

Unlocking the Potential of Wastewater

Insights into the Optimisation of Biogas Use



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Acknowledgment of Country

We acknowledge the land that we meet on today is the traditional land of the Turrbal and Yuggera people and pay our respects to their Elders, past and present. We recognise their continuing connection to lands, waters and communities.

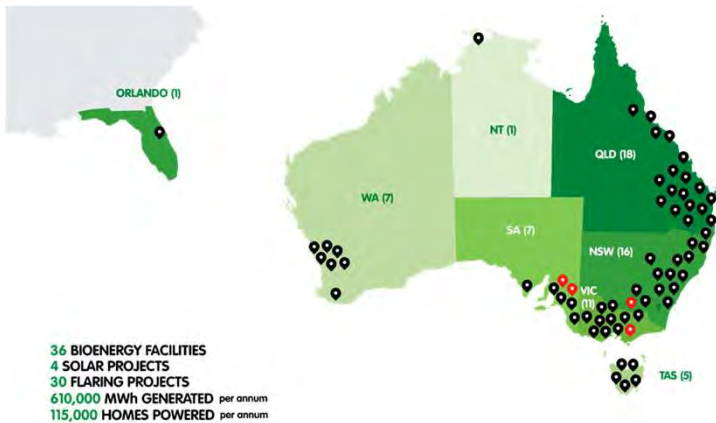
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LMS Energy Company Snapshot

Australia's largest and most successful landfill biogas company



LMS and Helmont Introduction

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Abates more than **5m tonnes of CO₂e** a year



Equivalent to taking **1.6 million cars** off the road every year



Power **250,000 people** per day with renewable energy



Equivalent to planting **68 million trees**



In-house **Australian manufacturing**



450 dedicated biogas employees

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Helmont Energy

Decarbonising the Australian Agricultura Economy through bioenergy

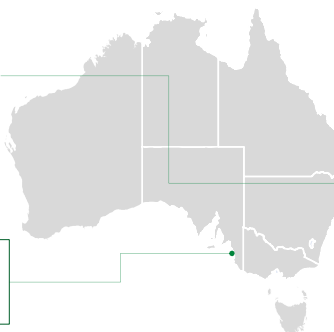


North Coast Bioenergy Hub

- **Project:** Anaerobic Digestion and Biogas to Generation
- **Waste Type:** Abattoir Waste

Renewable Fuel Project

- **Project:** Anaerobic Digestion, Biodiesel and sustainable aviation fuel
- **Waste Type:** Sugarcane



Murray Bridge Bioenergy Hub

- **Project:** Anaerobic Digestion and Biogas to Biomethane
- **Waste Type:** Poultry / Piggery

Wide Bay Bioenergy Hub

- **Project:** Anaerobic Digestion and Biogas to Biomethane
- **Waste Type:** Sugarcane

Specialist Biomethane and Carbon Abatement Project Developer

Developing Regional Bio-Projects and Mining Carbon Abatement Projects

Experienced in Renewable & Carbon Markets

Leader of Policy Change to Support Biomethane

Partnered with Leading Global and Australian Industry Players

Capital Available for Growth via Major Shareholder, LMS Energy

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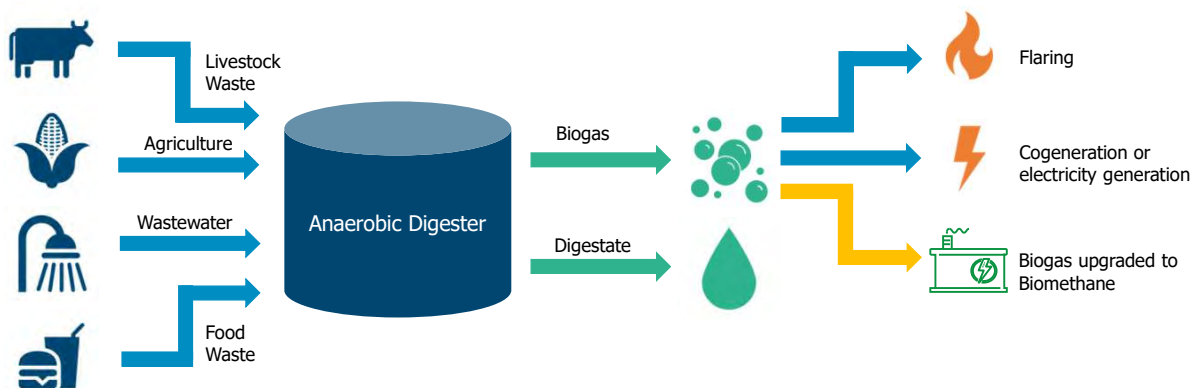
Cutting methane is the strongest lever we have to slow climate change over the next 25 years.

