



Presentation to Enapter's The Big Thing

10th October 2019



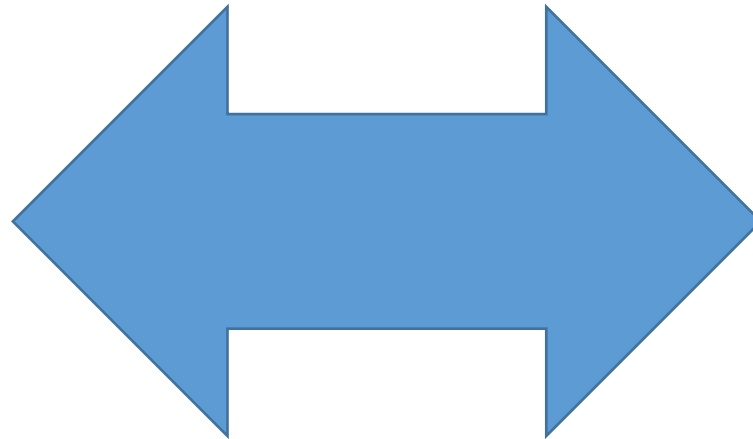
Hydrogen : export industry for Australia

THE OPPORTUNITY:

Australia's competitive advantage in solar, low cost flat land and gas infrastructure.

Major trading partners with high cost renewable resources.

Growing market for renewable energy globally.



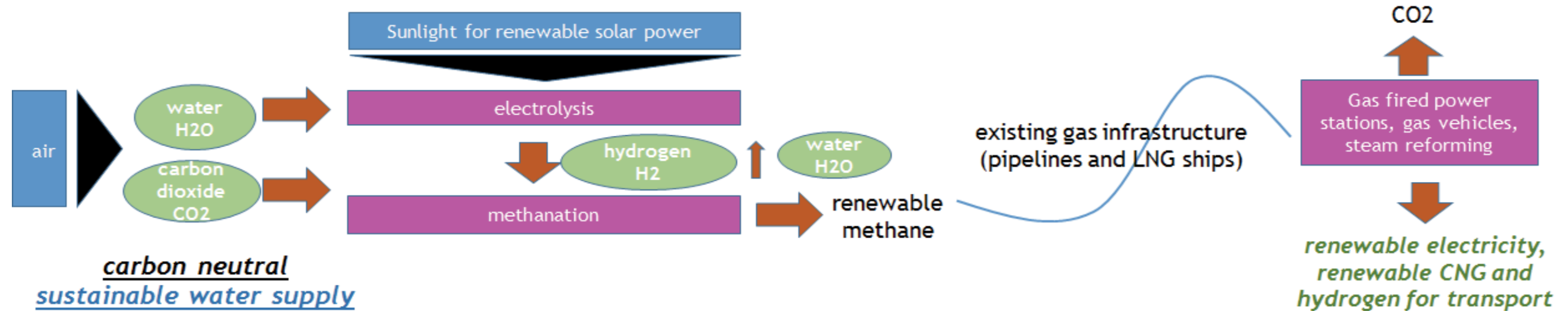
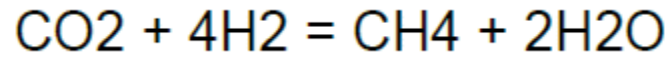
THE PROBLEM :

No viable means to sea freight renewable energy.

Proposed solutions are too high cost and need major new infrastructure.

