Call for Evidence Response

Tuesday 15th June

The role of biomass in achieving net zero

The Energy and Utilities Alliance (EUA) provides a leading industry voice helping shape the future policy direction within the sector. Using its wealth of expertise and over 100 years of experience, it acts to further the best interests of its members and the wider community in working towards a sustainable, energy secure and efficient future. EUA has seven organisational divisions - Utility Networks, the Heating and Hotwater Industry Council (HHIC), the Industrial & Commercial Energy Association (ICOM), the Manufacturers of Equipment for Heat Networks Association, the Hot Water Association (HWA), the Manufacturers' Association of Radiators and Convectors (MARC) and the Gas Vehicles Network (GVN).

1. Do you give permission for your evidence to be shared with third party contractors for the purpose of analysis?

Yes.

2. What is the potential size, location and makeup of the sustainable domestic biomass resource that could be derived from the a) waste, b) forestry, c) agricultural sectors, and d) from any other sources (including novel biomass feedstocks, such as algae) in the UK? How might this change as we reach 2050?

There is enormous potential for biomass feedstocks to make a greater contribution to reaching net zero, particularly in difficult to decarbonise sectors such as heating and freight transport. With the treatment of waste, particularly organic wastes, likely to change significantly in the coming decade, the question of how those wastes can be used as a resource will grow in importance. EUA believes that a greater focus should be placed on leveraging these feedstocks to produce biomethane gas which can be used as a drop in replacement for natural gas in the gas grid or for compressed natural gas and liquefied natural gas in vehicles.

In the near future, the amount of food waste collected from households is likely to increase substantially due to an anticipated new obligation on local authorities to offer segregated food waste collections with a clear preference from the Government for this to be treated through anaerobic digestion. Concurrently, reforms to subsidies for farms could lead to payments for on-farm anaerobic digestion capacity to treat farming wastes, and potentially limited waste feedstocks from nearby areas. Whilst these two increases would not enable an exponential increase in the production of renewable gas, they are almost certain to occur and could, if harnessed effectively, make a valuable contribution to decarbonising the UK's gas supply and heavy goods vehicles.

EUA agrees with ADBA's assertion that annual biomethane production could reach 8 billion cubic metres by the end of this decade.[1] This would require policy measures which incentivise and support biomethane production on an ongoing basis. This means, for example, subsidy frameworks that have the ambition and funding of the Renewable Heat Incentive but with a more stable level of payment per kWh and ongoing certainty over funding in order to free up long term investment in infrastructure. Government policies must also encourage the expansion of the range and quantity of feedstocks available; for example, in addition to subsidising and promoting nationwide food waste collections, the Government could also actively incentivise farms to process manure on-site and use bioenergy crops as part of sustainable crop rotations. The planning and regulatory process for anaerobic digestion plants and associated infrastructure, such as grid injection points, could also be simplified in order to reduce the administrative burden placed on would-be producers.

Novel feedstocks such as gasification of non-recyclable waste and the use of specially cultivated algae could play a supportive role in boosting the levels of biogas being produced. The Government should continue to target energy-related innovation spending at these kinds of innovative potential sources as they could widen the waste sources available to the biogas industry and, in some cases, synergise well with other processes in order to form a circular economy.

If AD-positive policies are adopted, the amount of biomethane produced could lead to a 6% reduction in greenhouse gas emissions with a focus on decarbonising sectors which are difficult to treat. Given that anaerobic digestion is a well-developed process, capacity across the country could increase rapidly over the coming decade with sufficient policy measures and subsidy framework; we therefore agree with ADBA that biomethane could deliver as much as 30% of the greenhouse gas emissions reductions we are legally bound to deliver as part of the fifth carbon budget.[1]

3. What are the current and potential future costs of supplying these different biomass feedstock types, and the key environmental and land-use impacts (positive or negative) associated with supplying and utilising these different types of biomass, e.g. impacts on GHG emissions, air quality, water quality, soil health, biodiversity, food security, land availability, etc.?

