



On-site anaerobic digestion (AD)

Modest Government support over the next five years could deliver a viable on-site AD sector.

Small scale on-site digestion can be deployed on farms, factories and in rural communities, producing base load and dispatchable power that is then used at the point where the biodegradable residues are produced. With a significant impact on GHG emissions by cutting fossil fuel use and capturing methane that would otherwise be released from manure and other residues, AD has a lower carbon footprint than other disposal systems. It contributes to decarbonising agriculture and food production and is a critical part of the circular economy.

The three significant benefits that on-site, small scale AD can deliver to the British economy, without placing excessive demands on taxpayers or having a long-term impact on cost of electricity to consumers, are outlined below.

GHG emissions Reduction

The Committee on Climate Change have recognised the importance of on-farm anaerobic digestion sector to reducing carbon in farming and meeting the UK's carbon budgets.

As shown in the [REA/Bangor University report](#) on carbon reduction impact, **small scale AD is a very cost effective way to abate carbon: it would only cost between £48 and £60 per tonne of CO₂ saved, at Feed-in tariff rates of 16 - 20 p/kWh¹**. This compares very favourably to GHG reduction costs for other renewable energy technologies, of up to £180/t CO₂e saved. The carbon cost effectiveness of AD has been used by DECC to inform the recent [consultation on the Renewable Heat Incentive](#), in line with the Government's plans that support should only be directed towards those technologies that can offer cost effective carbon abatement potential.

If slurry from all UK medium and large dairy farms was treated in AD plants, 1.8 Mt CO₂e could be saved each year across the UK - the equivalent of taking almost 900,000 cars off the road.

Decentralised Energy

On-site AD is able to generate baseload and dispatchable energy at the point of use, based on use of wastes and production residues generated on site or in its close proximity. Hence, farms and factories can make use of slurry and their biodegradable process residues. There are a number of examples in the food sector of such plants but these tend to be on sites of major multinationals (Nestle, Unilever, Diageo) rather than on smaller SME businesses².

Corporate expectations are changing. Managers at all levels are increasingly being held accountable for their site's environmental impact and that of their supply chains. Global food industry leaders are backing a more sustainable approach to food and beverage production.

¹ These are illustrative FIT rates and, based on industry suggestions, is the range of levels that would be required to make small scale AD < 100 kWh financially viable.

² An example is BV Dairy's plant in Dorset, funded by WRAP, although not widely replicated

Proven benefits of deployment of on-site digestion in the agri-food sector include reduced energy costs, lower disposal and effluent treatment costs, while cutting resultant carbon emissions. The challenge is transferring this approach to SME businesses that proliferate in our food sector and this requires a stable incentive regime that encourages investment.

Economic Benefits

On-site digestion has the potential to deliver a number of wider economic benefits for the UK. Some of the leading technology companies in the sector are British and in the last five years there has been significant investment in the technology based on indigenous engineering expertise. The British AD sector has created jobs in design and installation but also in the operation of plants which are more complex to build and operate than the weather related renewables, such as wind or solar.

Scope to deploy large numbers of smaller on-site AD plants (often in more deprived rural or urban areas) will create jobs, boost local economic activity and help stimulate growth. Also development of modular (lower cost) units will provide manufacturing jobs and help to reduce the cost of such plants. In addition, with the base of a secure market in the UK we know that there will be significant export opportunities for modular AD plants.

Moreover AD can provide supplementary income for hard pressed dairy farmers: AD can help farmers to manage volatility in the weather as well as in commodity prices and input costs, and helping to make our agricultural sector more resilient. It can contribute to the rural economy from farm diversification into on-site energy production, the income from which helps to make farm enterprises more profitable and resilient in a volatile world.

Our key asks to the Government

Small scale AD has been unduly penalised by the dramatic cuts applied to the Feed-in tariffs (FITs) over the past few years.

A higher support per kWh of electricity generated is needed for this section of the sector because such plants lack economies of scale available to larger plants, so it is harder to develop projects and secure funding. Support should be provided without unfair expenditure caps making it even harder to develop the on-site market.

The REA is seeking a re-setting of the FIT tariffs to create a more favourable environment for development of smaller scale AD (under 500kWe, but particularly under 250kWe, where deployment has not fulfilled expectations). Our main asks are:

- A new sub 100kWe FIT band to promote small plants at a farm, factory and community level (the Germans have had such a band for three years). The REA consider that **a minimum tariff of 16 p/kWh should be awarded to small scale AD < 100 kWe** to make it viable and initiate rapid on farm deployment. This request is supported by the evidence provided within [REA/Bangor University report](#). If we take a net cost of 9p/kWh as the proxy for economic production³ then we consider that this should be achievable in five to eight years with an incentive of 16p per kWh to kick start the process. We may need three years to really kick start the market and then a period of transparent degression based on levels of deployment would be acceptable⁴.
- There is also a case for a higher rate for sub 250kW plants. The REA considers that a **minimum tariff of 11p/kWh is required to make sub 250 kW plants viable**.

³ Although this is lower than the strike price for nuclear power, which is 9.26 p/kWh

⁴ Another option for consideration in the upcoming consultation on FITs for AD could be to allow these plants to receive the 16p rate for the first 100kW of output (this could also be allowed for all sub 500kW plants, allowing a modest claw back of the excessive degression that has taken place in the last three years (over 60% under 500kW compared to under 20% over 500kW).