



Anaerobic Digestion and Biogas Association

Decarbonising the electricity and gas grid

Response to DECC 2050 Pathways Consultation

The Anaerobic Digestion and Biogas Association ("ADBA") is the trade association that represents the range of interests and matters related to the anaerobic digestion of organic materials ("AD"), including the collection of waste for use as a 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 resource to land.

The organisation has over 140 members from across the AD industry, including local authorities, waste management companies, plant operators, energy and water companies, equipment manufacturers and suppliers, consultants and supporting service companies.

Anaerobic digestion can make a significant contribution to the UK's Climate Change, renewable energy and critical resource preservation targets, subject to the right policies being in place. Our calculations suggest that the AD industry is capable of generating over 30TWh of energy if all potentially available feedstock is allocated to AD.

Source	Biogas	CH ₄	CH ₄	Energy
	10 ⁶ m ³ /year	%	10 ⁶ m ³ /year	TW
MSW	1,522	62	944	9.4
C&I	2,240	62	1,389	13.9
Slurries	500	62	310	3.1
Crops	480	55	264	2.6
Sewage	560	65	364	3.6
Total	4,822		3,006	32.6

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Q2a. Does the range of alternative levels of ambition presented for each sector cover the full range of credible futures? If not, what evidence suggests that the range of scenarios should be broader than those presented?

ADBA welcomes the aim of the 2050 Pathways work. However, the current section on bio-energy is vague and needs to be broken down into individual technologies, so that it is clear what assumptions and models are being used. This is particularly important where methods of recovering energy from waste may compete over feedstock, and Government and industry need to decide what to prioritise.

In industries such as AD there are inherent complexities in modelling credible futures. As an emerging technology, a variety of decisions and choices will affect the ultimate potential for energy generation, including the number and size of plants built, the waste streams available, and the choice of use for the biogas. The model therefore needs to reflect these choices and scenarios.

Q2b. Do the intermediate levels of ambition (levels 2 and 3) provided for each sector illustrate a useful set of choices, or should they be moved up or down?

As they stand, the levels of ambition are very broad for bio-energy. In reality, it is likely that there will be a variety of uses for biogas (eg. electricity generation, or conversion to bio-methane either for transport fuel or gas grid injection) depending on local circumstances and other factors.

Changing this would obviously make the model much more complex, as there would be many more variables to factor in. However, with a limited feedstock available, these are the choices that industry and Government face up to 2050. It may be particularly important for DECC to analyse these in the context of setting incentives, to best meet the UK's targets and obligations.

Q2c. The 2050 Pathways Calculator currently describes alternative directions of travel rather than different levels for some sectors where changes reflect a choice rather than a scale. Is this a suitable approach and clear to users?

ADBA understands that this approach is necessary in some areas, where there are direct choices to be made.

This is particularly true of the energy from waste sector, where there are limited fuel resources. Government will need to make sure that the right decisions are taken to ensure that feedstock is used in a way which makes the best possible contribution to the UK's targets and responsibilities. This is not currently represented in the pathways, in the way that (for example) choices on use of biogas are. The value of the digestate as a source of nitrate fertiliser must also be seen in the context of replacing oil based fertiliser with a significant impact on emissions that does not appear to be contained in the modelling.



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Q3a. For each sector, are the input assumptions and the methodologies applied to those input assumptions reasonable?

ADBA hopes that the future revisions to the Pathways will contain more detailed information on sectors within bio-energy. The current information does not specify what is expected of individual technologies and treatments under the scenarios, so the input assumptions are currently difficult to quantify.

Q3b. As regards specific sectors: Are the bio-energy conversion routes used in the model accurate, or are there more efficient routes for converting raw biomass into fuels?

ADBA agrees that using the gas from Anaerobic Digestion to replace natural gas as bio-methane represents the likely most efficient use for bio-energy.

The Carbon Trust showed in their yearly update ("Biogas from anaerobic digestion", March 2010), the carbon savings from using biogas for direct grid injection will be higher by 2050 than those for electricity generation. Bio-methane from AD offers a chance to replace a fossil fuel where there are few other options, so can make a big contribution to the 2050 targets. The value of the nitrate fertiliser is also important as 15% of carbon on farm is generated by agriculture.

Q3g. Could the relative roles of coal and gas out to 2050 vary from the assumptions shown in this work, and if so, how?

ADBA believes that the pathways showing high electrification are unrealistic. This would require a huge investment in the networks, and an impractical expansion in heat pump use. As the Energy Saving Trust showed in their September 2010 study, "Getting warmer: a field trial of heat pumps", there have been serious problems with installation and use of heat pumps to date.

Realistically the gas network will remain vital, particularly for domestic heating, up to 2050. The challenge is therefore to decarbonise it as far as possible. Bio-methane from Anaerobic Digestion represents an obvious part of this solution, with few other options available to directly replace gas in the grid.

This will require changes from Government, notably a decision on the Renewable Heat Incentive which sets it at a level which is high enough to incentivise industry to produce bio-methane. It also requires regulatory changes, in particular relaxing the thresholds for oxygen and water content in the Gas Safety (Management) Regulations 1996, which are based entirely on natural gas. This is recognised in the Pathways Analysis. Without these and many other changes, bio-methane is not likely to reach its expected level of contribution.



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Q5a. What criteria should be taken into account in understanding the impact and relative attractiveness of pathways?

Although the Pathways naturally focus on technical potential and limitations, it is clear that cost will be important when it comes to decisions about how Britain moves to meet 2050 targets. In particular, it is vital for decisions on subsidy and support levels. The Anaerobic Digestion industry has the capacity to expand quickly and play a significant role in 2050 targets, but needs a stable and secure environment in which to do so. The FiT has proved too low to provide a real stimulus, so the RHI needs to be set higher. This will be particularly vital to stimulating bio-methane production, as the most efficient use of energy from AD.

Decisions based on the pathways should take into account the UK's targets in as many areas as possible. As well as renewable energy and climate change mitigation, energy from waste can contribute to avoiding landfill and preserving critical resources such as phosphorus. A report by the independent group Eunomia Research and Consulting found in 2007 that AD represents the best option for food waste treatment.

Q7a. Do you have any further suggestions for refining the 2050 Pathways Calculator?

Research into the complex variables that will influence the development of AD infrastructure is essential if the model is to reflect real life issues such as diversion of waste stream subsidy planning and type of power favoured for generation.

Q7b. Could the 2050 Pathways Calculator be improved to reflect the fact that the level of ambition for some sectors will depend on local preferences? Could the Pathways Calculator be improved such that the inherent degree of individual and local choice in a chosen pathway were clear?

Local preferences are important, as is greater modelling of local availability of waste for energy production and land bank for digestate. It is impossible to accurately model waste streams nationally, without looking at differences between different areas. This work should also look at the issue of contracts which lock waste streams into particular treatments for medium/long terms, and whether this creates problems with ensuring there is feedstock for the best available technology.