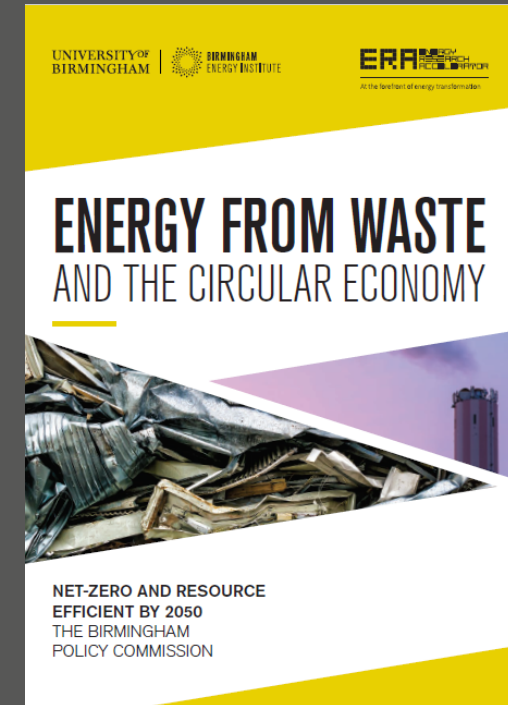


Heat, Storage EfW and Hydrogen: Energy Decarbonisation Opportunities for Rural Communities and Economies

Dr EMILY PRESTWOOD
Development Manager
Birmingham Energy Institute

RSN Seminar: Rural Decarbonisation
28th April 2021



About Birmingham Energy Institute

Birmingham Energy Institute (BEI) is developing and applying the technological innovation, original thinking and new ways of working required to create sustainable energy solutions and support the regional, national and global transition to a zero carbon energy system.

<https://www.birmingham.ac.uk/research/energy/index.aspx>
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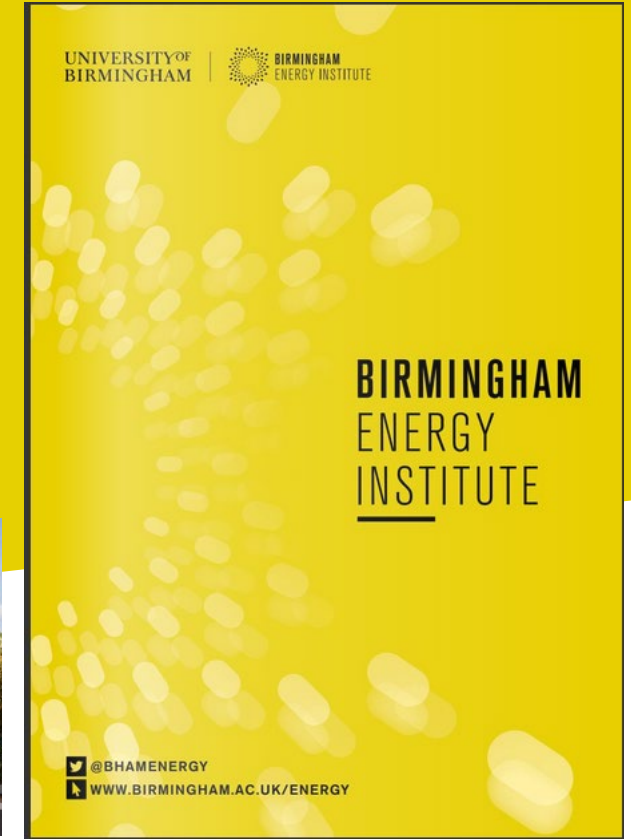
About Birmingham Energy Institute

Research areas:

- Thermal energy storage
- Strategic elements and critical materials
- Hydrogen and energy storage materials
- Fuel cells and hydrogen
- Cold Economy
- Transport systems
- Vehicle technology
- Energy and environmental economics
- Energy informatics
- Nuclear
- Energy policy and systems
- Energy justice and energy poverty
- Circular economy
- Energy law
- Sustainability



At the forefront of energy transformation



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Challenges for rural decarbonisation

