Strong case for biogas generation: Professor Ralph Sims

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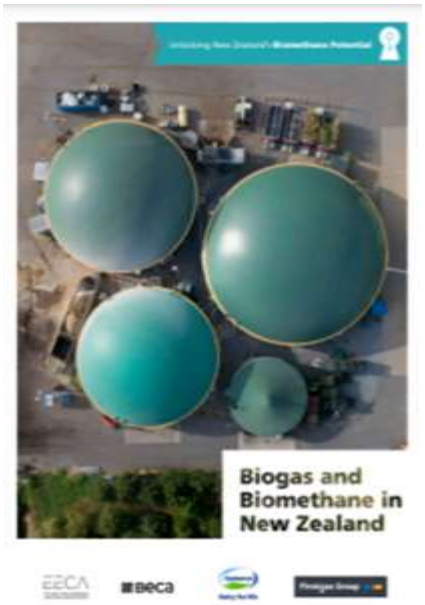

EMERITUS Professor Ralph Sims, who co-wrote an NZ Standard on biogas in the 1980s, responds to the **Biogas and Biomethane Report** released yesterday

The Beca, Firstgas, Fonterra and EECA comprehensive study on the potential of biogas and biomethane for NZ provides a good overview that serves to reinforce what the Bioenergy Association of NZ has been advocating for some time – there is good potential to expand biogas production and use to offset demand for coal and natural gas.

Producing biogas is not a new concept in NZ. David Stewart undertook extensive demonstration trials at the Invermay Agricultural Research Station in the 1970s and 80s. As a result the NZ Standards Association produced a detailed report in 1984 titled “On-farm production and utilisation of biogas in NZ”. A number of on-farm biogas plants were constructed, the scrubbed gas was used for heating pig buildings, fuelling tractors and other vehicles, and generating electricity. The plants didn’t last long however, and it was realised that due to operating costs plus the corrosive nature of the gas, the scale of a plant had to be sufficient that someone could be employed full-time to manage and maintain it. Farmers are too busy looking after their animals to also have to spend time looking after the anaerobic bacteria.

Many biogas plants were also built in Europe around this time, encouraged by agricultural subsidies. For example, one plant I visited on a pig farm in Austria was established partly to reduce the odours from the manure when applied directly to the land (the digestate is relatively odour-free). However, was making so much money through the subsidies that the farmer got rid of his pigs and instead grew green crops on the land to store as silage and then use as feedstock

for the plant throughout the year. The problems of operating smaller farm-scale plants also became apparent in Europe. This led to community-scale plants being constructed, initially in Denmark and Germany and mainly in rural towns where municipal organic waste is used as feedstock with farm wastes added. These are delivered by local farmers to the plant who then take away the digestate to be spread on their land as a useful soil conditioner.

Food process residues have also been digested in NZ in past decades, such as at Cedenco's tomato processing plant in Gisborne. This was also closed down, but a new plant is again being considered to overcome the current environmental problems that these waste products have caused resulting in a court case. Several landfill gas plants are also operating around the country – the gas, also being predominantly methane, usually used on-site for electricity generation.

This recent EECA study has usefully evaluated anaerobic digestion plants and processes that are operating overseas. Its two case studies of using municipal organic waste or cow manure feedstocks have identified the potential and the barriers of each. But there are "horses for courses". In small rural towns these feedstocks could be mixed and used for electricity generation for local supply. By-products from a large food processing plant could be digested and the unscrubbed gas used to provide heat for direct use in the plant, which would also overcome the problems of waste disposal. Organic wastes in a large municipality could provide biomethane for injection into an existing gas grid.

Overall the study offers a strong case for encouraging biogas production and utilisation in NZ and further evaluation. Sufficient volumes of organic feedstocks are available and when used for biogas production, can avoid disposal issues. Whether the biogas should be used for heat, electricity or gas grid injection is site and cost specific. In all cases, being a short-lived greenhouse gas, any leakage of the gas produced should be minimised.

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