



SUSTAINABLE BIOENERGY SYSTEMS
FOR OUR LOW-CARBON FUTURE

Policy Stakeholder Consultation Event
27 January 2023, London



SUSTAINABLE BIOENERGY
SYSTEMS FOR OUR
LOW-CARBON FUTURE



Biotechnology and
Biological Sciences
Research Council



Engineering and
Physical Sciences
Research Council

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Agenda

11.00am Welcome and Introductions *(start of online session)*

- Overview of current Supergen Bioenergy Hub status/position
- UKRI Call for Proposals
- Supergen Bioenergy Hub draft framework and consultation process

(close of online session)


11.30 Workshop session


12.30 Lunch and networking

13.30 Continuation of Workshop session


2.30pm Next steps

3.00pm Close





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Current status

- TG1 (resources): options for UK feedstock production: marginal land; opportunity mapping; land suitability, barriers and support tools to bridge the gap between national scale targets and field scale decisions
- TG2 (pre-treatment and conversion): lignin bio-oil; H₂ production from cellulose and lignin; bleached fibres for paper additives; sugars for renewable transport fuel; ionic liquids, ball-milling, pyrolysis, fermentation, photocatalysis, potassium, ash, aromatics.
- TG3 (vectors): SAF, hydrogen, bio-methane, LPG
- TG4 (Systems): BSIM biomass sustainability model; GHG calculations; bioenergy pathway analysis; policy positioning



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UKRI Proposal

Title: Impact focussed Supergen Hubs in bioenergy, networks and ORE

<https://www.ukri.org/opportunity/impact-focussed-supergen-hubs-in-bioenergy-networks-and-ore/>

Total fund: £17,500,000

Up to £5 million for bioenergy

Closing date: 23 March 2023

The proposal has a focus on:

- impact (in all its forms)
- demonstrable contributions to how the UK will meet net zero
- leverage



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UKRI Proposal

Impact

- The hub must demonstrate progression from the previous Supergen hub, to focus on accelerating the impact of current generation technologies and solutions over the course of the investment

Knowledge transfer

- The hub must ensure knowledge transfer and the exploitation of intellectual property. This strategy should refer to, and take account of, the existing national landscape, published roadmaps and other official documents.

Contribution to net zero targets

- The hubs are expected to demonstrate how their activities will contribute to securing net zero greenhouse gas emissions in the UK by 2050 and global decarbonisation efforts, encompassing decarbonisation (including materials, chemicals, embodied carbon) as well as energy generation.

Visible research leadership

- The hub must be credible and able to act as the international face of the community, feeding into and helping to respond to as-yet unadopted challenges and strategies. They should be a centre of collaboration.



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UKRI Proposal – Hub expectations

- This hub will provide a focus for the UK research community, working in close partnership with businesses, governments, and administrations throughout the UK to accelerate the impact of current generation bioenergy technologies and solutions.
- The Supergen Bioenergy 2023 hub will be co-funded by EPSRC and BBSRC, to increase the hub's potential and gain additionality from combining engineering, technological, biological and biotechnological research outputs. We would also expect the new bioenergy hub to consider social and environmental aspects.
- Continuing support in this area will ensure that bioenergy has a role to play in replacing fossil fuels to meet net zero targets. Research will continue to address important sustainability issues including crop yields, water dependence and the availability of land for energy and food crops.
- The successful translation of research underpinning the production of advanced fuels will help the UK meet its commitments for reaching net zero by 2050. The commercialisation of advanced fuels should encourage increased sustainability, energy security and economic growth. The hub will look to develop solutions and pathways for the forthcoming UK bioenergy strategy.



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Research challenges

1. New **feedstocks**, sustainability and impacts
2. Land use, **ecosystem services** and life cycle assessment
3. **Biomass to hydrogen pathways**: including gasification, photocatalysis and fermentation
4. **Biomaterials, chemicals and products**: leveraging biomass for very significant reductions in carbon intensity
5. **Biorefineries**: engineering practicalities; hydrogen and ammonia; biorefinery engineering vision; energy and carbon balances
6. Reducing **costs** and increasing **efficiency**
7. **Scale-up** of process and technologies to deployable scales
8. **Carbon value chains**: integrity, viability and bankability of carbon reductions from biomass over life cycle
9. **Bioenergy integration** in transport, water treatment, heat, CCS
10. **Energy transitions**: more finely characterized and realistic appraisal than current energy systems models
11. **Opportunities and challenges** e.g. policy, social acceptability, financial, perceptions of relevant actors, trade-offs and decision-making processes



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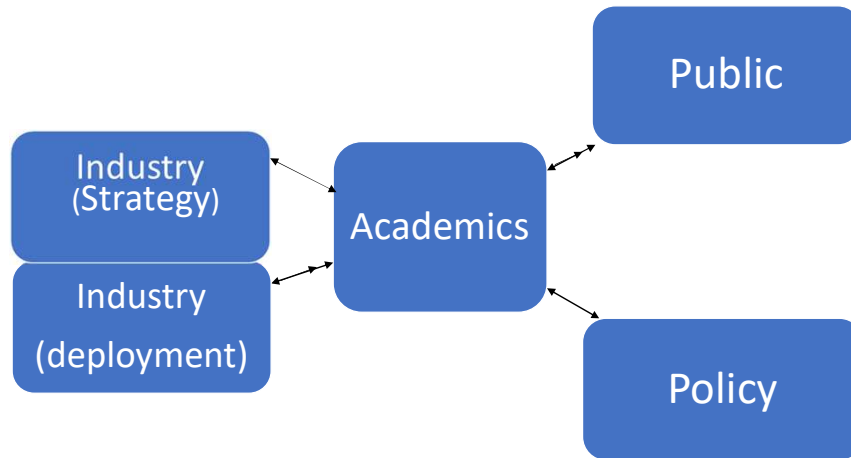
Aims/Objectives/Outcomes

- Independent academic voice for strategic priorities
- Making “common” academic knowledge available
- Delivering flexible academic support for specific deployment
- Increasing public awareness and understanding



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Bioenergy research context



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Delivery of research in a contested space

- Provide strategic independent evidence (sustainability)
- Support deployment
- **Tensions: a hub of 2 parts???**

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Questions?



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11.30- 11.50: Table Session 1: Departmental Policy Priorities

What are the departmental priorities for the different departments represented? How can bioenergy support these?



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11.50 -12.30: Table Session 2: Biomass and Bioenergy Policy Priorities

1. What are the bioenergy/ biomass relevant objectives and priorities of the teams/ individuals represented?
2. What are the key outstanding questions or evidence gaps policy makers need to see addressed?
3. Which 3 areas (1-11) do you think are most relevant to delivering impact from bioenergy and bioproducts in the UK from 2023 to 2027?
4. Are there other areas you think are important that are not listed here?



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Lunch

- Discuss your ideas with others



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13.30-14.00: Table Session 3: What do you need?

What do policy makers need from academics/ the hub? (particularly once the intense period of work around the biomass strategy is over)



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Mechanisms to date

- Central hub funding
- Project funding
- Flexible funding
- Secondment funding
- Travel bursaries



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14.00-14.30: Table session 4: Mechanisms for working together

1. What mechanisms have worked well previously?
2. How can we work together in the future? In the leveraged way that UKRI are expecting (put paragraph from call document)



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Next Steps

1. Send form to all attendees to complete and return additional ideas if they want to
2. Share outputs from today with attendees at an online meeting in February



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Questions?