Inger Anderson, Executive Director UN Environment Programme (UNEP)
6 May 2021

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Biogas Generation

Biogas is produced from livestock, agriculture, food wastes and wastewater as well as landfills



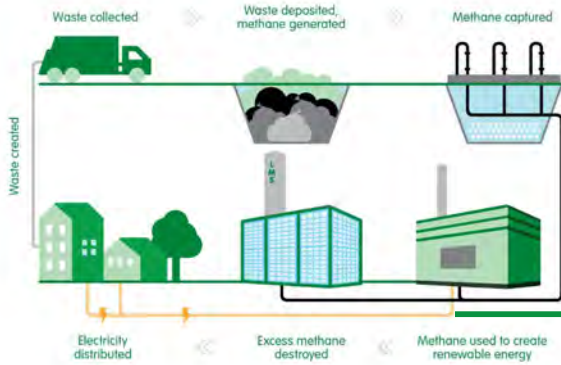
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Biogas Generation - Landfills



LMS Energy has been focused on destruction through flaring and electricity generation

METHANE TO ENERGY



Or Biomethane:

- Chemically equivalent to Natural Gas
- Promotes Circular Economy and waste re-use
- Increases agricultural opportunities
- Beneficial use of organic waste streams
- Digestate can be used as a bio-fertiliser
- Through the Upgrading process biogenic CO₂ is a waste product
- Potential for beneficial re-use of Biogenic CO₂
- Carbon neutral

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Australian Gas Market Context



Natural gas is used by a broad range of customers for electricity generation, mining, industrial, commercial and residential use, and for export

1,600PJ

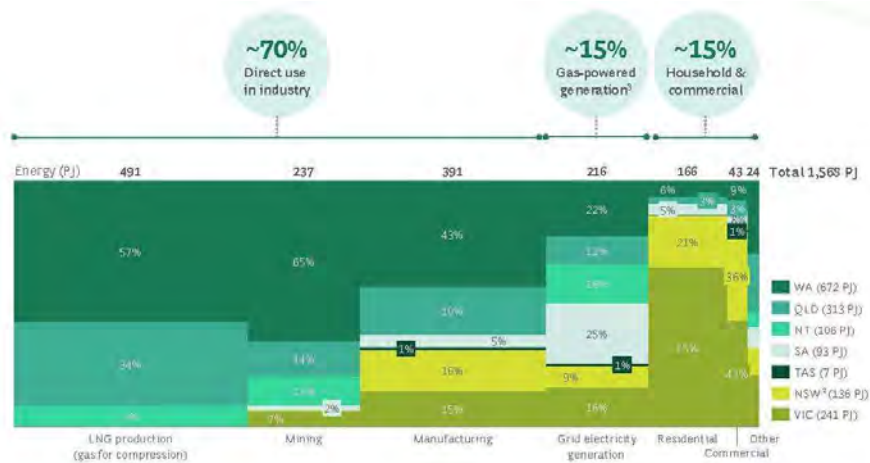
Australian annual domestic gas consumption

27%

Natural gas' contribution to Australia's primary energy consumption

18%

Natural gas' contribution to Australia's emissions

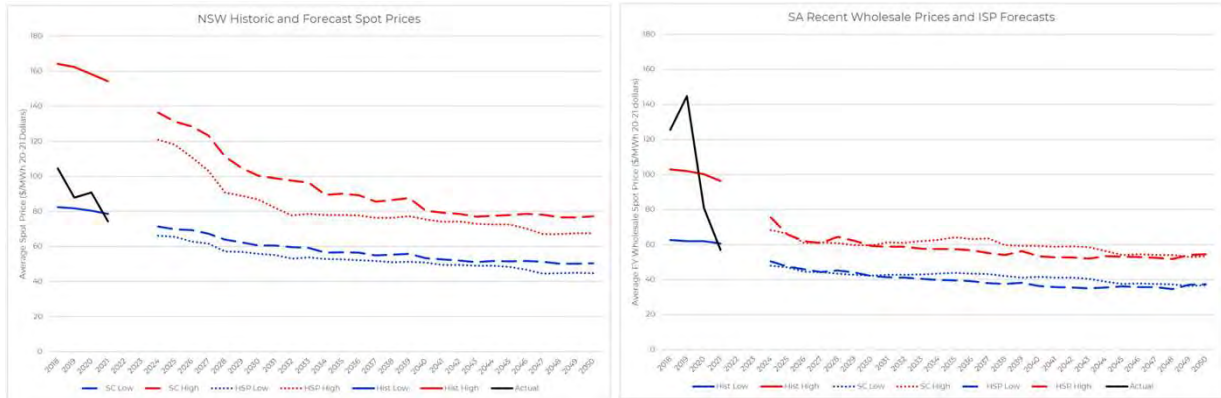


Source: BCG, Role of Gas Infrastructure in the Energy Transition, 2023.

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Best Use of Biogas – It depends?

