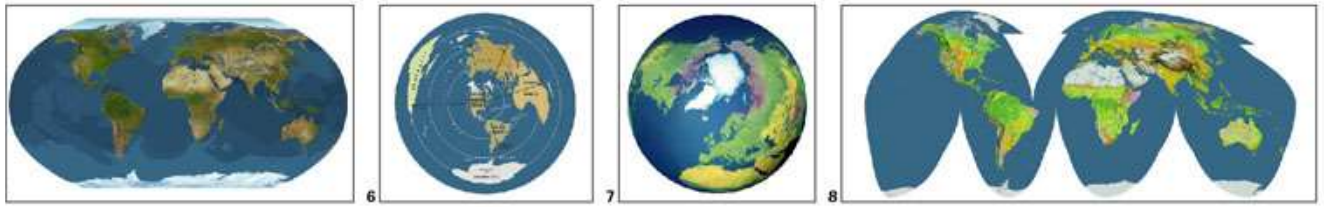
Professor Guy Littlefair

Pro Vice-Chancellor

Dean of Design & Creative Technologies

NZINC.



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Number 8 wire was the preferred wire gauge for sheep fencing, so remote farms often had rolls of it on hand, and the wire would often be used inventively to solve mechanical or structural problems. Accordingly, the term "number 8 wire" came to represent the ingenuity and resourcefulness of New Zealanders, and the phrase "a number 8 wire mentality"

DID YOU KNOW

- No New Zealander lives more than a 90 minute drive from the beach
- In 1893, NZ was the first country to give women the right to vote
- New Zealand's Southern Alps are longer that the French, Swiss and Austrian Alps combined!
- NZ is the last land mass on earth to be discovered, making it the youngest country in the world
- Least corrupt country in the world*
- One of the safest countries in the world**

*Corruption Perceptions Index, 2017

**Global Peace Index, 2017

NEW ZEALAND


AUCKLAND & AUT
WELLINGTON
CHRISTCHURCH

TIMES HIGHER EDUCATION RANKINGS

3rd

IN NEW ZEALAND

1st

INTERNATIONAL OUTLOOK

#1 IN NEW ZEALAND FOR **GLOBAL RESEARCH IMPACT**

TOP

350

IN THE WORLD

OUR STUDENTS AND STAFF

TOTAL EFT STUDENTS

18,035

- 20% PG Students
- 80% UG Students

INTERNATIONAL STUDENTS

8,347

- 73% UG Students
- 27% PG Students

TOTAL (FTE) FACULTY STAFF

1,149

- 543 International Staff
- 606 Domestic Staff

AUT is ranked 22nd in the world for International Outlook—the first in New Zealand and Australia

BUSINESS, ECONOMICS & LAW

HEALTH, SCIENCE, SPORT & RECREATION

CULTURE & SOCIETY

DESIGN & CREATIVE TECHNOLOGIES

- More than 60 research centres and institutes
- Our research institutes include:
- Engineering Research Institute
- Health and Rehabilitation Research Institute
- Institute for Radio Astronomy and Space Research
- Institute of Applied Ecology New Zealand
- Institute of Biomedical Technologies
- Institute of Culture Discourse and Communication
- Knowledge Engineering and Discovery Research Institute
- National Institute for Public Health and Mental Health Research
- National Institute of Stroke and Applied Neurosciences
- New Zealand Tourism Research Institute
- New Zealand Work Research Institute
- Sports Performance Research Institute NZ
- Te Ipukarea – National Māori Language Institute

AUT UNIVERSITY

QS STARS RATED FOR EXCELLENCE 2018

THE WORLD UNIVERSITY RANKINGS

Centre for Energy and Power Engineering

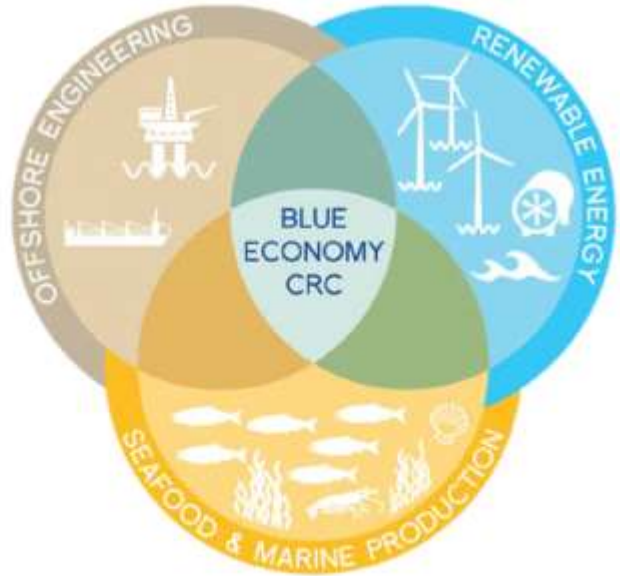
- Concentrating solar power, solar water heating, photovoltaics, energy use in buildings
- Ocean Energy Conversion (Wave Energy, Tidal Energy, Offshore Wind Energy)
- Renewable energy, combustion engines and thermofluid systems
- Integration of renewable energy and energy storage systems to electric grid and electric transportation
- Smart grids and renewable energy
- Electric vehicles
- Energy Harvesting, Smart Lighting