A key barrier to the expansion of biomass feedstock availability is meeting upfront costs. When it comes to food waste, local authorities, retailers and the hospitality sector are seldom financially encouraged to segregate food waste so any incentive or obligation for them to do this, as has been the case in Wales and Scotland, would almost certainly entail additional costs for the waste producer and the Government. However, the net benefit will clearly be a positive one as carbon-intensive fuels and waste processing methods can be replaced with low or zero carbon ones. For example, in the case of heavy goods vehicles which are responsible for 17% of the UK's transport-related emissions despite only constituting 2% of vehicles on our roads, diesel can be replaced by waste-derived biomethane. Doing this results in emissions savings of around 84% whilst biomethane produced from manure is certified as carbon neutral, meaning a net zero solution for HGV fuel is available already.

[1] *Biomethane: The Pathway to 2030* – Anaerobic Digestion and Bioresources Association

Given that biomethane can be produced from a variety of waste feedstocks, its creation does not have adverse effects on land use, biodiversity, etc. In addition to this, energy crops which can be planted as part of sustainable crop rotations can actually improve soil quality and boost farms' productivity, leading to a net benefit in addition to the sustainability of the renewable gas produced.

4. How do we account for the other (non-GHG) benefits, impacts and issues of increasing our access to, or production of domestic biomass (e.g., air quality, water quality, soil health, flooding, biodiversity)?

Additional factors such as these should be factored into the calculations of the environmental impact of various fuels. In the case of transport fuels, for example, a so-called 'well-to-wheel' model can take into account the emissions related to diesel production as well as the carbon saved from diverting methane-producing manure into biomethane-based transport fuels. When it comes to subsidy schemes, payments to farms, etc., the net environmental effects of biomass production should be weighed up against the impact of low carbon alternatives and the fossil fuels which they can displace.

5. How could the production of domestic biomass support rural employment, farm diversification, circular economy, industrial opportunities, and wider environmental benefits? This can include considerations around competition for land, development of infrastructure, skills, jobs, etc.?

It is clear that in leaving the European Union and therefore the Common Agricultural Policy, the Government has an opportunity to reframe the subsidies directed towards encouraging sustainable farming practices to projects which suit a UK context. For example, given that much of the UK's energy demand is met by gas usage, increasing domestic production of renewable biomethane would tie in well with sustainable uses for farm-derived wastes. Incentivising on-farm anaerobic digestion capacity would be one policy measure which could help to achieve this aim. The possibility for this new capacity to also meet demand from local authorities mandated to provide separate household food waste collections could also be an additional benefit for all concerned.

Involving the agriculture sector in the energy sector's move towards net zero could provide co-benefits around farm viability, rural employment and domestic self-sufficiency in addition to the obvious environmental benefits of replacing natural gas with biomethane. In some countries, biomethane produced on farms is even being used to create gas fuels which can then be used by the farms' vehicles and machinery, creating a true closed loop circular economy; this is a model which certainly warrants further consideration by the UK Government and devolved administrations.

6. What are the main challenges and barriers to increasing our domestic supply of sustainable biomass from different sources?

As previously indicated, high upfront costs associated with biomass production, including planning and regulatory costs, as well as the availability of feedstocks are the key barriers to a significant increase in domestic production of sustainable biomass. High upfront costs can be

addressed through well designed and promoted subsidy schemes whilst the availability of feedstocks can be improved through a wholesale re-evaluation of the waste hierarchy across the country. The latter is already being looked at in some sections of the Government, for example through DEFRA's new waste strategy for England. Waste should be seen, as it is in many other European countries, as a resource to be repurposed in a circular economy, as opposed to a problem to be dealt with as simply and cheaply as possible e.g. landfilling organic waste as opposed to utilising it for sustainable energy production.

7. What is the potential biomass resource from imports compared to the levels we currently receive? What are the current and potential risks, opportunities and barriers (e.g., sustainability, economic, etc) to increasing the volumes of imported biomass?

