

FORWARD WORK PROGRAMME

CONSULTATION 2020-2022

Background

The Anaerobic Digestion and Bioresources Association (ADBA) is the trade association that represents the range of interests and matters related to the anaerobic digestion (AD) of organic materials across the UK, including the collection of waste for use as feedstock. ADBA understands the complex range of skills required by developers of new AD plants, from feedstock management through technology to energy production, markets and resources-to-land. ADBA is also a founding member of the World Biogas Association (WBA).

Our organisation has over 300 members from across the AD industry, including several manufacturing companies who have successfully integrated AD into their operations; other members come from a wide range of industries, comprising farms, supermarkets, local councils, private financiers, and specialist equipment suppliers. There are currently 672 AD plants in the UK, with an installed capacity of 992 MWe-e which is directed at electricity, heat and transport sectors.

Ready-to-use technology

AD is a ready-to-use technology, which is ever-improving through pioneering research; the extent of environmental benefits is likely to only increase over time. AD already reduces the UK's carbon emissions by over 1% and, if all available feedstocks were processed, could cut them by a further 5%. Moreover, as a technology that is available today, AD has the potential to contribute 30% of the carbon savings required to meet the UK's legally binding targets for 2030 set in the 5th Carbon Budget, helping the UK to catch up and get back on track to meeting Net Zero by 2050. The CCC has consistently identified biomethane as a "no regrets option", advising that greater quantities of the green gas are urgently required.

Cost effective carbon abatement

AD delivers multiple carbon savings. Not only does biomethane displace fossil gas, but also prevents the release of methane from organic wastes directly into the atmosphere, for example when food waste is left to break down in landfill. AD also reduces emissions from rotting manure, farm wastes and slurries, while still providing a low carbon, renewable biofertiliser. The CCC itself claims that AD *needs* to be used more widely on farms if the UK is to meet its fifth carbon budget.

Carbon capture and utilisation

Biogas produced during anaerobic digestion comprises biomethane and carbon dioxide. To upgrade biogas to grid-ready biomethane, the CO₂ must first be separated. At this point, it can be captured and utilised; Westons Cider, for example, feeds apple-based waste into their AD plant, generates renewable energy and utilises the bio-CO₂ to carbonate their cider. Alternatively, power-to-gas technology uses excess renewable electricity from wind and solar to produce hydrogen through electrolysis; this hydrogen can be mixed with raw biogas, reacting with AD's CO₂ to create more biomethane. This can nearly double the biomethane yield and convert AD from a carbon-neutral to a carbon-negative technology.

Fuel switching

Industries dealing with organic materials (e.g. food and drinks manufacturers) could develop an on-site AD plant to power and heat their operations. For example, around 80% of the UK's wastewater is already processed through

AD, where biogas generated typically powers Combined Heat and Power (CHP) units to provide electricity for their energy-intensive treatment procedures. Moreover, CHP units' heat can be utilised and integrated into a manufacturing process, such as pasteurisation, to cut the energy demand from the national grid.

Energy efficiency

Similarly, on-site AD increases energy efficiency through the localisation of industrial processes. Organic wastes do not need to be transported to external plants, and artificial fertilisers do not need to be produced and imported. As one UK-based cheese manufacturing company currently demonstrates, over 70,000 tonnes of dairy effluent can be processed through AD each year on-site, thus significantly cutting transport distances of waste around the country and providing a steady supply of biofertiliser for their fodder crops.

Ofgem processes and the AD industry

Under the current circumstances, Ofgem processes for administering support for the AD industry are causing significant issues for members as communication about significant sums of money is often very poor, which hinders the business activity, delivery of target energy supplies, and diverges from the policy intent as ofgem payment delays create a major additional risk for new AD projects. It is essential that Ofgem provides better support and much more transparent communication about policy administration.

ENABLING COMPETITION AND INOVATION WHICH DRIVE DOWN PRICES AND RESULT IN NEW PRODUCTS AND SERVICES

1. Retail Markets

A. Retail Market Change

ADBA is very involved with start-ups that present innovative technologies that are able to promote market change and provide revolutionary solutions to problems that due to lack of knowledge may be considered unsolvable.

We would like to work closely with Ofgem to compile lists of new technologies. We strongly believe that these lists need to be published on official websites (such as Innovation Link) for scrutiny, allowing for the new technologies to be tested by the wider public. In the same manner, advertising these technologies is extremely important, as marketing solutions evolve.

It is, therefore, extremely important that ADBA can collaborate with Ofgem to push the industry further by means of mutual information sharing. The collaboration should also be focused on clear interpretation of legal measures. In cases where Ofgem is not always able to respond to general queries, ADBA is ready to provide consultancy advice to its members to better clarify the regulatory constraints or educate our members of future trends and promote business adaptability. So long as Ofgem and ADBA are able to maintain continuous dialogue on topics of concern, we see very promising opportunities in our cooperation.

