

**Renewable Gas in Australia forum, “Hydrogen and biogas to deliver Australia’s emission outcomes”, Thursday 6<sup>th</sup> June 2019, Maritime Museum, Darling Harbour, Sydney.**

Leon Bogers Vice President GAMAA attended this Forum on GAMAA’s behalf and his notes include:

It was a jampacked day with 14 presenters on diverse topics relating to three themes, Advancing renewable gas in Australia, Capitalising on the opportunity and Australian case studies. Some of the key points from the speakers are below:

- Gas delivers as much energy to Australia as electricity and is the silent achiever.
- Hydrogen opportunities are in export, transport and heat
- Hydrogen is a major vector of decarbonisation at a world level
- The gas network delivers heat, not gas
- It’s not Hydrogen or Biogas, it can be both. Hydrogen and Bio-methane can be mixed with existing Natural Gas
- Australia lags behind Europe. The focus in Europe has been more on renewable energy rather than renewable electricity as has been the case in Australia
- At a world level, gas is part of the solution to deal with the decarbonisation challenge
- Renewable gas can be made a part of the ‘circular’ economy
- The lack of a national Energy Policy is holding Australia back.
- The economics for producing H<sub>2</sub> from renewable sources will always be challenging, 2/3rd of energy is lost in conversion of electrolysing water into hydrogen. Scale and automation of electrolyser technologies will drive down costs.
- Biomethane has the potential to reduce GHG emissions, increase renewables, manage landfill and help agriculture (a source of income from farmers)
- Biogas captures methane emissions, which is itself a highly active greenhouse gas
- Barriers of biomethane are
  - (a) Financial: (high upfront capital costs, complexity in securing revenue sources),
  - (b) Policy: No renewable gas targets, no tax incentives, no landfill waste levies
  - (c) Project development: approval process complexity, a lack of national consistency, social license, physical distances
- Methane can utilize existing infrastructure as Hydrogen carrier.
- Methane Pyrolysis:  $\text{CH}_4$  to  $\text{C} + 2\text{H}_2$ . The ‘C’ is solid carbon which can be used for nanotubes, char (fertilizer) or can be buried.
- There is a power struggle between molecules and electrons. 78% of world energy still comes from molecules and 19% from electrons. Hydrogen can reverse this power struggle.
- Electrons are moving into areas traditionally dominated by molecules
- Electrification has limits, including ‘bandwidth’
- Hydrogen is the molecule to power a green economy
- Gas is competing against batteries and pumped hydro, not wind and solar
- Decarbonisation by 2050 is current projection. But this could be faster, due to feasibility rather than regulation and hopefully not because of climate disruption.
- Sector coupling between gas, electricity and transport, decarbonisation and decentralisation.
- With Hydrogen, the public are asking “Australia is a dry place, where is the water going to come from”?
- With Hydrogen, surveys shows the public is “cautiously optimistic”. Largest concern is safety, followed by cost
- Biogas is typically 65% Methane and the rest CO<sub>2</sub>
- One of the key questions should be “what are the lowest cost options towards decarbonisation”?
- Renewable gas has the potential to be recognized under BASIX and NatHERS energy ratings for buildings.



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