

NORTHERN RIVERS
HYDROGEN OPPORTUNITIES
SEPTEMBER 2021

Opportunities through the transition

Focus on domestic hydrogen economy

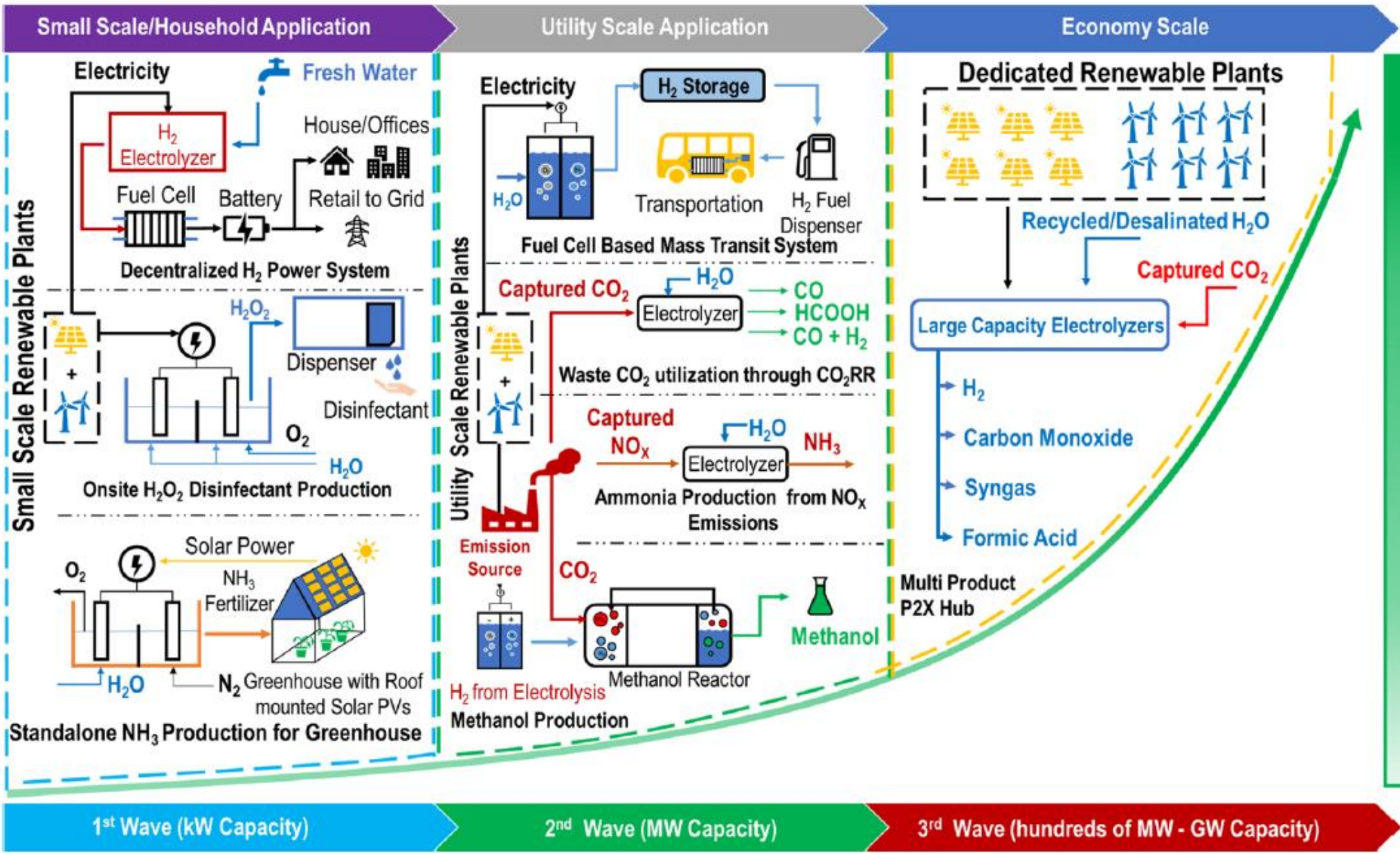
- Energy transition underway. Prior to the development of large scale projects an opportunity exists to deliver more focussed projects in regional communities during the transition
- Regional communities have a strategic advantages due to opportunities initially match supply with demand and leverage existing technologies, skills and processes
- Locating hydrogen initiatives across regions facilitates much needed build out of hydrogen refuelling/supply networks

Capabilities and jobs

- Take advantage of similarities between hydrogen and existing industries such as fossil fuel industry
- Transfer of fossil fuel linked skilled jobs to clean energy roles
- Individuals employed in these roles become advocates for the hydrogen industry assisting wider adoption
- Localise production and manufacturing further enhancing employment opportunities