B. Faster More Reliably Switching

The AD industry is heavily focused on the heating sector, attempting to provide low-emissions solution to homes either connected to the grid or those off-grid.

Grid heat supplies do not require any infrastructure changes, because biomethane is compatible with the already existent natural gas. This can benefit the poorer households, as the investment that would be potentially required for new infrastructure build-up can be redirected to energy price controls and monetary support to households. Additionally, the more support there is for the AD industry to evolve, the more manufactured biomethane there is to respond to higher demands.

Off-grid households can benefit from anaerobic micro-digesters. These can benefit a set of households at a time and secure their heat and/or electricity needs. This is a very feasible solution to households located in remote areas such as farms or villages, because those households have access to the feedstock and can become self-sufficient by means of a joint, local effort.

The more the AD industry is encouraged to expand, the more suppliers this will generate and, consequently, additional competition will generate faster and more reliable switching. ADBA believes that programmes of food, agricultural and green wastes collections need to be developed in order to ensure that all of the available feedstock is directed to AD plants in return for reduced costs of energy supply.

2. The Energy System

A. Network Price Control Design, Development and Implementation

AD is compatible with the current network infrastructure, and as other renewable technologies develop, is compatible with an integrated renewable energy system.

There are currently 672 AD plants in the UK, with an installed capacity of 992 MWe-e. This is enough to heat close to a million homes. Of these plants, 108 are biomethane plants, in which the biogas is upgraded so it can be injected into the grid or used as transport fuel, with a total installed capacity of over 85,000m³/hr, equivalent to the gas demand of Edinburgh¹, with a population of over 500,000 people². The sector is currently injecting 2.1 TWh of biomethane into the grid each year, which is enough to heat more than 170,000 homes.

The industry, however, requires stable government support to guarantee further growth. AD is central to creating a circular economy that allows for the reuse of the existent resources, which can deliver a value for money alternative to fossil-based energy with appropriate support systems in place and appropriately implemented. Renewable obligation scheme quotas must be extended over time to increase demand and the subsequent supply. Certificates for renewable energy require floor price to guarantee investment.

Additionally, it is important that incentives that seek to promote smaller energy producers, do not hinder the evolution of the industry. Over time, with technology evolution, it is possible to increase the AD sites' generating capacity, as well as efficiency. This should not be limited by means of regulatory restrictions of equipment replacement, for instance. On the contrary, when it is possible to increase the efficiency of the site, Ofgem should seek to approve such transformations and arrange for flexible solutions for extra biomethane and/or electricity generation.

AD operators need to be certain that their effort in pushing the energy generation further is encouraged by the government.

B. Energy System Operations

If Ofgem is attempting to create an energy system that is based on local energy security, rather than consumer dependence on the currently existent infrastructure, developing AD technology solutions could potentially be available for the consumer energy market.

AD microgenerators, for instance, are already available as a concept, but require government funding in order to guarantee the prices are low enough for the regular consumer to invest. Factory line production could significantly bring down the cost of these micro-digestors, increasing their accessibility.

Additionally, the legislation doesn't always respond to specific circumstances of a given plant or technology. Therefore, it is important that certain flexibility is allowed in creating original business models based on contractual obligations rather than legislative description of specific cases.

Ofgem must create a framework whereby innovative ideas on business operation can be negotiated. Given that technology is changing over time reaching higher levels of efficiency, Ofgem must ensure that certain conditions may be reviewed as per the new circumstances of a business.

C. Value for Money for Network Projects

Tender processes also need to be promoted for the AD and biomethane industry.

3. Core and Support

¹ <https://www.gov.uk/government/statistical-data-sets/gas-sales-and-numbers-of-customers-by-region-and-local-authority>

² <https://www.nrscotland.gov.uk/files/statistics/council-area-data-sheets/city-of-edinburgh-council-profile.html>

A. Engineering Technical Support and Consultancy

Under the current circumstances, Ofgem processes for administering support for the AD industry are causing significant issues for members as communication about significant sums of money is often very poor, which hinders the business activity, delivery of target energy supplies, and diverges from the policy intent as ofgem payment delays create a major additional risk for new AD projects. It is essential that Ofgem provides better support and much more transparent communication about policy administration.

The AD industry is particularly interest in having regular catchups with Ofgem in order to discuss issues, processes, innovation, equipment, etc.

PROTECTING CONSUMERS, ESPECIALLY THE VULNERABLE, STAMPING OUT SHARP PRACTICE AND ENSURING FAIR TREATMENT

1. Retail Markets

A. Protecting Domestic and Microbusiness Consumers

Microbusiness consumers that have access to AD-appropriate feedstock should be encouraged towards AD micro-digesters with a view to becoming energy self-sufficient or obtaining discounted prices.

