

Anaerobic Digesters (AD) and Biogas Plants

A Position Statement Adopted by CPRE Somerset

Introduction

AD is a powerful and useful technology for dealing with organic waste matter. AD prevents greenhouse gases from entering the atmosphere as they do when organic wastes naturally decompose, and the gases collected from the digester can be used to recoup a little energy. The gas produced can be used directly as fuel on site, fed into the gas main or used to run electrical generators.

About 85% of the tonnage that goes into a digester comes out again as digestate which is the spent liquid residue left at the end of the process. It is valuable as a non-petroleum-derived agricultural fertiliser. Digestate is stored in tanks or open lagoons. It needs to cool and mature before being distributed for spreading at the right point in the crop cycle. Liquid digestate can have a very powerful smell, especially if it has not been stored.



Waste-Fed AD Plants

Agricultural Digesters

Typically on-farm digesters of modest size, fed with manure slurry or waste from on-farm activities like cheese making are good for the environment, good for agriculture and able to provide small amounts of gas for heat or electricity. Sometimes a proportion of crop is used with the waste to provide the right mix of feedstock.

Non Agricultural

Larger digesters fed with food waste from the food industry and supermarkets or from urban recycling rounds are also useful green enterprises, but they don't have any particular need for a countryside location. They can be sited on brownfield areas or on edge-of-town commercial locations as per the Local Planning Authority's policy. Traffic issues can arise from the final distribution of the digestate to be spread on farmland.

The digestate is mainly water and is much more bulky to transport than the dry agricultural fertilisers that it replaces. It isn't considered economical to transport it long distances. Something like 85% of the tonnage that goes into a digester is piped out into storage tanks or lagoons as liquid digestate where it should cool and mature before being distributed for spreading. In theory digestate can be separated into a dry fertiliser and waste water but it isn't often done in the UK.

Crop-fed AD Plants

In Somerset and other counties we are seeing proposals for new large scale crop-fed AD Plants in rural locations. Existing digesters like those at Cannington Enterprises are also abandoning food waste in favour of an input of energy crops. ***These are very unwelcome developments for the following reasons:***

Destruction of Landscape

Taking as an example the proposed Ecotricity AD Plant at Currypool, the site itself will be about 3.5ha of greenfield site turned over to industrial use. The 17m dome (About as high as a 6 storey building) will be visible from miles around, as will the gas flare. The principle activity is the production of fuel gas, which is not agriculture and there is no overriding reason why the plant should be sited in open countryside. It is difficult to see how the land would ever revert to farmland. CPRE Somerset feels the plant would be much better built at a location with better road access such as the former Royal Ordnance Factory site, already earmarked by the LPA as an 'Energy Park'.

Apart from the plant itself the Currypool site will need something like 10km² of land to grow its annual intake of feedstock, and an even larger total area when the requirement to rotate crops is considered. This would be land lost to food production and taken out of traditional agriculture, making a profound change to the landscape. Currypool Farm itself could only ever provide a tiny proportion of the required crop so this is **absolutely not** an on-farm operation. Crops are to be brought in from, and the digestate returned to land in different locations up to 15km away.

Large, on-farm AD plants cause extreme traffic problems

Normal agricultural activity has always involved moving crops, feeds and fertilisers across short distances from field to shed and back, some of it by road. With AD Plants the activity is not restricted to the farm. Crops and digestate are moved in great quantity to and from fields which might be 15km or more from the plant. This is done in many thousands of tractor and trailer loads of up to 20 tons each. This kind of transport is only economical because low-cost agricultural red diesel is used.



These vehicles are too slow for main roads and too big for country lanes. In rural lanes particularly they do great damage to verges, ditches, gateposts and the road surface, all of which are repaired at public expense. They drive pedestrians, cyclists and riders off the lanes and severely inconvenience the people who live in the surrounding villages.

Large AD plants are damaging to real agriculture

The Tenant Farmers Association has several times issued warnings that farmers wanting to carry on with normal agriculture in the vicinity of an AD Plant are disadvantaged. The price of land, labour and fodder crops is inflated by the demand from the AD Plant, increasing the difficulties in an already squeezed industry.

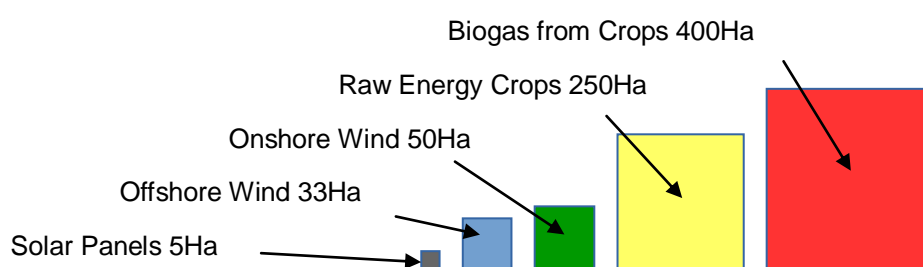
Where farms are supplying crops for AD and spreading the digestate, mixed farming is abandoned in favour of blanket intensive arable production. The requirement is only for the highest yields not even to normal fodder crop quality so the tendency is to use plenty of chemicals and the simplest systems, all the worst practices for soil biota, wildlife, soil erosion and compaction and biodiversity. Contract labour is favoured over permanent employment.

AD doesn't produce much power

Professor Sir David MacKay, one time Chief Scientific Adviser to the Department of Energy and Climate Change wrote in his book *Sustainable Energy - Without the Hot Air*:

“BIOFUELS CAN'T ADD UP ...Even leaving aside biofuels' main defects - that their production competes with food, and that the additional inputs required for farming and processing often cancel out most of the delivered energy - biofuels made from plants ... can deliver so little power, I think they are scarcely worth talking about.”

This graphic shows the amount of land (or sea) needed for 1MW capacity of energy generation from different technologies



Biogas from energy crops is never going to be a useful part of a low carbon economy.

Effect on the Local Economy

Large AD Plants can provide some local employment, but they have an adverse effect on many other parts of the rural economy. Any business dependent on the peace and beauty of the countryside can be destroyed by an AD plant. Pubs, hotels, stables, shoots, B&Bs, campsites, wedding venues and any parts of the tourism sector are adversely effected by the smell, the unsightliness and the traffic of large scale AD.

Pollution Risks

There have been many spillages of digestate in Somerset and elsewhere. 60 tonnes of liquid digestate was discharged into the Cannington Brook in 2012 turning the stream black all the way to the river Parrett and killing everything in it.

Mis-directed Subsidies

Given that they are so inefficient, one might wonder why large crop-fed biodigesters are built at all. They are highly profitable only because they exploit poorly drafted government programs to subsidise both agriculture and green energy generation.

First agriculture is subsidised with the intention of protecting food production and the rural environment, then gas and electricity are purchased at very generous prices with the intention of encouraging sustainable green energy generation. None of these ends are achieved by crop-fed AD but the subsidy regime remains in place for the time being. Investors are gambling that future governments will maintain these subsidies but the long term future of the business model is very doubtful.

CPRE's Position



National CPRE Energy Policy recognises the need to generate power from renewable sources, but does not support an increase in the use of agricultural land for energy crops. CPRE Policy Guidance Notes state:

Energy production affects the countryside through its impacts on landscape, tranquillity, character and capacity to deliver other environmental goods such as food, clean water and functional habitats ...Inappropriately sited energy infrastructure, including for renewable or non-renewable generation, can also damage the landscape.

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