In the future electricity from wind and solar will likely produce cheap and efficient electricity

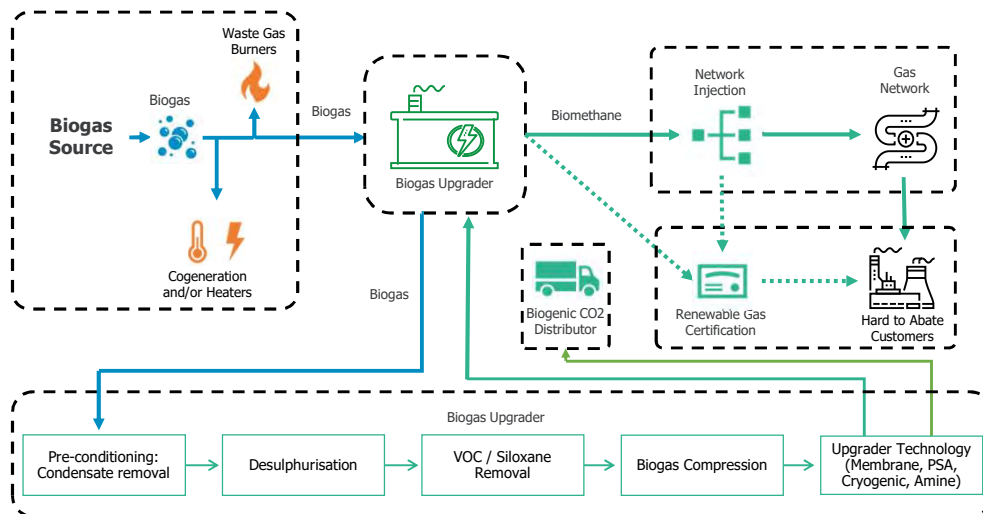


Source: Future wholesale and retail electricity prices in SA in 2030 and 2040 under select ISP scenarios | University of Wollongong 2022

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Biogas to Biomethane Process

A biogas upgrading facility can convert biogas to useable biomethane, a product chemically equivalent to natural gas.



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Biogas to Biomethane – Does it Work



International growth in biogas to biomethane is significant



Source: Outlook for biogas and biomethane | IEA 2020

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Community Waste – Dry Anaerobic Digestion



LMS is developing its first commercial scale anaerobic digestion project, where food and garden organics (FOGO) waste is turned into renewable energy and nutrient-rich compost.

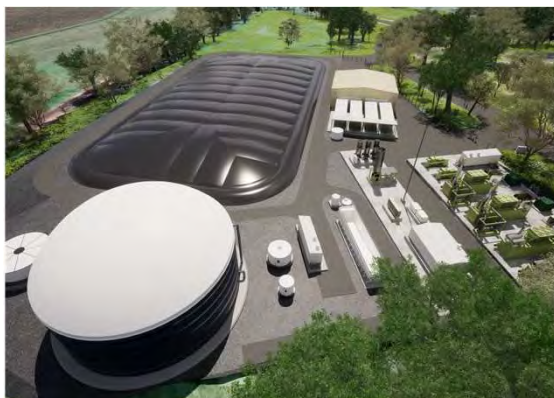


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Agricultural Waste – Sectoral Decarbonisation



Investing in and supporting Australia's agricultural industry to decarbonise, including FOGO processing option



Proposed future anaerobic digestion technology to convert **abattoir waste** into **electricity and abating methane**



Future project stages estimated to reduce the abattoir's carbon footprint by **90%** and provide it with **renewable heat and electricity**

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Landfill Gas – Biogas to Biomethane



Investigating the potential for landfill biogas to biomethane in combination with electricity generation



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Projects Under Development



We have a large pipeline of projects that are under development around Australia



Wastewater Projects

Location: Australia

Status: Proposed

Size: **100 – 600 TJs** per annum

Summary: Opportunities to leverage existing wastewater anaerobic digesters for food and organics or conversion biogas to biomethane for gas network injection.



Agricultural Bioenergy Hubs

Location: South Australia

Status: Proposed

Size: **40 – 300 TJs** per annum

Summary: Working in collaboration with Agricultural partners to develop a portfolio of bioenergy projects across their existing portfolio of facilities around Australia.



Landfill Projects

Location: Victoria,

Status: Proposed

Size: 2 Key projects over **2 PJ** per annum

Collaborating with gas network and landfill operators around Victoria to complete feasibility assessments on over 2 PJ of potential biomethane projects for gas network injection.

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Summary



Biomethane is a great opportunity to support the decarbonisation of hard-to-abate sectors



Biomethane can contribute to the 24/7, reliable, energy supply and existing assets can be leveraged to support the hard-to-abate industries through the energy transition.



Existing customers are available on the gas networks and can use biomethane like they use natural gas today with no changes to their existing operations.



Supports an economy-wide diverse energy transition where renewable gases can decarbonise the gas network while ensuring energy security.



For Australia's least-cost integrated clean energy system, there is a need to develop competitive low-carbon gas supply.



Highest use benefit for end-products should be the goal, as wastewater treatment facilities diversify with co-digestion as well as managing increasing population growth, wastewater treatment plants may be able to deliver a higher-value biomethane product.

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Thank you

Leaders in methane abatement
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