Supergen Bioenergy

# Supergen Bioenergy Hub Systems Research

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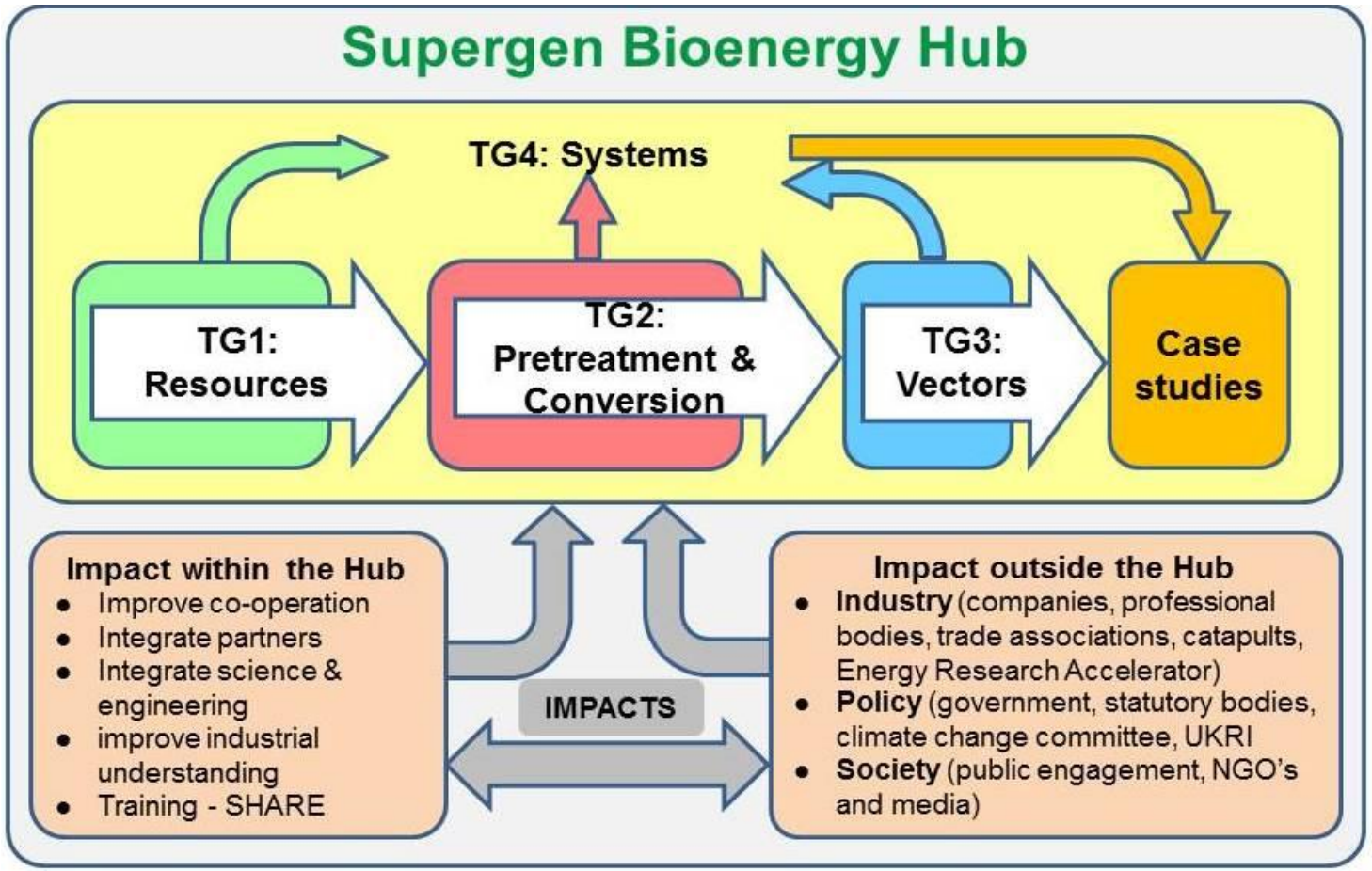
# Structure