DECARBONISING TO DELIVER A NET-ZERO ECONOMY AT THE LOWEST COST TO CONSUMERS

2. The Energy System

A. Energy Network reforms

The energy network reforms must take into account technology evolution, including the current and future possibilities of the technology.

While the gas grid is not yet compatible with more than 20% hydrogen, incorporation into the AD process allows for the best use of green hydrogen to capture carbon and generate grid-ready biomethane. Recent innovation is looking to integrate AD with wind and solar farms to optimise their respective strengths. During summer, high solar and wind energy production can exceed the UK's electrical demand, yet there is no means of storing this electricity at scale. AD offers an opportunity to utilise and store this excess energy, through the production of additional biomethane. In short, surplus electricity can be used to produce hydrogen (via the electrolysis of water) which, when mixed with AD's biogas, combines chemically with the CO₂ to generate extra biomethane; upgrading biogas to grid-ready biomethane, and minimising the venting of bio-CO₂. Here, innovation can help plants make the best-use of their energy output. Depending on capacity, wind/solar electricity may be fed into the grid or used to support biomethane production at any given time.

Post 2030/35, as the energy networks develop to become hydrogen-ready, hydrogen generation through wind/solar hydrolysis can be used directly as an energy source rather than used to generate biomethane, which is already compatible with our existing infrastructure. Going forward hydrogen is expected to become one of the primary fuels for domestic heating, alongside biomethane, to heat homes and fuel transport. Furthermore, biomethane itself could act as a renewable supply of hydrogen gas, if hydrogen became the dominant energy source further down the line. With a molecular structure containing four hydrogen atoms (CH₄), biomethane can be used to create hydrogen, instead of the fossil gas generally used in the generation of blue hydrogen, and

requires much less energy than splitting water (H₂O) molecules through electrolysis. And we will always need to treat our organic wastes and prevent the GHG emissions generated when they are untreated.

ADBA strongly advises Ofgem in taking the above information into account when planning for investment and network reforms. It is of the utmost importance that the majority of carbon savings are calculated based on technologies that are ready to use and can be deployed now to deliver the necessary decarbonisation. We cannot rely on technologies in development to make these savings. AD is the technology that is ready to be used now and can deliver 30% of the current carbon budget for 2030.

Current policy uncertainty is not sufficiently encouraging the biogas industry to grow and, therefore, not enough resources are being deployed towards further advancing the production of biomethane nor green hydrogen. This is attributed to the lack of certainty with regards to the schemes such as RHI, RTFO and SEG. Funding for these schemes are allocated for periods of 5 years and are reviewed closer to the deadline without much prior communication by the government on future plans.

- RTFO, for example needs to be guaranteed continuity post-2032 so that investors are prepared to invest today in biomethane production that will guarantee transition to hydrogen.
- SEG, which replaces the FiT export tariff, requires additional funding in the form of a generation tariff, in order to promote construction of new plants.
- RHI is expected to be extended in some form, but it is unknown for how long and under what conditions. It is vital that any replacement scheme is sufficiently generous to unlock the industries potential.

In this sense, the government is expected to guarantee the existence of schemes that respond to industry's needs through legislative amendments (yearly quota targets for biomethane and hydrogen production, for instance) and continuous incentives.

It is vital that a strategy is put in place setting out the continued commitment to green gas, and the complementarities between biomethane and hydrogen, giving investors confidence that they can fund projects and develop new industry technology, with confidence that support, in whatever form, will not be withdrawn.

B. Decarbonising Heat and Transport

Biomethane can be used as a direct alternative to fossil gas, as it has the same chemical structure, meaning it is already compatible with the UK's existing gas infrastructure. Unlike biogas electricity, biomethane cuts emissions in the hard to decarbonise sectors of heat and transport, where there are very few alternative technologies and few that are at technological maturity. Biomethane is, therefore, the key solution to decarbonise heating and heavy goods vehicles in transport, with a great deal of potential for shipping and planes, over the critical 10 years ahead of us. At its full potential, the AD industry would be able to save over 27 million tonnes of CO₂(e) from being emitted into the atmosphere every year – greater than the current emissions of all HGVs operating within Great Britain.