- Increasing electricity and transport demand due to EVs and impact on rural infrastructure
- High number of hard-to treat and expensive to heat solid wall properties
- Lower density population reducing economies of scale and funding opportunities for heating and transport solutions
- Ensuring a just transition where rural communities benefit from renewables infrastructure and aren't left behind
- Need for regional coordination that doesn't forget rural community needs

Heat decarbonisation

- National Centre for Decarbonisation of Heat to build skills capacity and supply chains at scale & reduce costs
- Piloting economic modelling and developing a community learning platform to identify the best solutions
- Working with finance institutions to develop new public/private/householder investment models



NCDH
A NATIONAL CENTRE FOR
DECARBONISATION OF HEAT

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ERA
All the research at energy research centre

mtc
Manufacturing Technology Centre

ENERGYCAPITAL

CATAPULT
Energy Systems

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Energy storage

- Thermal energy storage systems for heating, transporting goods and agriculture/industry.
- Liquid air energy storage (LAES) for grid balancing
- Battery storage of electricity – community and onsite.



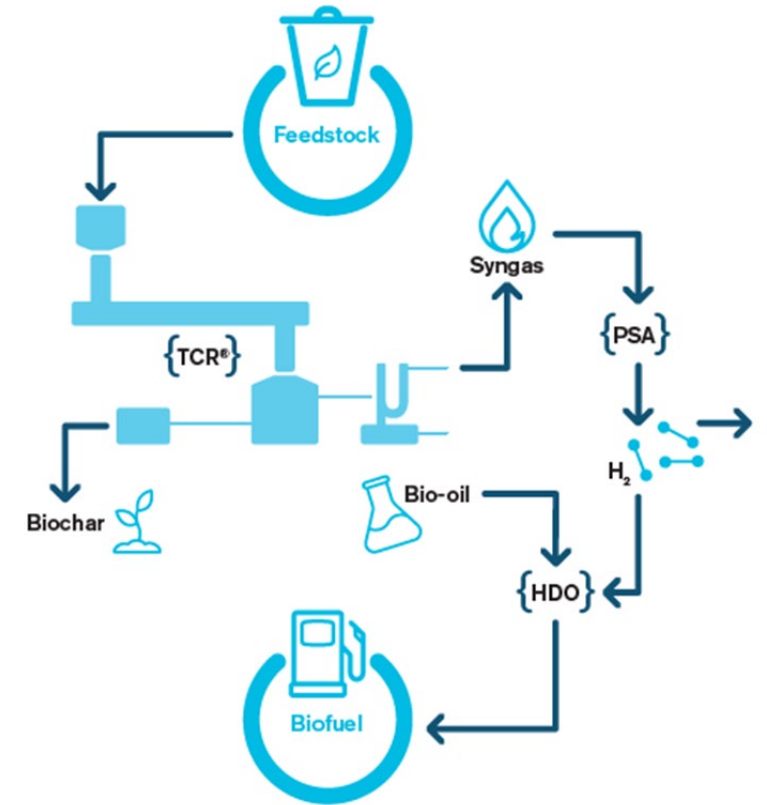
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Energy From Waste and Circular Economy

- Identify locations for Resource Recovery Clusters: waste, heat, energy and transport solutions
- Develop and roll out 2nd generation EfW tech, AD, pyrolysis and gasification - turn waste into molecules & products as well as energy.
- Roll out proven small-scale carbon capture tech, plus boost R&D



Thermo-catalytic reforming of biomass to produce synthetic transport fuels. Source: Fraunhofer Umsicht

Hydrogen Economy

- Producing green hydrogen using renewable energy for local use
- Mapping transport networks across regions to identify hydrogen/low-carbon refuelling hubs/infrastructure opportunities
- Fuel cell solutions for HGVs and agricultural vehicles and bridging funding gaps



Opportunities for rural economies

- R&D into rural decarbonisation and new partnerships with industry and academia
- Coordinating community learning and engagement processes for rural communities
- Pilot and pioneer projects to develop innovative financing solutions for rural decarbonisation
- Develop systems thinking and circular economy approaches that combine waste, energy, heat and transport solutions

Any Questions?

If you are interested in exploring our research/projects/work/industry links (both Birmingham Energy institute and the Energy Research Accelerator) please get in touch: E.Prestwood@bham.ac.uk

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