REA Response to EFRA Select Committee Inquiry – Environmental Land Management and the agricultural transition

The Association for Renewable Energy & Clean Technologies (REA) is pleased to submit this response to the above inquiry. The REA represents a wide variety of organisations, including generators, project developers, fuel and power suppliers, investors, equipment producers and service providers. Members range in size from major multinationals to sole traders. There are over 500 corporate members of the REA, making it the largest renewable energy trade association in the UK. Of particular relevance to this inquiry are the following Member Forums of the REA: Wood Heat Forum, which includes our biomass heat members; Biogas Forum, which includes biomethane producers, BiomassUK, which includes our biomass power members; and the Organics Forum, which includes members who produce digestates and composts who, together with other members such as agronomists, are interested in soils, and other compartments of natural capital.

Given the range of the technologies represented by the REA, and the evidence provided below, we would welcome the opportunity for our Chief Executive, Dr Nina Skorupska CBE FEI, to also provide oral evidence to the committee as part of this inquiry.

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1. Summary of Response

1.1. **ELMs must have a joined-up approach with wider Government policies**

- Previous agricultural and land use policy has created a siloed landscape, with the full lifecycle benefits of products from these sectors often not fully recognised.
- This has meant that, whilst certain activities may not have been discouraged, they have failed to be deployed at scale, and many remain a complex area to get into, with logistical and financial barriers to overcome.
- ELMs should be seen as an opportunity to promote these activities in a meaningful way, one that recognises the environmental and economic benefits they provide, and through the adviser scheme, give participants the information they need to do it.
- With the Government currently developing, in tandem, its England Tree Strategy and Biomass Strategy as well as implementing further measures in support of its Resources and Waste Strategy, the ELM Scheme should be designed so that it creates joined-up activities that fully deliver these benefits.

1.2. Bioenergy is a valuable market for encouraging the types of activities the CCC prescribes

- The Climate Change Committee is calling for afforestation rates to reach 30,000 hectares a year by 2025, and the planting of perennial energy crops alongside short rotation forestry to reach 30,000 hectares by 2035.
- Bioenergy, generation for heat, e.g. biomass boilers or anaerobic digestion, electricity, or transport fuels – provide a sustainable end-use for these bioresources. As an activity, it delivers low-carbon energy, which has already been vital in decarbonising our heat and power demands.
- Its further growth, however, is often held back by discussions of bioenergy feedstocks being a 'limited resource' – in reality, there is considerable potential for more sustainably produced sources.

- ELMs has an opportunity to fully recognise these benefits of bioenergy, particularly in providing the farmer or land owner a reliable source of diversified income, that is effective in meeting both the environmental and economic priorities of ELMs.

1.3. Composts and digestates made from biodegradable wastes (including manures) and also digestates made from energy crops should be recognised for the true environmental benefits they provide under ELMs

- Bioresources are a valuable part of the circular economy and have a strong role to play in making farms more environmentally sustainable.
- Ensuring bioresources do not go to landfill, as is the long-term objective of the Resources and Waste Strategy, and that they are used to produce organic fertilisers and soil improvers, as well as for the production of renewable energy (through anaerobic digestion) will be vital to transitioning farms to more environmentally friendly practices.
- Similarly, doing so will achieve economic benefits for the farmer. As an example, food-based digestate is a valuable source of readily of readily available nitrogen, the single most important nutrient influencing crop yields.
- Additionally, for composts, research shows that its repeated application over time, as per good agricultural practice guidelines, builds levels of soil organic matter more quickly than other organic materials, such as farmyard manure, which will help deliver stronger and more resilient crops.
- Research is part-way through quantifying the economic, agronomic and environmental benefits of applying composts and digestates to cultivated soils (particularly in the case of digestates), yet, ELMs should use these practices as an anchor to encourage better environmental management on farms and should consider it as a principle for all.