<i>Feedstock</i>	Biomethane capacity of today's AD industry million m³	Equivalent homes heated	Biomethane potential from 2030 feedstock million m³	Equivalent homes heated	GHG emission abatement from 2030 feedstock, MtCO₂(e)
<i>Food waste</i>	456	380,000	443	369,000	1.81
<i>Sewage</i>	272	227,000	616	514,000	5.55
<i>Farm waste</i>	83	69,000	1,992	1,660,000	10.46
<i>Industrial waste</i>	924	770,000	1,364	1,137,000	2.62
<i>Green waste</i>	3	2,000	748	623,000	1.44
<i>Bioenergy crops</i>	463	386,000	514	428,000	0.99
Subtotal	2,201	1,834,000	5,677	4,731,000	22.86
<i>Power-to-Gas</i>			2,271	1,892,000	4.36
Total			7,947	6,623,000	27.22

Below are some measures that are needed to further propel biomethane for Heat:

- Immediate interim support beyond March 2021 in the form of an energy tariff to urgently increase deployment, closer to the rates seen in 2013-2015 which delivered deployment of around 100 plants per year, while more tailored policy is developed. Lessons learnt from the RHI and FiT should inform the design of this interim policy, including lengthening commissioning deadlines and tiering of the tariffs.
- A green gas obligation on the gas grid, with gradually increasing targets to stimulate demand and a minimum price for certificated gas to provide a level of certainty to investors.

Biomethane is also considered one of the most efficient fuel to address the needs of the HGV and bus fleets and should be supported to help unlock this ready to use technology for decarbonising HGVs. At the moment, however, investment is the biggest impediment, especially with fleets operating a low number of vehicles. Access to the refuelling infrastructure is also a barrier as fleets must undertake the responsibility of ensuring availability of refuelling stations, especially for longer distance travel.

Refuelling infrastructure for biomethane requires additional support from the government not only in terms of funding, but also in terms of comprehensive guidelines and a large enough team of public officials to ensure compliance is guaranteed and different cases are reviewed in a timely manner. Under the current circumstances the construction permitting, for example, is problematic to obtain, and local authorities need to be better educated with regards to new infrastructure needed for the future. In the same manner, private-public partnerships should be promoted to further propel the infrastructure build-up.

Below are some measures that are needed to further propel biomethane for Transport:

- Commitment to extending RTFO beyond 2032.
- Infrastructure funding for the development of alternative refuelling networks, delivering biomethane as a transport fuel.
- Align classifications of waste between government departments to simplify the participation across multiple incentive schemes, such as RHI and RTFO.
- A price guarantee should be introduced within the Renewable Transport Fuel Obligation to provide greater certainty to investors and to ensure a more stable supply of biomethane for transport.

3. Core and Support

A. Renewable Energy and Social Scheme Administration

We strongly believe that Ofgem should support the call for supportive policy to decarbonise the gas grid, and ensure that Ofgem resources are allocated to streamline policy processes. Find below our policy asks of government.

Heat:

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Transport:

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- A price guarantee should be introduced within the Renewable Transport Fuel Obligation to provide greater certainty to investors and to ensure a more stable supply of biomethane for transport.

Agriculture:

- A renewable biofertiliser obligation to stimulate the market for digestate and transition towards a more circular use of fertilisers based on nutrient recovery.
- In line with legislation requiring all digestate and manures stores to be covered by 2027, appropriate support, such as grants are required to effectively prevent emissions and draw value from captured gas, without adversely impacting farmers and operators.
- AD should be included in the Environmental Land Management Policy in the Agricultural Bill to recognise the benefits it can deliver in terms of reduced on-farm emissions, alongside generating renewable energy and generating renewable biofertiliser.
- Tighten the end-of-waste standards for digestate, including restrictions on feedstock contamination, to give farmers greater confidence in the quality of digestate.

Waste management

- Support for small business and community circular economy projects, transforming local waste into local heat and power.
- Encourage the treatment of all organic wastes through AD, including manure and slurry, by developing hierarchies, like the food and drinks material hierarchy, for all organic material, and introduce mandatory measures to ensure these hierarchies are enforced.
- Urgently implement separate collection of food and green waste for diversion to AD with the possibility of co-mingled collection in localities with dry-AD infrastructure.

Overarching

- Targeted innovation funding to unlock key aspects of the AD industry that reduce cost, including digestate upgrading; biomethane yield; and utilisation of bio-CO₂.
- Increased administrative capacity in Ofgem and streamlining of processes to ensure there is confidence that payment will be made on time and accreditation will be received in a timely manner, such as accreditation for innovative new feedstocks.
- Lower business rates for the AD industry and review of other tax allowances that could be offered to incentivise deployment.
- Support best practice by tying policy to independent certification schemes, such as the Anaerobic Digestion Certification Scheme, to ensure plants are adhering to environmental standards, plant optimisation and health and safety, thus minimising risks and costs.

B. Approach to Supporting Decarbonisation

We believe that Ofgem should work closely with trade associations such as ADBA to ensure they are aware of industry implications of their practices and are administering schemes in line with the policy intent, rather than creating barriers to green business. We would like to ensure that regular catchups are organised so that data, industry insights and concerns are shared and pragmatic solutions are found by means of joint collaboration.

C. Consumer Insights

The consumer must be educated on the benefits of food waste recycling and encouraged to pursue the best waste management practices.