

Biomass Strategy comes up short

James Skinner

Sewage pollution of rivers and beaches has spoiled the summer for many swimmers and surfers. In the popular rage against the water companies, it is easy to forget that, like most forms of waste, sewage is, in fact, a valuable resource that happens to be in the wrong place at the wrong time.

All forms of organic waste, including sewage, animal manure and food and vegetable waste, emit methane to the atmosphere as they rot. Methane is a particularly potent GreenHouse Gas (GHG). The Intergovernmental Panel on Climate Change (IPCC) has indicated that it has a Global Warming Potential (GWP), over 20 years, of 86. This means that methane has 86 times the carbon dioxide equivalent in its effect on the climate over the first 20 years from emission. Methane Capture and Use (MCU) therefore deserves to be given the highest possible priority if government is to achieve its legal commitment to reach net-zero by 2050.

Methane can be captured, using Anaerobic Digestion (AD), in which microorganisms break down biodegradable material in the absence of oxygen. The products of this process are biogas, liquid digestate, and solid digestate which can be used to replace fossil fuel derived fertilisers. The biogas comprises some 60% biomethane and 40% carbon dioxide. As the carbon is already part of the existing carbon cycle, unlike fossil fuel emissions, so its return to the atmosphere does not increase the total volume of GHGs.

AD produces relatively low-cost biomethane, which is chemically identical to Compressed Natural Gas (CNG) derived from fossil fuels. It can therefore be used, as BioCNG, to replace CNG as a valuable source of heat, power or transport fuel.

Last month the Department for Energy Security and Net Zero (DESNZ) published a 204-page Report entitled "Biomass Strategy", in which it examines the role of Biomass, (including organic wastes such as sewage, manure and vegetation) in achieving the government's legal obligation to ensure that the UK economy is net zero by 2050. Strangely, it does not mention the potency of methane as a GHG.

Instead of prioritising Methane Capture and Use (MCU) the Biomass Strategy concentrates on BioEnergy Carbon Capture and Storage (BECCS). This is like mopping up water in the kitchen when a bath is overflowing upstairs and flooding the whole house. Obviously, the priority is to locate the bath and turn off the taps – mopping up comes later. There is no point in wasting resources on capturing carbon that is already in the carbon cycle at the expense of ignoring the overriding need to cut off the source of the problem – fossil fuel and methane emissions. Priority needs to be given to capturing all sources of GHGs that were previously sequestered, particularly as methane can itself be such a valuable resource.

As the effects of global warming become more frequent, with increasing wildfires, storms, floods and droughts, receding glaciers and dwindling biodiversity reported daily, the danger of encountering positive feedbacks, such as the accelerated loss of Antarctic ice are starting to appear. This risk is highest over the next 20 years.

MCU not only eliminates the massive GHG effect of methane by turning it into a valuable resource, which can be used as a chemically identical substitute for Compressed Natural Gas (CNG) made from fossil fuels. It also provides a valuable natural resource that will continue to be available for so long as life exists on the planet. At present there are only some 670 AD plants in UK as compared with 10,000 in Germany and over 100,000 in China. The rising world cost of energy and fertilisers makes

home production of biomethane attractive, but rising interest rates make AD plants unviable. This calls for government action to invest in expanding AD capacity.

The situation has been well summed up by the UN Framework Convention on Climate Change (UNFCCC) recommendation of the five wins of Biomethane:

Win for turning GHG into energy;

Win by using that energy to replace fossil fuels;

Win by turning global waste, that releases dangerous levels of methane gas every day, into a valuable resource;

Win by creating jobs and contributing to the new low-carbon economy;

Win by offering a stable energy source that can be built and used even at the household scale in remote areas.”

Niclas Svenningsen, Manager, Global Climate Action at UNFCCC

The UK government is a signatory of the Global Methane Pledge (GMP), under which over 100 countries have undertaken to reduce their methane emissions by 30% by 2030. Surprisingly, the Biomass Strategy makes no mention of the GMP. The government has performed well so far on overall methane reduction. Now it needs to focus on capturing and using methane (MCU) by stimulating the anaerobic digestion of all organic wastes and using the biomethane as efficiently as possible.

James Skinner

Director, Ultra Light Rail Partners (ULRP); Director Advanced Anaerobics Ltd (AAL); Founder Trustee, Conservation Farming Trust (CFT).