Given that many developed economies are using biomass resources to achieve their own climate change objectives, it is difficult to see the UK being able to make far greater use of imported feedstocks. Many European countries have been increasing their importing of these resources for many years, leaving relatively little for the UK to exploit. We must also ensure that imported resources are clearly in line with our own ambitious climate change objectives i.e. it would be undesirable to import waste with a higher emissions profile than biomass produced domestically. There should be a clear preference for UK waste-derived feedstocks being used in domestic production of biomass; for example, it would make little sense for waste on UK farms to continue to be treated the way it is today whilst we import biomass resources to meet producers' demands.

8. Considering other potential non-biomass options for decarbonisation (e.g. energy efficiency improvements, electrification, heat pumps), what do you consider as the main role and potential for the biomass feedstock types identified in Question 2 to contribute towards the UK's decarbonisation targets, and specifically in the following sectors: heat, electricity, transport, agriculture, industry, chemicals and materials, other?

We believe that a key usage for biomethane will be in decarbonising heating with a significant role for decarbonising heavy vehicles. Given that more than 80% of UK properties use natural gas boilers as their primary heating technology, there is significant scope for decarbonising the heating of millions of homes by using low or zero carbon gas supplied through our existing gas grid. Biomethane has a significant role to play in this endeavour, initially through displacing natural gas in the grid but also latterly with the potential to be used in hydrogen production via steam methane reformation and carbon capture and storage to create carbon neutral, or even carbon negative, hydrogen for use in the grid.

When it comes to HGVs, there are no viable electrified alternatives to diesel models; a typical HGV would need to carry nearly all of its permitted weight in batteries and real time charging technology such as overhead centenaries would be costly and disruptive to install on UK roads. Biomethane not only offers typical fuel savings of 50% thanks to the differential in Fuel Duty between gas fuels and diesel, but also significant emissions reductions in a difficult to decarbonise sector.

9. Out of the above sectors, considering that there is a limited supply of sustainable biomass, what do you see as the priority application of biomass feedstocks to contribute towards the net zero target and how this might change as we reach 2050? Please provide evidence to support your view?

We believe that, with the favourable policy framework outlined previously, biomethane production would be able to increase sufficiently to enable significant growth in its use in both heating and transport. In the longer term, the Government's preferences could dictate how this progresses; biomethane could be used extensively in hydrogen produced or used more directly in transport fuels. There is significant growth potential in the latter as demonstrated by sales of gas transport fuels increasing by 78% in 2020 compared with the previous year, despite the challenges of the pandemic.[2]

10. What principles/framework should be applied when determining what the priority uses of biomass should be to contribute to net zero? How does this vary by biomass type and how might this change over time?

The focus should be on the greatest emissions savings compared to the fuel that is being displaced with a biomass alternative. This approach will be needed if we are to meet our net zero goal.

11. When thinking of BECCS deployment, what specific arrangements are needed to incentivise deployment, compared to what could be needed to support other GGR and CCUS technologies as well as incentivising wider decarbonisation using biomass in the priority sectors identified?

We have no comment to make.

12. How can Government best incentivise the use of biomass, and target available biomass towards the highest priority applications? What should the balance be between supply incentives and demand incentives and how can we incentivise the right biomass use given one feedstock could have multiple uses or markets?

In the case of biomethane, the Government should continue to incentivise its use through schemes such as the Renewable Heat Incentive. We believe that subsidies should encourage the injection of biomethane from anaerobic digestion into the gas grid as opposed to it being burned on-site to generate electricity, as is often the case currently. The former is a far more efficient use of the gas and can deliver greater emissions savings given the fuels being displaced in difficult to decarbonise sectors.

13. Are there any policy gaps, risks or barriers hindering the wider deployment of biomass in the sectors identified above?

We have no comment to make.

[2] *Gas as a transport fuel can go the distance* – Gas Vehicle Network

14. How should potential impacts on air quality of some end-uses of biomass shape how and where biomass is used?

As with emissions reductions, the use of biomass should be concentrated where it can deliver improvements to air quality. For example, the use of gas powered HGVs in urban areas would deliver significant improvements on a number of air pollutants, such as NO_X and $PM_{2.5}$ compared to diesel.