

# Power to X

TRANSFORMING RENEWABLE ELECTRICITY INTO  
GREEN PRODUCTS AND SERVICES

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Te Puna Umanga

# The urgency of going green

- Global warming heading for +2.4°C (based on current NDCs), Paris Climate Agreement target is 1.5°-2.0°C
- New Zealand's legislated goal net zero emissions by 2050. Climate Change Commission sets carbon budgets
- Government's Emissions Reduction Plan – May 2022
- Several sectors are hard to decarbonise
- Power to X provides opportunity to address some of them
- Essential transformation meets Just Transition for New Zealand communities principles.



# Platform for a more vibrant economy

- Nation building as well as advancing emission reduction commitments
- Will support meaningful growth and diversification of economy (local and national) – and potentially transformation
- Supports other Government priorities, such as Just Transition and Industry Transformation Plans (ITP's)
- Enable broader and equitable social gains and enhanced lifestyle for future generations
- Power to X opportunity requires collective vision from Taranaki and recognition of the potential by private sector and central and local government

# Taranaki well suited to lead from the front

Significant offshore wind potential



Existing infrastructure



Physical resources



Specialist skills and services



Transferable manufacturing base



Thought leadership



# Power to X

- The process of using renewable electricity to produce clean products such as green hydrogen and the green products derived from it:
  - Ammonia
  - Urea (from ammonia)
  - Methanol
  - Liquid synfuels
  - Methane
- Renewable electricity can also include other energy intensive industries:
  - Data centres and cryptocurrency mining
  - Silicon production
  - Aluminium production

# Core opportunities for Taranaki

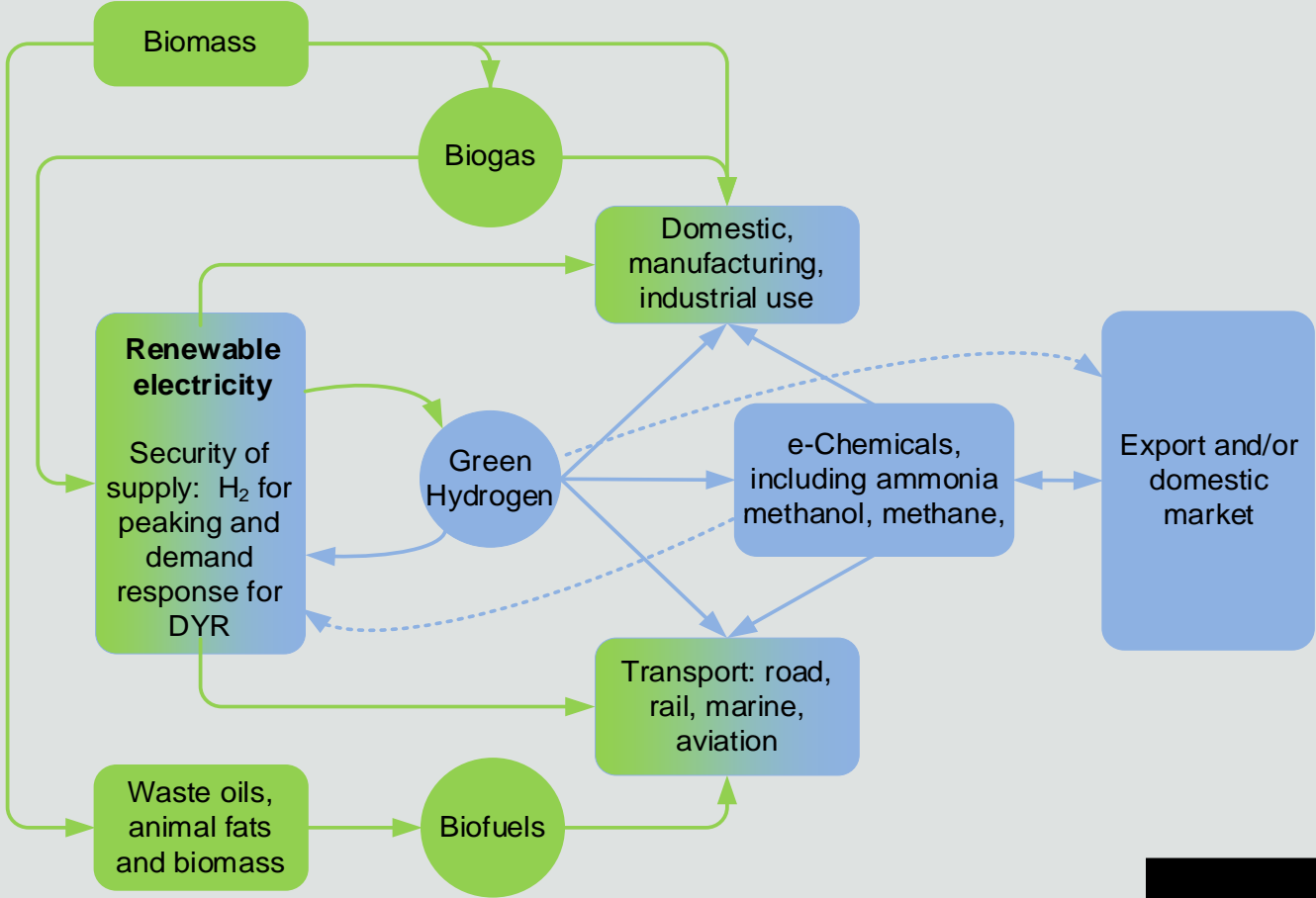
- Green hydrogen can be used:
  - To make other products
  - As a fuel for trucks, buses, trains and aviation
  - For storing and moving energy – including for export
- Green ammonia can be used:
  - To make urea
  - As a shipping fuel
  - For storing and moving energy – including for export
- Green methanol can be used:
  - To make many other products including synfuels
  - As a transport fuel including for shipping



# Key Power to X inputs

- Renewable electricity is an essential input for Power to X
- Commercial scale green hydrogen takes a lot of electricity (1 kg green H<sub>2</sub> uses ~50kWh)
  - Kapuni: current urea production needs ~310MW of offshore wind capacity for making green hydrogen
  - Motunui: current methanol production needs ~3.2GW of offshore wind capacity for making green hydrogen
- Water is also needed to produce green hydrogen (9 litres for 1 kg of hydrogen)
- Nitrogen and carbon dioxide also crucial for other Power to X products

# Decarbonised energy system





# Enablers and next steps

- Further engagement with Iwi and Māori required
- Identify relevant cross-government and private sector connections
- Develop regulatory framework for offshore energy generation and storage
- Continue to understand and determine viability of pathways, and promote and explore the significant advanced economic opportunity
- Contact [anne@venture.org.nz](mailto:anne@venture.org.nz) to provide feedback or discuss further



# Pātai/Questions?

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