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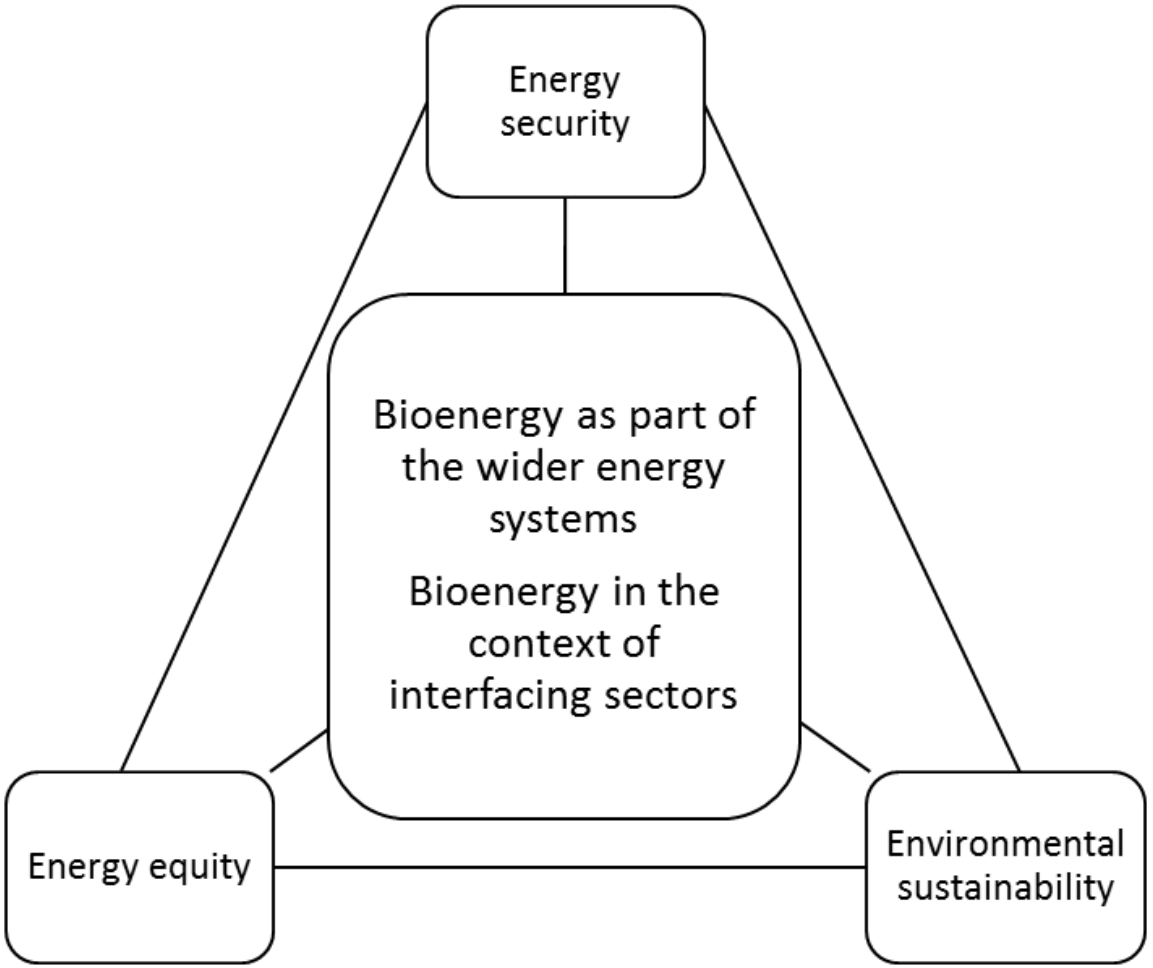
# Systems 1

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# Systems 2

- Identification and evaluation of wider sustainability impacts
- Role and impact of bioenergy pathways on the energy system and interfacing sectors
- Maximising benefits and mitigating negative impacts of bioenergy to the energy trilemma of affordability, resilience and carbon reductions considering wider ecosystem, socio-economic and societal aspects
- Assessment of key sustainability impacts and uncertainties
- Analysis of synergies and trade-offs
- Investigation of land, ecosystem and socio-economic implications

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# Wider issues

- Demonstration and learning - gasification
- Biomass Energy with Carbon Capture and Storage: performance; scale; vector
- Overseas development
- Aviation biofuels
- Energy material degradation
- Energy intensive industries (high grade heat)
- Space heating
- Airborne pollution
- Biohydrogen

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# Opportunities

- Q4 2018: Technical workshop (TG1-4); case study workshop with industry
- Researcher & network meetings
- Collaboration, secondment & travel awards
- 6 x £120k research challenge calls
- 2 x £120k fellowships
- International conference & exhibition representation
- Policy forums & industrial advisory board
- Early career researcher Network (SHARE)

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# Case studies

**RESOURCES**
- UK agricultural product e.g. energy crop or residue
- Lignocellulose (woody biomass or waste)
- Organic wastes e.g. waste wood & MSW
- Difficult wastes
- Dry brown biomass & waste & wet biomass & waste
- Woody material e.g. forest residues and coppice
- Process residues from bio-processing

**PRETREATMENT & CONVERSION**
- Biocatalysis
- Catalytic conversion
- Chemical conversion
- Digestion
- Fermentation
- Fractionation to simple sugars
- Hydrolysis & separation,
- Hydrothermal processing
- Omnivorous catalytic technology
- Pyrolysis
- Saccharification
- Gasification to syngas
- Separation
- Synthesis of alcohols
- Synthesis of hydrocarbons
- Thermal conversion of residues
- Upgrading

**VECTORS**
- Animal feed
- Aviation fuels
- Biofuels
- Biomethane
- Bulk chemicals
- Electricity
- Ethanol
- Fertilizer
- Fine Chemicals
- Fuel gas
- Heat
- Hydrogen
- Liquid fuels
- Syngas

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# Next steps

- Sign up online for updates (www.supergen-bioenergy.net)
- Ensure your institute/company is a member
- Attend initial technical & case study workshops
- Join SHARE network (early career researchers)

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# More information

www.supergen-bioenergy.net

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