REA BIOMASS UK

BECCS: making Britain a clean energy superpower by 2030

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LYNEMOUTH POWER

To deliver the Clean Power 2030 mission and achieve Net Zero, government should:

1. Include BECCS projects in Hynet Track 1 expansion shortlist
2. Publish cluster sequencing for carbon capture, usage, and storage (CCUS): East Coast Track-1 expansion and Track-2 as soon as possible.
3. Provide an update on the status of the Greenhouse Gas Removals (GGR) and Power BECCS business models.
4. Introduce transitional support arrangements for large-scale biomass generators.
5. Provide clarity for generators post Renewables Obligation (RO) support.
6. Publish the Cross Sectoral Sustainability Framework consultation as committed to in the Biomass Strategy 2023.
7. Publish a long-term strategy with clear targets for increasing domestic feedstock growth, including Perennial Energy Crops (PECs) and Short Rotation Forestry (SRF).

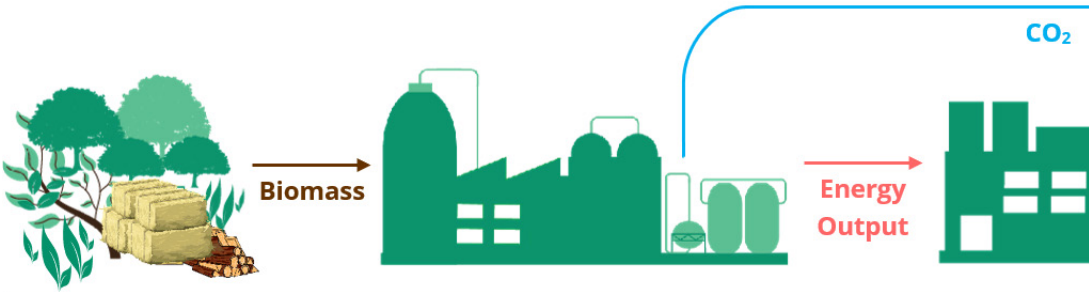
What is Bioenergy Carbon Capture and Storage (BECCS)?

BECCS is the process of capturing and permanently storing carbon dioxide (CO_2) from processes where biomass is converted into fuel or burned to generate energy. By capturing the carbon that plants have absorbed as they've grown, and permanently storing it underground, BECCS simultaneously removes CO_2 from the atmosphere and provides the UK with low carbon energy. BECCS is truly unique in this way, as it's the only carbon dioxide removal technology that removes CO_2 and provides low carbon energy. That's why it's likely to play such a critical role in hard to decarbonise sectors like heavy industry and aviation.

Why do we need BECCS?

Greenhouse Gas Removals (GGRs) are critical for reaching Net Zero and delivering the Government's Clean Power 2030 mission. GGRs include engineered removals, like BECCS or Direct Air Carbon Capture and Storage (DACCS) and nature-based removals, which includes things like soil restoration or forestry regeneration.

Engineered removals have higher rates of permanence (storage) and less risk of carbon leakage than nature-based removals, which can make them more expensive. That is why we need a range of technologies, including BECCS if we are going to deliver our carbon reduction targets.

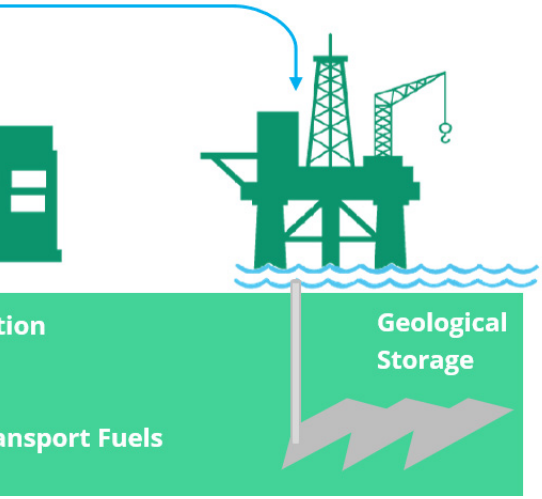


Energy Crops	Biomass Power Plants	Power Produc
Forestry	Anaerobic Digestion Plants	Heat
Agricultural Residues	Energy from Waste Plants	Green Gas
Waste Wood	Renewable Transport Fuels Facilities	Renewable Tra

[1] Climate Change Committee, (Dec 2020), The Sixth Carbon Budget: Greenhouse Gas Removals, https://www.theccc.org.uk/wp
[2] National Infrastructure Commission (July 2021), Engineered Greenhouse Gas Removals, https://nic.org.uk/app/uploads/NIC-
[3] DESNZ, (June 2023), Engineered Greenhouse Gas Removals, Government Response to the Consultation on the GGR Business Mo
[4] Climate Change Committee, (2020), The Sixth Carbon Budget: Greenhouse Gas Removals, https://www.theccc.org.uk/wp-co
[5] Ibid
[6] International Energy Agency, (May 2021) Net Zero by 2050, https://www.iea.org/reports/net-zero-by-2050
[7] UN IPCC, (2023) AR6 Synthesis Report, https://www.ipcc.ch/report/ar6/syr/
[8] National Grid ESO, (July 2024), Future Energy Scenarios, https://www.nationalgrideso.com/future-energy/future-energy-scer

Yet BECCS projects are unique in terms of CCUS applications because of the revenues they can access from the voluntary carbon market. Large corporates are keen to purchase Greenhouse Gas Removals (GGRs) from projects with sustainably sourced feedstocks. This will only happen if Government facilitates the development of a negative emissions market in the UK. The volumes of negative emissions BECCS projects can provide would also help anchor the voluntary carbon market in the UK, with its associated verification, registry and trading services.