Substantive Response

2. The challenge for the agriculture and land-use sectors

2.1. 'The UK's net-zero target will not be met without changes in how we use our land'.[1] According to the Climate Change Committee (CCC), the agriculture and land use sectors will be required to reduce their GHG emissions from 67 $MtCO_2$ in 2017, to 40 $MtCO_2$ by 2035. In 2050, emissions must not exceed 16 $MtCO_2$ according to the CCC's Sixth Carbon Budget[2].

2.2. For this challenge to be reached, a wide range of solutions will need to be adopted. Equally crucial will be the need to deliver activities that are both environmentally and economically sustainable. Work to achieve this, however, will not need to start from scratch, and Government should look to industries that are producing emissions savings today, and how it can effectively scale those up going forward.

2.3. This is particularly the case for the bioenergy and biodegradable waste management sectors, which are well proven in delivering environmental outcomes, whilst ensuring the farmer or landowner has a reliable income stream.

[1] CCC: Land Use – Policies for a Net Zero UK (2020). Available at: https://www.theccc.org.uk/publication/land-use-policies-for-a-net-zero-uk/
[2] CCC: The Sixth Carbon Budget – The UK's path to Net Zero (2020). Available at: https://www.theccc.org.uk/publication/sixth-carbon-budget/

2.4. For bioenergy - from anaerobic digestion to produce biomethane, to biomass feedstocks for use in both heat and power systems, to producing transport fuels, all encourage a valuable end-use, that delivers both environmental and economic outcomes.

2.5. For biodegradable waste management, effective use of digestates and composts can increase yields on farms, whilst building levels of soil organic matter. This in turn can sequester more carbon, and soil can store up to 3.5 million tonnes a year of CO2 when compost is regularly applied in combination with other soil management practices.

2.6 Both of these sectors, however, have been unable to reach their full potential, in part, due to the lack of a clear framework. For bioenergy, discussions on growing the market have often been held up by discussions of insufficient feedstocks. Similarly, for the organics sector, the objectives of the Resources and Waste Strategy, amongst other policies, have not yet been fully realised, and joined-up policy across waste and natural capital (including soils as an important part of natural capital), is still lacking.

2.7. ELMs provides a perfect opportunity to remedy this, as does the timing, with many Government policy priorities being developed in parallel. These include:

- The England Tree Strategy, which alongside the accompanying £640 million Nature for Climate Funding will aim to deliver 40 million trees.
- Continued efforts by DEFRA to meet the objectives of the Resources and Waste Strategy, as well as provisions in the Environment Bill.
- The Biomass Strategy, which aims to address the role the sector will have in reaching Net Zero, including how production of biomass feedstocks from agriculture and land use can be significantly increased.

2.8. Providing a joined-up framework, one that fully recognises the chain of value that both bioenergy and organics can provide, will allow the market and supply sides to feel confident in the Government's direction of travel. This in turn, will allow sectors that are required to grow substantially over the coming decades, for instance perennial energy crops, the policy landscape in which to do so.

2.9. The REA would strongly encourage DEFRA to work alongside BEIS and other Government departments to strengthen these markets and take a whole system approach to decarbonising the agriculture and land-use sectors.

3. The role bioenergy can play in ELMs

3.1. Bioenergy, which uses sustainable biomass and biofuels produced from wood, crops and food wastes, is the UK's leading source of renewable energy, and is being successfully utilised in the heat, power, and transport sectors. Furthermore, the REA's own industry-led Bioenergy Strategy, produced in 2019, found that bioenergy could be sustainably increased by a factor of 2.5 in the UK by 2032[3].

3.2. The sector, however, is often divided into two parts by Government, between the businesses that produce the feedstocks, and the end-market that uses them to make bioenergy. In reality, they are interdependent, with farmers and landowners needing to be assured that there is a market, or profitable use for their crop or forestry product.

[3] https://www.bioenergy-strategy.com/publications

3.3. This traditional divide has often meant that the bioenergy sector is not dealt with within the core agriculture support schemes, and forestry or energy crops have been looked at in separate schemes. In the past this has been through the Energy Crops Scheme (which closed in 2013), or through various grants under Countryside Stewardship.