Northern Rivers opportunity

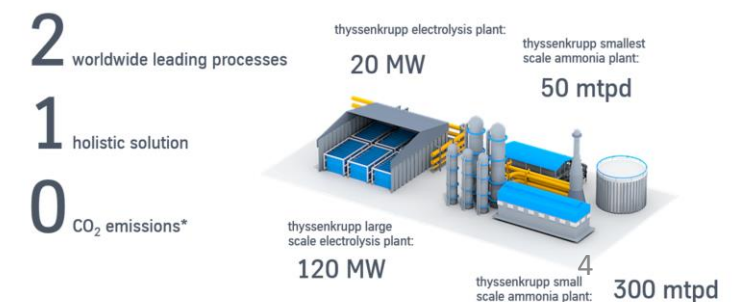
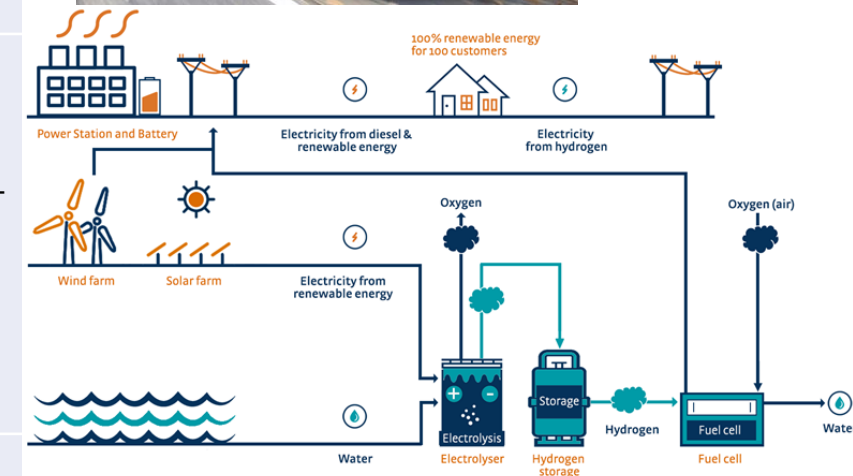
- Become a demand driven “Hub” that stimulates either local production or inbound transport of energy/hydrogen
- Collaborate to break the circularity of who comes first! Also look collaborate across the energy industry. For example zero emission ecotourism.
- Displace diesel and LPG
- Firmed renewable remote power (off and end of grid power)



Projected Share of Renewables in Our Energy System

Potential applications

Northern Rivers opportunity	Potential application	Scale
Fuel cell electric vehicles	On farm vehicles (tractors, Utes), heavy vehicles (bus, garbage trucks)	H2X Warrego 6.2kg h2 per 500km
Remote power	Off and end of grid diesel and grid infrastructure replacement. Long duration energy storage. FCEV/EV power to the home	~1MW Solar, 0.4MW electrolyser, 0.1MW fuel cell – 100 homes. (Horizon Power) Lavo green hydrogen energy storage systems
Chemicals	Localised ammonia production	Thyssenkrupp 20MW Electrolysis into 50 tonne per day NH3
Displace fossil fuels	At the home use	Replace LPG at home alternative to electrifying



* If the required electricity is generated from renewable sources

Initial projects

- Region may not be conducive to large scale renewable hydrogen production. But this shouldn't deter Northern Rivers progressing as a demand driven hydrogen hub
- Small scale renewable hydrogen projects are possible throughout Northern Rivers. Project scale increasing away from the coast
- Opportunity for smaller scale renewables to initiate the market through collaboration with potential customers to eliminate the current circularity and take the first/early mover advantage
- Leverage announced government funding and R&D concessions
- Develop hydrogen supply through proven technology. Optimise the expansion of a project rather than focussing on the nirvana solution for initial developments
- Examples of potential supply side projects being considered
 - Surround Energy: planning to establish network of renewable hydrogen refuelling sites targeting regional mobility sector. +500 kg/day production target
 - TGE Solar to hydrogen: Tyagarah based ~5MW DA approved solar farm development project proposing to produce hydrogen and or install a local micro grid. +200kg per day target to firm renewables or supply into mobility sector
 - Byron shire council ~5MW solar farm and ~0.5MW Biogas facility development. Opportunity for council to incorporate hydrogen
 - Myrtle Creek ~100MW Solar farm development (~30km outside of Casino) and NCMC proposed bio hub project

Capitalising on the opportunities

- Industry and government collaboration across broader energy sector and within the hydrogen economy.
- NSW NZIIP and Hydrogen programs, NewH2, and RDA platform assist with co-ordinating discussions between supply and demand
- Demand side proponents consider targeting funding program which aim to promote/catalyse demand
- Opportunity to develop a domestic industry ahead of the mega export projects. Focus on leveraging existing technology and drive the development of right sized projects well ahead of larger scale projects which may come online later in the decade