ADVERTISING FEATURE

Capturing biogas

The greening of our gas

Shahana McKenzie, CEO of Bioenergy Australia: the association's membership has surged in recent years along with a growing interest in biogas. Main image: Jandakot Bioenergy Digestion Plant, Western Australia. PHOTO: JOSEPH OLIVER

"Now we're cooking with gas" is an age-old Australian catchcry for anything triumphant.

But what if that gas could be green? Something derived from food waste? Or perhaps crop waste, pig-farm slurry, landfill or wastewater?

These overlooked resources make excellent feedstock for biomethane, a renewable gas that is set to "go off" in Australia, in all the right ways. Biomethane's circular system can also produce fertiliser and water useable for crops – just what a sunburnt country needs.

Biogas currently provides one-tenth of the world's primary energy. Home heating, industrial processes and public transport can all be powered by clean, green biogas.

In Australia, however, it's an under-utilised treasure. Renewable gas provided just 0.5 per cent of Australia's power in 2017. But with government backing, much like that delivered to green technologies such as solar and hydrogen, it could quickly deliver substantially more.

That's the well-informed opinion of industry association Bioenergy Australia, which brings together hundreds of energy providers and innovators in a single national voice.

One such group, Energy360, in Victoria, says biogas can provide hard-to-abate industries (which use high-temperature processing fired by natural gas) a cost-effective abatement solution.

Jemena and Sydney Water, meanwhile, with support from the Australian Renewable Energy Agency (ARENA), are developing the Malabar biomethane injection project, which will use gas from wastewater treatment.

The project is being used by GreenPower to pilot renewable gas certification, allowing customers to voluntarily buy renewable gas from 2022.

Similarly, in South Australia, Australian Gas Infrastructure Group (AGIG) is working with Delorean Corporation to use green gas from organic waste in the existing distribution network, and has an agreement to extend this work across the country.

"Utilising mature technology to capture biogas for energy production via diversion of organics from landfill enables renewable energy production to offset fossil fuels at a commercially viable scale," says Joe Oliver, managing director of Delorean Corp.

According to Deloitte Access Economics, Australia has a potential 371PJ (petajoules) in biogas resources, enough to power 80 per cent of east coast households. There's scope to attract $5 billion in investment, rising to a possible $13.7 billion by 2030.

The CEO of Bioenergy Australia, Shahana McKenzie, says the future bioeconomy could deliver benefits such as economic development in regional areas, energy security, jobs and significant emissions reduction.

"Bioenergy Australia has been in operation for more than 20 years and has seen a 300 per cent increase in membership over the last three years," she says. "That's a strong indication the sector is ready for significant acceleration."

Europe jumped into biogas in the 1990s, with many cities having plants tucked discreetly within their suburbs. (One in Paris is within sight of the Eiffel Tower.) The European Union provided funding and incentives, putting biogas on an equal footing with wind and solar power.

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"Biogas has had great success in Europe due to infrastructure and incentive schemes," reports NIRAS, a Danish international engineering consultancy. "In addition, EU consumers are willing to pay for green products."

Several BA partners cite a lack of government-certified recognition and incentives equivalent to those offered to other electricity producers as the biggest barriers to Australia expanding its biogas use.

According to AGIG, this could be achieved through the Emissions Reduction Fund, a government-backed renewable gas target and biomethane certification.

"Another method [of production] uses horticultural crop residue in a tank rather than a lagoon, which stirs the residue and produces biogas and digestate – a solid by-product – for use as a natural soil conditioner and fertiliser," says Energy360 CEO Samantha Lamond.

Also, residual organic waste in landfill can produce biogas for up to 20 years.

According to LMS Energy: "Currently, three-quarters of Australia's municipal residual waste ends up in landfill where biogas is captured.

"As such, there is a great opportunity to use this biogas to produce biomethane. In the United States, for example, there are more than 100 projects in operation or under development which utilise landfill biogas to create biomethane."

A key challenge for more waste recovery is that Australia's state governments and municipal councils have different definitions, rules and permits for "waste" and the products derived from it.

Swiss-Japanese company HZ Inova, which is building an energy-from-waste plant in Rockingham, Western Australia, says this could be overcome if the federal government took charge and mandated uniform regulations.

"The increased co-operation by councils should be encouraged," says HZ Inova's Australian managing director, Dr Marc Stammbach.

With international experts in agreement about Australia's biogas riches, Bioenergy Australia says its call for a government-backed certification scheme – so that customers know they're buying green energy – deserves urgent attention.

This, combined with a renewable gas target and incentives for the sector, would provide confidence and bring substantial investment, it argues.

Then, we might just have to upgrade the saying: "now we're cooking with *green* gas."