3.4. The logical time for that to change, is now. The CCC has identified the following steps as necessary to reach the emissions targets sets for agriculture and land use, all of which require these activities to become part of the mainstream:

- Scaling up afforestation rates to 30,000 hectares a year by 2025, rising to 50,000 hectares annually by 2035.
- Accelerating planting of perennial energy crops alongside short-rotation forestry, reaching 30,000 hectares by 2035, so that 700,000 hectares are planted by 2050.
- Transition agricultural land towards measures that reduce emissions and sequester carbon, with 9% transitioning by 2035, rising to a fifth by 2050.

3.5. With ELMs being the main future support scheme for farmers, if it is to make significant progress towards these levels, it must meaningfully incorporate bioenergy feedstocks and their production into the scheme.

3.6. With this endorsement from the CCC, the Government should look at how best to incorporate these activities under ELMs, and recognise them as deployable, profitable and an effective use of land.

3.7. Additionally, they should recognise the role that these revenue streams can play in rural economies, providing well paid and high-skilled jobs in woodland management, or through the associated supply chains in bioenergy.

- According to annual REA REview data[4], over 46,000 jobs are associated with bioenergy in the UK, including those in the supply chain of producing bioenergy feedstocks.
- In sum, this amounts to over 2,500 companies and a combined value of over £6.4bn to the UK economy.

3.8. Sustainably growing production of feedstocks will result in a greater economic benefit for rural economies, one that provides new jobs as we transition towards Net Zero.

3.9. Below is a list of case studies and examples that illustrate the economic and environmental value that bioenergy can have.

4. Perennial Energy Crops and Short Rotation Forestry

4.1. Perennial Energy Crops, incorporating Short Rotation Coppice (SRC), e.g., willow, Miscanthus, as well as Short Rotation Forestry (SRF) can give farmers a reliable income from economically marginal land, or allow them to transition away from fossil fuel heating.

4.2. As it currently stands, it has not been specifically mentioned as having a role within ELMs.

4.3. There has been a lot of research done into this area in the past, with Energy Technologies Institute studies finding that all sites experienced an increase in the profitability of the land over a 23-year

[4] https://www.r-e-a.net/resources/review-2020/

lifetime, with initial costs being recouped within the first six to seven years. One case study found the net margin of land was £403/ha/yr higher than if the land had continued under an arable rotation.[5]

4.4. It has also been linked with greater levels of biodiversity, as well as other environmental benefits, such as Natural Flood Management. When placed in the right locations, perennial crops such as willow increase the surface roughness of vegetation, slowing runoff during floor events.

4.5. As well as delivering these benefits, it can also help reduce dependence on fossil fuels on sites and offset other emissions. This can be seen in the below case study:

4.6. Umberleigh Barton Farm – biomass for heating, fuelled in part by willow planted on site.

4.7. Background:

- Situated in North Devon, the owners of the farm, installed a biomass boiler in 2013 to supply space and water heating to the farm complex, including six residential properties.
- Due to its location, which is not located near conventional woodchip supply for the boiler, the owner initially planted 3.95 hectares of Short Rotation Coppice (SRC) willow, which is harvested manually.
- This project has now had its first harvest, which was able to provide 50% of the farm's fuel and has the potential to move to satisfying the full supply down the line.
- Not only has this project delivered low-carbon heating to the site at a lower price than alternatives, but it has also reported increased levels of wildlife, due to planting the willow at wider spacing.
- Yet, this farm had to overcome barriers to reach this point, with some decisions being taken, in part, due to logistical issues, for instance the lack of energy crop growers in the South West of England, making hiring machinery a costly challenge – led to planting that would allow manual harvesting.

4.8. Yet, the total area of crops grown for bioenergy has fluctuated over the past decade and has not shown any real trend towards growth, now at 1.6% (2019, with a high point of 2% in 2014[6].

