



**IEA Bioenergy**  
Technology Collaboration Programme

# UK Update

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# UK Biomass Strategy

Dr Joanna Sparks, Biomass Policy Fellow - [Linkedin](#)  
[The role of biomass in achieving net zero: call for evidence](#)

BEIS are developing a new UK Biomass Strategy. They are currently engaging stakeholders through a call for evidence, and they plan to run a series of round table discussions. The result will be a position statement in summer 2021 which will be followed by the Biomass Strategy in 2022.

## Call for evidence on the role of biomass in achieving net zero (closes 15<sup>th</sup> June)

A system-wide look at how and where sustainable biomass can best be used to meet the UK's net zero target. Questions cover four key areas:

1. **Supply** - how much biomass can we assume the UK will have access to?
2. **End use of biomass** - how should we use biomass to reach net zero?
3. **Sustainability and Accounting for Emissions** - (i) how can we strengthen our sustainability criteria and (ii) how can we improve the way we account for biomass emissions?
4. **Innovation** - what technological or systems developments do we need to see?



# UK Greenhouse Gas Removal Demonstrator (GGR-D) programme

The £31.5 million Greenhouse Gas Removal (GGR) programme is part of the second wave of the government's Strategic Priorities Fund (SPF), which invests in high quality multi and interdisciplinary research.

- 5 projects with nature based solutions (peatlands, enhanced rock weathering, biochar, large-scale tree planting, rapid scale-up of perennial bioenergy crops)
- Coordinating GGR hub addressing cross-cutting aspects

<https://www.ukri.org/news/uk-invests-over-30m-in-large-scale-greenhouse-gas-removal/>

# BEIS Phase 1 of the Direct air capture and greenhouse gas removal programme

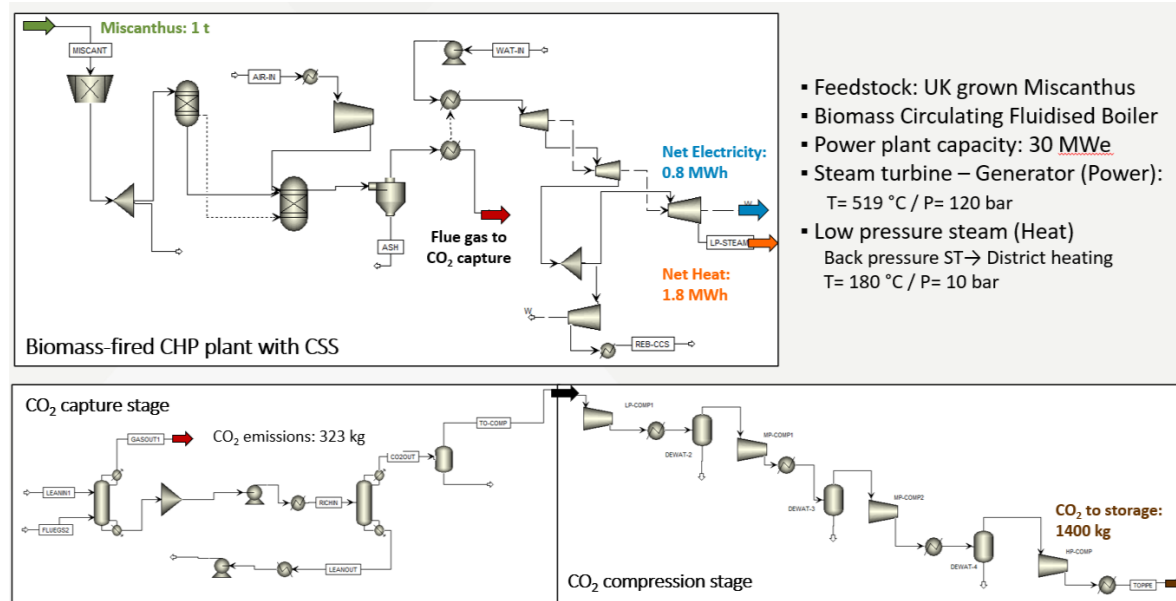
1. Advanced Biofuel Solutions Ltd (ABSL): Biohydrogen Greenhouse Gas Removal Demonstration (sorption enhanced water gas shift biohydrogen production)
2. KEW Technology: CCH2: Carbon Capture and Hydrogen production from Biomass (upgrade hydrogen-rich gas to produce separate high-purity Hydrogen and CO2 streams)
3. Drax Corporation Ltd: Negative Emissions Gasification (gasification with CCS)
4. Ricardo UK Ltd: BIOCCUS (biochar production, combined heat and power generation, and carbon dioxide capture, utilisation and storage.)
5. Peel NRE InBECCS (integrated BECCS-gasification)
6. University of Nottingham Bio-waste to Biochar (B to B) via Hydrothermal Carbonisation and Post-Carbonisation
7. Severn Wye Energy Agency: Mersey Biochar: Carbon Negative Community Energy
8. Sofies UK: The Biochar Network - A Road to Demonstration and Beyond
9. Capchar Ltd: Circular Greenhouse Gas Removal (GGR) solution utilising biochar produced from low grade biomass

<https://www.gov.uk/government/publications/direct-air-capture-and-other-greenhouse-gas-removal-technologies-competition/projects-selected-for-phase-1-of-the-direct-air-capture-and-greenhouse-gas-removal-programme#bio-waste-to-biochar-b-to-b-via-hydrothermal-carbonisation-and-post-carbonisation>

# Academic research activities

## Project: Feasibility of Afforestation and BECCS for GHG removal

Investigate the feasibility of different BECCS supply chains to understand the potential UK contribution by evaluating the potential for carbon capture and GHG emissions removal.



