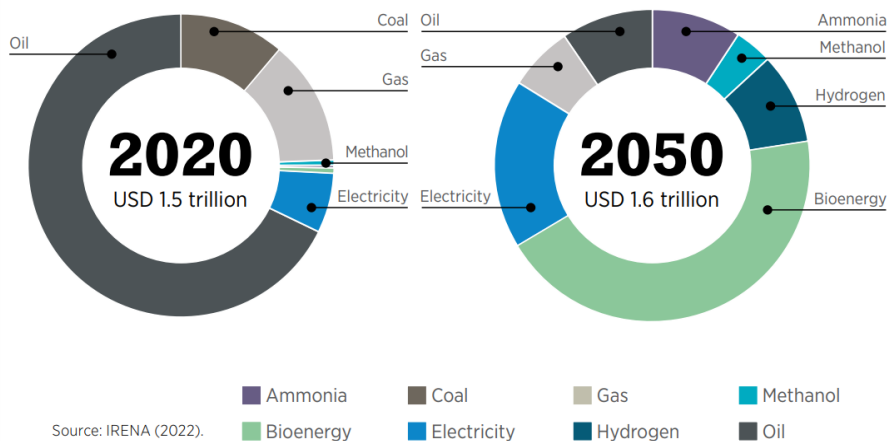
# 600% renewables is the goal



GWEC estimate - 2,000 GW technical potential of offshore wind resource  
On an area basis - proven fixed turbines (22 GW) and proven floating to 200m (57 GW)  
**Proven energy - 79 GW**

# NZ Pure – the green gas export opportunity

Figure S.1 Shifts in the value of trade in energy commodities, 2020 to 2050



## 600% RE can displace 31 MT CO<sub>2</sub>e /a

This is equivalent to 50 % of New Zealand's net emissions or 0.1% of global fossil fuel emissions

Potential to produce 3.3 million tonnes of hydrogen equivalent energy by 2050, a \$10 billion per annum industry (or even more at today's prices)

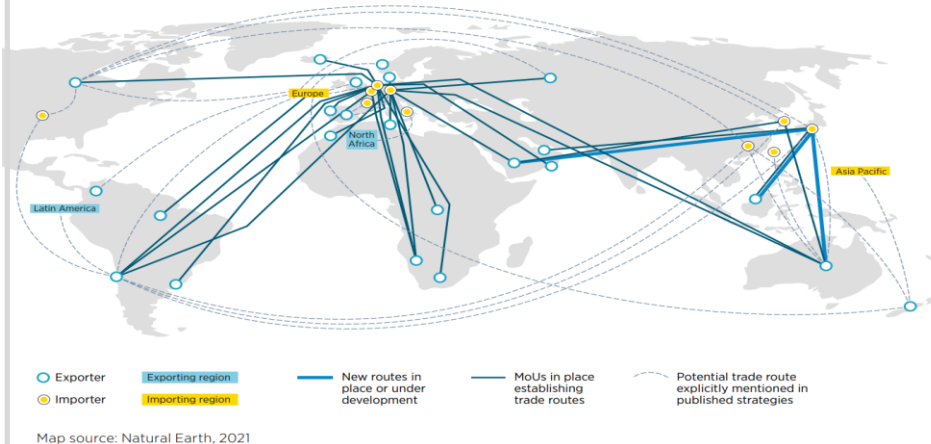
New Zealand is a target market for the emerging clean supermajors - well located for Asia

One of few markets in the world with combination of renewable resources, positive investment climate and export track record

## Challenges

- Social values
- Are RE-ready let alone H2-ready
- Confidence

Figure S.2 An expanding network of hydrogen trade routes, plans and agreements



# Think bigger

## Germany - Netherlands



### Hy3 – Large-scale Hydrogen Production from Offshore Wind to Decarbonise the Dutch and German Industry



Hy3 was announced in 2020 – before the latest EU announcements and recent upsizing of offshore wind ambitions in Europe in response to energy price shock and energy security concerns. By working together Netherlands and Germany could repurpose existing under-utilised gas infrastructure in Netherlands and potential for storage in salt caverns to decarbonise energy supply and reduce costs for consumers by not developing standalone energy systems.

Hy3 seeks to build upon the existing offshore wind developments in the North Sea and move towards greater collaboration and integration of the onshore and offshore infrastructure.

The feasibility study released in March 2022 examined the Hy3 concept in detail. <https://www.tno.nl/en/about-tno/news/2022/3/towards-dutch-german-hydrogen-value-chains-synergies-for-decarbonised-industry-and-mobility>