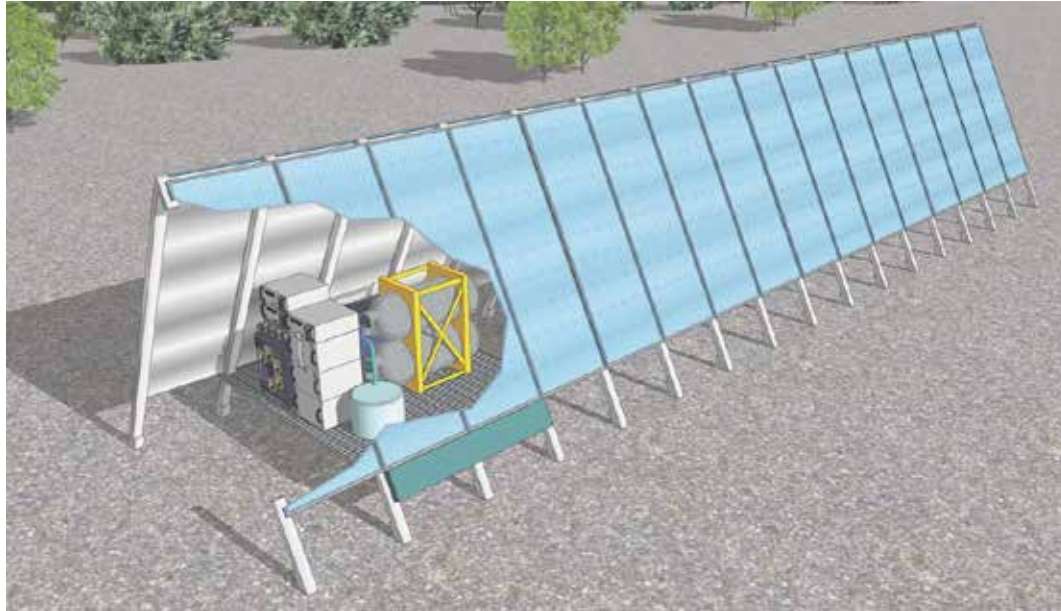


Solution : renewable methane



- Dispatchable renewable energy
 - hydrogen storage allows 24/7 methane production
 - balances the generation from variable solar energy
 - making 100% zero carbon energy viable
- Methane is best hydrogen carrier
 - fungible with natural gas, therefore uses existing infrastructure
 - 33% hydrogen when reformed, versus 17% for ammonia and 6% for MCH
 - no new infrastructure to build
 - cost and speed-to-market advantage

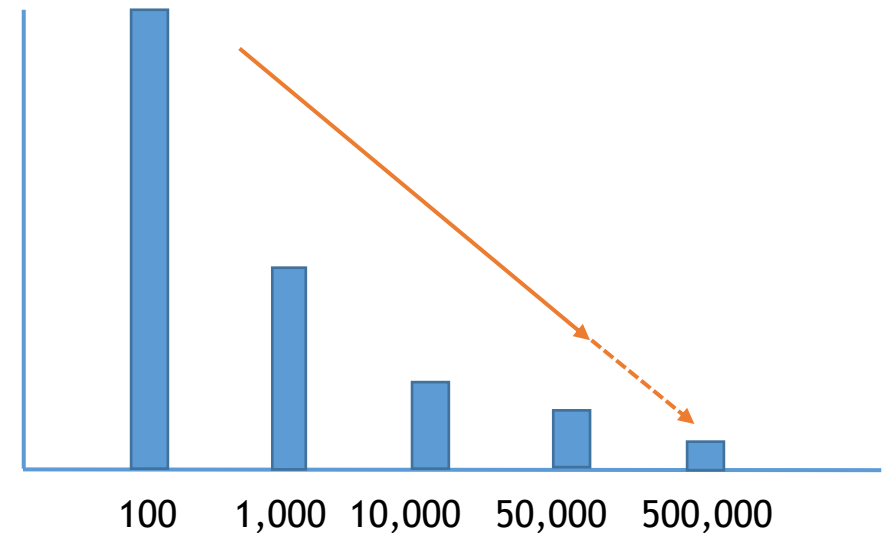
Cost reduction : economies of manufacture