In the UK alone we're likely to need 44-112 $MtCO_2$ of engineered removals per year by 2050 to meet Net Zero.[1] Even by 2035, around 15-25 $MtCO_2$ of removals may be needed to meet the Sixth Carbon Budget.[2] The Government's own GGR ambitions envisage 5$MtCO_2$ of removals annually by 2030, scaling up to around 23$MtCO_2$ by 2035.[3] The CCC's balanced pathway sees BECCS facilities removing 22 $MtCO_2$ per year from the atmosphere by 2035, and 53 $MtCO_2$ per year by 2050, across a mix of biomass power, waste-to-energy, industrial heat, biohydrogen, biojet and other biofuel & biomethane facilities.[4] These negative emissions can be sourced within the UK through BECCS projects or, if not, will need to be purchased from overseas to meet the UK carbon budgets.



With the right government support for First of a Kind projects, BECCS can be deployed commercially and cost effectively, helping us get to Net Zero more quickly and realise the Government's Clean Power 2030 mission. It's why the Climate Change Committee[5], International Energy Agency[6], and UN Intergovernmental Panel on Climate Change[7] - the world's leading climate science authorities - along with National Grid ESO[8] all recognise the role BECCS can play in removing carbon from the atmosphere and meeting our Net Zero targets.

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July-2021-Engineered-Greenhouse-Gas-Removals-UPDATED.pdf
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The case for sustainable biomass

Bioenergy is produced from organic material known as biomass. Biomass contains carbon absorbed by trees and plants through photosynthesis. When used for energy, biomass includes waste wood, compressed wood pellets, agricultural and energy crops, like willow, miscanthus, and straw, and biogas and biofuels.

Biomass power is the second largest producer of low carbon energy and in 2023, accounted for around 12% of UK electricity generation.[9] It provides consistent power, complementing other forms of renewable energy, like wind and solar, and ensuring the UK has a continuous, secure energy supply with a mix of technologies in the system.

However, despite its role in our energy system, the debate around biomass - and as a result BECCS - is often polarised, being seen as 'good' or 'bad' when the reality is much more nuanced. When done correctly, biomass is very much part of the climate solution. Ensuring it is done correctly is the key. That's why sustainability is, and must always be, at the very heart of using any bioresources. The expected Cross Sector Sustainability Framework consultation, previously committed to in the UKs Biomass Strategy, will help with this.

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[9] DESNZ (2023), Digest of UK Energy Statistics, https://www.gov.uk/government/statistics/renewable-sources-of-energy-chapt

nestic biomass | Domestic biomass includes agricultural waste, rgy crops, and waste wood. More than 4.3 million tonnes of waste wood e processed in the UK in 2022, with 63% - 2.73 million tonnes - used enerate low-carbon energy in biomass power stations. This is a great mple of the circular economy in action, diverting non-recyclable wood y from landfill. The waste wood biomass fleet contributes 470MW ow-carbon energy to the grid, supplying enough electricity to power 000 homes a year.

larly, Anaerobic Digestion plants utilising agriculture and food wastes, ell as energy crops, produce biogas - a gaseous mix of biomethane and CO_2. By 'upgrading' this biogas, plants can split the gas into its component s. Biomethane can be injected directly into the gas grid, displacing l natural gas, and bio-CO_2 can be captured and then geologically stored eliver GHG removals. With over 130 plants currently in operation, nethane is an established technology and presents significant potential he delivery of negative emissions.

orted biomass | While we'd welcome a renewed focus on increasing estic biomass production, the UK simply doesn't have enough forested to produce all the biomass we need. That's why we need to look to other ntries to import sustainable biomass. The biomass used are typically by-ducts already produced by the forestry sector to supply wood for other stries like construction, furniture, and paper. Without bioenergy, these grade woody products - sawdust, low-grade roundwood and thinnings, off-cuts - might be sent to landfill or left in the forest, increasing the of forest fires. Bioenergy also provides an economic incentive to owners to preserve and maintain healthy working forests - like those n where the UK sources biomass.

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What do we need to deliver BECCS at scale?

We need every tool in the toolbox if we are to meet the challenge of climate change and the delivery of BECCS, using sustainable biomass, has a critical role to play in that. However, we also need the right policy landscape to enable this. The UK is already losing out to more attractive markets. This is despite having been at the forefront of large-scale coal to biomass conversions over a decade ago, leading the development of negative emissions technologies and being the first major economy to set legally binding targets.[10] Without urgent action, that trend is set to continue.