- Feedstock: UK grown Miscanthus
- Biomass Circulating Fluidised Boiler
- Power plant capacity: 30 MWe
- Steam turbine – Generator (Power):  
T= 519 °C / P= 120 bar
- Low pressure steam (Heat)  
Back pressure ST→ District heating  
T= 180 °C / P= 10 bar

S. Garcia-Freites, "The greenhouse gas removal potential of bioenergy with carbon capture and storage (BECCS) to support the UK's net-zero emission target," Biomass and Bioenergy, vol. In print, 2021

# Advanced Biofuel Solutions Ltd (ABSL)

## Swindon site

- Commercial demonstrator
- 20-25 GWh/yr of bioSNG
- Cost of £38M
- Construction complete
- Continued commissioning as of May 2021



Reference demonstration plant, Swindon commencing commissioning





# ABSL Swindon site continued...

Lots of updates via linked in account

<https://www.linkedin.com/company/advanced-biofuel-solutions-ltd/>



This photo gives a good view of the completed plant. The carbon dioxide scrubbers are in the foreground, followed by the flare, wet scrubbers and waste heat boilers. The carbon dioxide liquefaction plant and storage vessels are visible at the back of the site. The roof extension we installed to accommodate the gasifier and plasma converter can be seen to the right.

# Other sites - UK

Some progress:

- Energy Works Hull (28MWe) back in operation
- Levensat (Outotec) operational
- Ince Bio Power facility exploring option for CCS.
- Hooton Bio Power (Kobelco gasifier) still in commissioning (contractor is BWSC)
- Riverridge / Full Circle gasifier (nr Belfast) operational.

(in all cases, information from internet rather than first-hand)



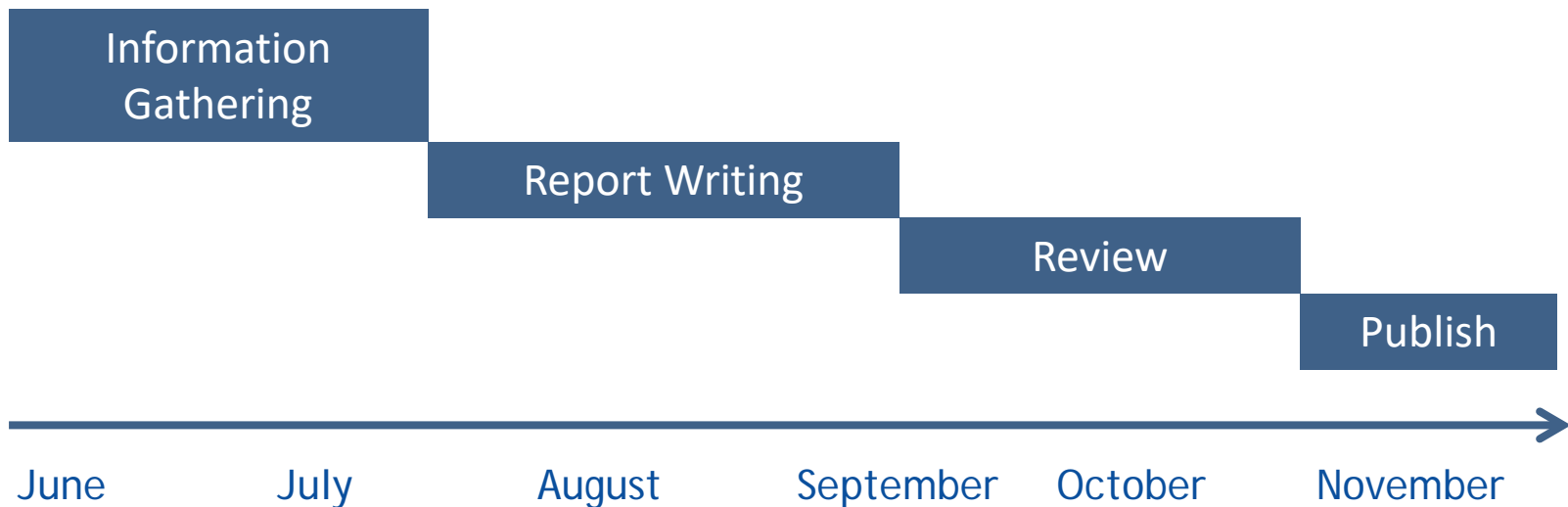
# UK Country Report Contributors

- Reaching out to over 20 commercial projects in the UK to gauge interest in contributing information to the report.
- On board so far:
  - Kew Technologies Ltd. (ETI, Midlands)
  - Advanced Biofuels Solutions Ltd. (Swindon)
  - Velocys (Altalto, Immingham)
- Follow-ups planned for early June.
- Leveraging Supergen industrial and academic contacts to gather an updated picture of gasification of biomass and waste in the UK.



# Timeframes

Once relevant plants have been contacted and given sufficient time to reply, we will collate their submissions and use them to formulate the UK's Country Report, aiming to submit a draft in September for review.



For updates on the UK  
Country report please  
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