5. Biomass Power generation – decarbonising electricity generation and supporting rural economies

5.1. Sustainable biomass is the second-largest producer of renewable electricity in the UK, second only to wind power.

5.2. It largely relies on wood pellets, which are made from the parts of a tree than cannot be used for construction, furniture etc. Feedstocks for biomass power can also be agricultural residues, such as straw.

5.3. Such plants, with the right supply chain and security of supply, can utilise local biomass resources, an option that will only increase with greater feedstock production. A model of locally sourced feedstocks used to create low-carbon electricity generation can be seen in the below case study.

5.4. Snetterton Renewable Energy Plant

[5] https://www.eti.co.uk/library/an-eti-perspective-bioenergy-crops-in-the-uk-case-studies-of-successful-whole-farm-integration

[6] https://www.gov.uk/government/statistics/area-of-crops-grown-for-bioenergy-in-england-and-the-uk-2008-2019

5.5. Background:

- Located in Norfolk, the plant is a 44.2MW straw-fired biomass power station, and it has been generating low-carbon power since spring 2017.
- The fuel is all sourced from within 50 miles and represents a £10 million investment into the area.
- In sum, this project saves 133,043 tonnes of CO2 per year, supplying 107,509 homes. It also supports 30 jobs in operation, and 50 in fuel supply.

6. Anaerobic Digestion – increasing crop rotations and efficiency of arable land.

6.1. Anaerobic digestion (AD) on farms of manures, wastes and residues combined with crops grown as part of a rotation can deliver many of the environmentally sustainable farming practices that ELMs seeks to deliver.

6.2. On farm AD of agricultural residues and crops is not a stand-alone activity, but is normally seen as part of the agricultural system and is often associated with a shift of the whole farming business to one that is more environmentally sustainable.

6.3. The following case study illustrates one way the AD sector in the UK is innovating, and with the right framework of support, such methods could become the norm.

6.4. *Biogasdoneright* (sic) – increasing crop rotations, thereby allowing space for energy crops without affecting existing crop levels.

6.5. Background:

- Already widely adopted in Italy, the *Biogasdoneright* model involves sequential cropping, where two crops are grown in the same field, one after the other in the same year. In Italy, this has led to three crops in two years, following food/non-food double cropping rotations.
- This model has been explored in a 2014 study by the IEA at Icknield Anaerobic Digestion (AD) plant in South Oxfordshire, where a three-crop rotation was replaced with a four-crop one, containing maize, wheat, rye and turnips.
- The non-food rotations in this case have been used as feedstocks for AD, which creates biomethane (a renewable gas), that has been sold on (but could also be used on site).
- The subsequent by-product from AD, digestate, was used on the land, and has led to higher moisture content and organic matter returning to the soil, which contributed to an increased crop yield.
- Innovations such as these, could be utilised much more widely, and with best practice guidance and clear demonstration in projects, it can provide farmers with a profitable and environmentally sustainable way of using their arable land, alongside its food production.
- You can find more information on this topic, here, in the European Biogas Associations briefing.

7. The role natural capital and organics can play in ELMs

7.1. Bioresources are a valuable part of the circular economy, with life on earth dependent on carbon and nutrient cycling. In the cycle, ecosystems rely upon the availability of organic and inorganic matter for living organisms. Organic materials are decomposed and humified to accumulate organic matter in soils.

7.2 A circular economy has a strong role to play in the agriculture sector, particularly in encouraging a move away from energy intensive mineral fertilisers, towards the production of organic fertilisers and soil improvers for application to cultivated soils.

7.3. Much research has been done on the environmental benefits of using composts and anaerobic digestates in agriculture, as well as on quantifying those benefits[7,8]. These reports highlighted the following:

- Applying compost to soil has been shown to increase soil microbial biomass and microbial activity, and build up an in-soil pool of nutrients that become available to plants. It is also an important reservoir of carbon, storing more than the atmosphere and terrestrial vegetation combined.
- Compost applied to soil at a rate of 30 tonnes/ha per year could increase soil organic carbon levels by between 10 to 25 tonnes/ha over a 20-year period.
- One tonne of green-waste-derived-compost applied to soil over one hectare results in a net CO2-eq saving of 143 kg/ha per year due to the increase in soil organic matter alone.
- An economic evaluation of the role of compost with regard to its potential to sequester carbon in soil and its total plant macro-nutrient content, suggests that it has significant monetary value at €21.20 to 28.20 per tonne.
- Studies have shown increased crop yields following digestate application due to its high nutrient content; as these are present in mineral form, they are readily available for crop uptake.