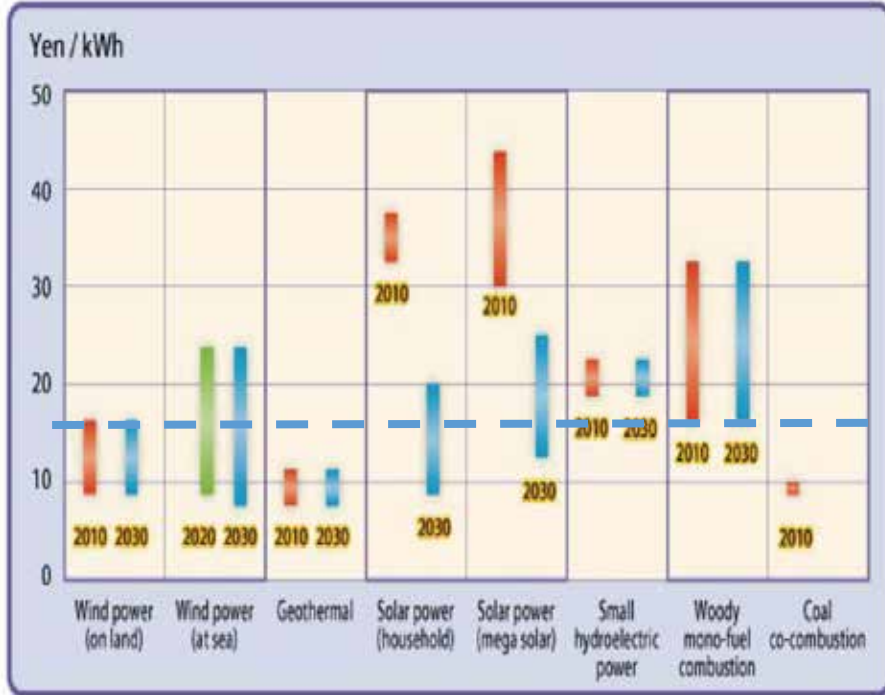
Renewable Methane Module
(1m³/h H₂, 31GJ methane pa)
Virtual Gas Well™

MODULAR FOR MASS MANUFACTURE

Typical example of economies of manufacture:
Battelle 2017 manufacturing study on fuel cell stacks demonstrated 11 fold cost reduction from 100 to 50,000 units.

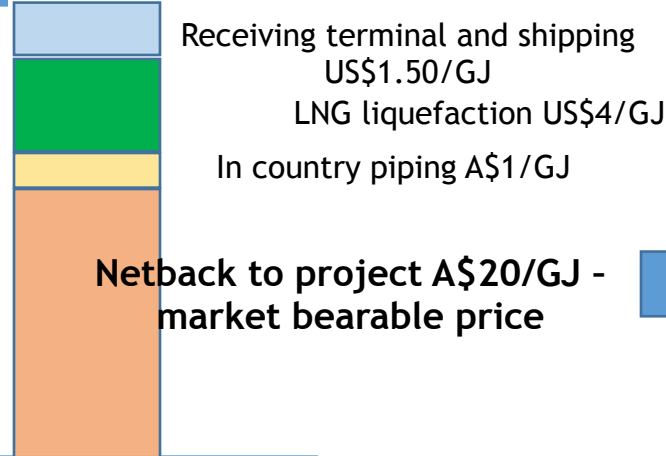


Netback pricing : Japan to Australia

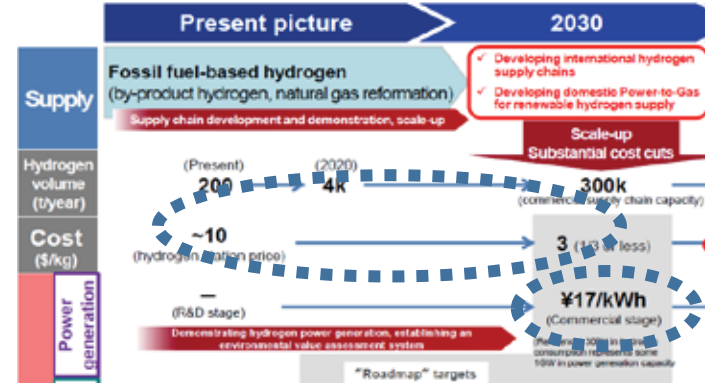


Indigenous renewable supply options for Japan

17 Yen/kWh (US15c/kWh) - based on fuel cost alone, LNG price is US\$20.20/GJ = \$3/kg hydrogen



Scenario for Basic Hydrogen Strategy



Module target cost

A\$20/GJ x 31GJ pa module production = \$620 pa revenue @ 10% WACC plus O&M = A\$6,200 capital cost

PV	\$1800
Electrolyser	\$900
Methanation	\$400
CO2 extractor	\$1200
AWG	\$300
Ancillaries	\$400
Profit	\$1200

SGG : disrupting global renewable energy

A disruptive technology is ... a ground-breaking product that creates a completely new industry.



renewable methane



seaborne renewable energy trade





SOUTHERN GREEN GAS

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