To address this, government should:

1. Include BECCS projects in Hynet Track 1 expansion shortlist.

Government has already placed other CCUS applications such as hydrogen, industrial and waste in the initial Track 1 shortlist. The Track 1 expansion process enabled large and smaller BECCS projects (the latter under the GGR business model) to bid for access to the transportation and storage infrastructure, and for government revenue support. Including BECCS in Track 1 expansion cluster sequencing ensures government supports a wider range of CCUS technologies - derisking implementation and delivering the clusters at a lower cost to the Treasury.

2. Publish cluster sequencing for carbon capture, usage, and storage (CCUS): East Coast Track-1 expansion and Track-2 as soon as possible.

It is critical that the contract allocation windows for Track 2 and East Coast Track 1 expansion are published as soon as possible to enable successful projects to enter the negotiation phase with government by the end of the year and deploy on time. Developers also need this confidence if they are to reach financial close and build out in line with UK Net Zero ambitions.

3. Provide an update on the status of the Greenhouse Gas Removals (GGR) and Power BECCS business models.

To help projects stay on track for initial deployment from 2028-29, the next Government should provide an update on the status of the GGR and Power BECCS business models, including the publication of a heads of terms for the latter, by the end of the year. At the time of writing, expert groups on the GGR business model have not met since March.

[10] Financial Times, (2024), UK 'not exciting' for green investors, says former climate adviser, https://www.ft.com/content/08c2

4. Introduce transitional support arrangements for large-scale biomass generators.

A decision on transitional support arrangements, as consulted on earlier this year, needs to be made as soon as possible. Without transitional support, some generation assets will likely close in little over 2 years' time, resulting in a significant reduction in biomass generating volumes across the board and loss of skilled green jobs. As the UK's second largest producer of low carbon energy, this loss would be significant and disrupt the supply chains needed to see negative emissions realised.

5. Provide clarity for generators post Renewables Obligation (RO) support.

There are more than 60 sub-100MW biomass power sites in the UK, collectively contributing more than 1100MW of generating capacity. Many of these sites are suitable for retrofit of carbon capture technology with non-pipeline transport. However, some guarantee of support is needed for some of those generators who are not within scope of the large transitional support arrangements consultation and are not geographically suitable for inclusion in a cluster. For some of these sites, their support under the Renewables Obligation begins coming to an end from 2027 making the need to provide some form of support even more time critical.

6. Publish the Cross Sectoral Sustainability Framework consultation as committed to in the Biomass Strategy 2023.

This framework will ensure principles are followed across all bioenergy sectors and build public confidence in the industry. The consultation is also important for providing industry with clarity about potential future requirements, necessary for securing long-term investment in sustainable supply chains.

7. Publish a long-term strategy with clear targets for increasing domestic feedstock growth, including Perennial Energy Crops (PECs) and Short Rotation Forestry (SRF).

This would help establish a commercial business case for PECs and SRF and grow confidence in the economic and environmental benefits of the crops. The strategy should identify and focus on key regions for growth, supporting farmers and landowners to increase available hectarage for energy crops on appropriate marginal land.

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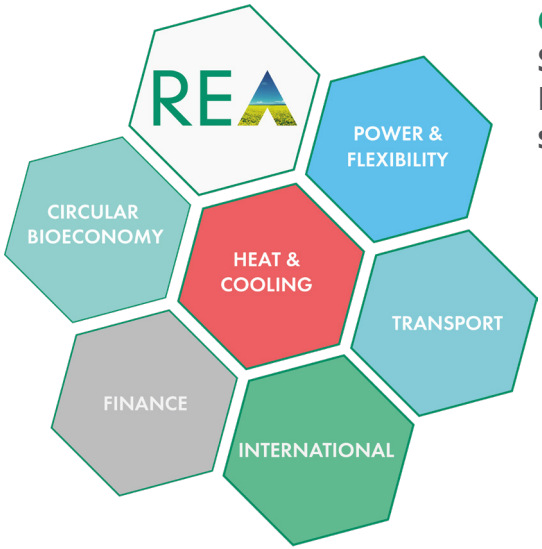
About the REA

The REA represents a wide variety of organisations, including generators, project developers, fuel and power suppliers, investors, equipment producers and service providers. The REA has dedicated member forums focused on biomass power, biomass heat, green gas and hydrogen, renewable transport fuels, thermal storage, and energy from waste (including advanced conversion technologies).

Members range in size from major multinationals to sole traders. There are around 500 corporate member organisations of the REA, making it the largest renewable energy trade association in the UK.

Biomass UK is the REA members forum for Biomass Power. It includes the largest group of Biomass Power generators in the UK, ranging in size and utilising a range of feedstocks from waste wood, to compressed wood pellets, agricultural and energy crops, such as willow, miscanthus, and straw, to biogas and biofuels.



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