7.4. ELMs has the purpose of encouraging more sustainable practices for all farmers and land-owners. This need not always require 'wholesale' changes to the way a business is run, and these practices can be adopted easily by land management businesses, without the need to purchase new equipment, or face large up-front costs (e.g. substantial amounts of composts and digestates are spread in the agricultural sector using the services and equipment of contractors and a number of farm businesses who produce their own composts or digestates have purchased and use their own equipment for spreading them).

7.5. As a result, they should be seen as a crucial first step, as well as continued practice, that farmers should implement under ELMs. Doing so, will allow farmers to see the benefits in terms of yields, as well as receive financial support from Government as a result of delivering an activity that sequesters carbon, as well as providing other environmental benefits, such as greater surface runoff.

7.6. Park Farm, Suffolk

7.7: Background: A long term scientific trail to assess the benefits of using compost as part of a soil improvement programme for crop growth. Trails have run over a number of years and have assessed the benefits of compost on wide range of crops including barley; wheat; carrots; sugar beet and potatoes. Compost was applied at varying rates and compared with untreated control and treatments with traditional fertilisers. Following repeated applications over a seven-year period, the results showed:

- a reduced need for inorganic fertilisers;
- a long-term improvement in soil structure; and

[7] http://www.wrap.org.uk/content/digestate-and-compost-agriculture-dc-agri-reports
[8] https://www.iswa.org/media/publications/iswa-soils-project/#c8146

- increased yield on a range of crops

7.8. Many of the benefits derive from the fact that compost adds organic matter to the soil which means that repeat applications can cause long-term improvements in soil structure, making it more workable, providing better seedbed conditions, and supporting the retention of both nutrients and moisture for longer periods.

8. Brief Answers to Specific Questions

8.1. *Will the Sustainable Farming Incentive be a viable support measure for farmers before the full roll-out of ELM? Is further support required during the transition period?*

- The REA welcomes the decision by DEFRA to include tree and woodland management as an activity under the Sustainable Farming Incentive, which will mean the sector will not have to wait for the full ELMs rollout to benefit, as previously expected.
- Similarly, the wider range of standalone programmes announced in the Agricultural Transition Plan, for instance on Tree Planting, peatland and nature recovery in 2022 will all provide support for farmers and land-owners from 2022, until the end of 2024, when the remaining components of ELMs are launched.
- As farmers begin to see a decrease in direct payments, it will be vital that the Sustainable Farming Incentive is open to all, and provides clear and easily deployable solutions to meet the aims of the scheme. The focus on soil management, particularly the role organics and regenerative practices play in achieving this, is welcome in the Incentive, and this should lead to industry wide best practice that can be adopted across the board.
- As the Incentive moves towards 2024, we would like there to be a move towards getting farmers and landowners ready for Local Nature Recovery (formerly Tier 2) or even Landscape Recovery (formerly Tier 3), to ensure that farmers are encouraged to consider further activities, alongside their existing ones.

8.2. *How can the Government ensure that ELM agreements achieve their intended environmental outcomes, reduce bureaucratic burdens on farmers and deliver value for money?*

- As mentioned, ELMs should promote choice and flexibility for farmers and land-owners in pursuing activities that best suit their land type and level of ambition. It should aim to take a pragmatic approach, one that uses the role of the advisor to find what activities may work best.
- This, alongside a wide acceptance that the transition will require a whole range of solutions, will ensure that businesses are able to understand the benefits of implementing activities such as perennial energy crops, woodland creation and good practice applications of digestates and composts to cultivated soils.

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