ENGINEERING RESEARCH INSTITUTE

Overview of Stage 1 Blue Economy CRC bid

>$100bn by 2025*

- Intensive seafood production in the coastal zone (<2Nm) is problematic and fundamentally constrained in terms of scope for expansion
- Offshore wind and marine renewable energy devices are still emerging but can compete offshore with a very high capacity factor
- The offshore engineering sector is looking for new markets to apply its skills, assets and knowledge base: 'Blue Growth'
- Natural synergies exist between these three sectors, with ability to leverage shared infrastructure and services, while defraying costs and maximising asset utilisation
- A new offshore production paradigm is required to enable all sectors to achieve scale and competitiveness over the long term



National Marine Science Plan

Blue Economy CRC

Delivering innovation in sustainable seafood and renewable energy for a marine nation

Research Program 3: Marine Renewable Energy

Irene Penesis (AMC-UTAS)

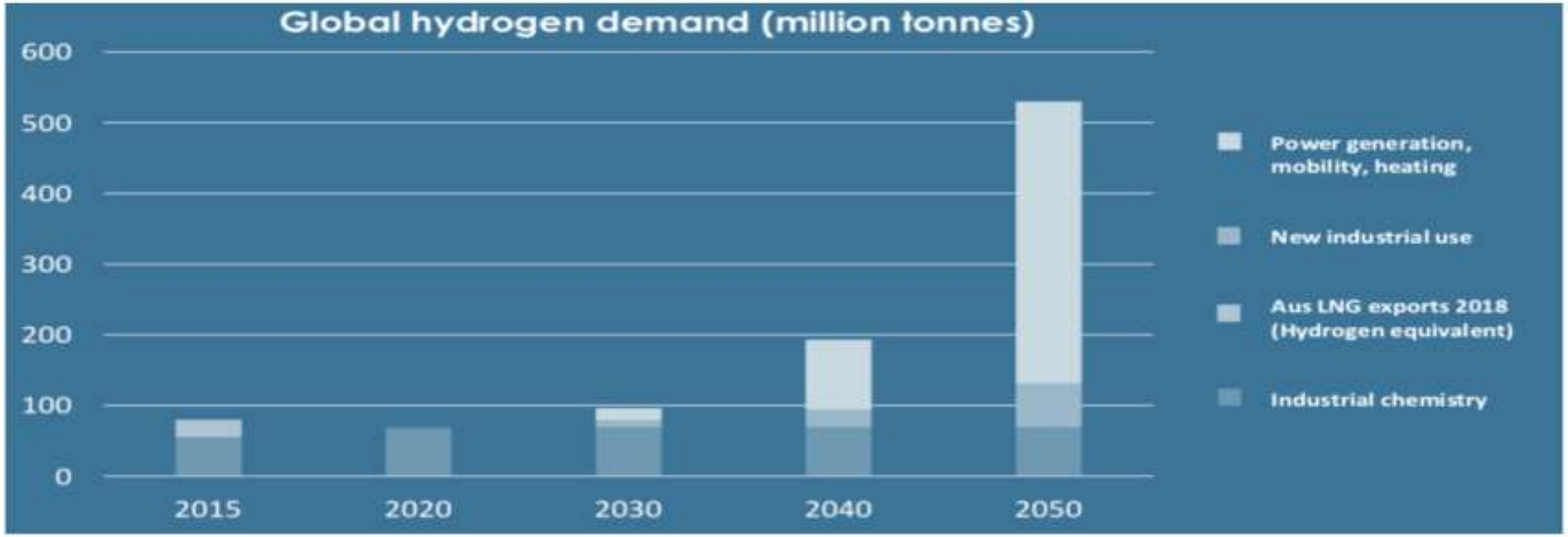
Blue Economy CRC

Marine Renewable Energy (MRE): Key sub-themes

Environmental assessment	**Device development, co-location and multi-purpose platforms**	**Energy management**	**Technical and economical feasibility**
Site characterisation, monitoring and environmental impact		Micro-grids, design, storage, usage and transportation	Market identification and development, competitiveness, levelised cost of energy (LCOE), regulations, rules and standards

Blue Economy CRC

Hydrogen: chemistry today, energy tomorrow



Blue Economy CRC

Hydrogen: the offshore advantage

- Electrolysis is the preferred platform for *renewable* hydrogen
- Cost of production is a function of (i) cost of the energy being delivered to the electrolyser + (ii) capacity factor
- A simple model:
  - Solar - 7hrs + 17hrs storage
  - Onshore wind - <24hrs continuous but…<3 days storage still required
  - Tidal - ~20hrs + 4 hours storage; when clustered with offshore wind/wave - 24 x 7
- Proximity to market, minimal supply chain (cf. LNG)
- Low cost, 'behind the meter' electricity
- Safety
- Co-product – oxygen
- Critical dependencies – clean water (desalination)

LATEST RANKINGS

AUT MOVES INTO WORLD'S TOP 350

TIMES HIGHER EDUCATION

Do great things

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AUT UNIVERSITY
NEW ZEALAND

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