

Country	Institute	Category	Related programs (with short summary)	Target / Goal Outcome	Lead person / Organization	Partnership (if any)	Related information
UK	UKERC	Systems analysis	Security of UK energy futures (2015-18)	To assess the security and reliability of the UK energy system in 2030 and 2050. Scenarios include a sensitivity analysis of the impact of CCS not being available; and the potential role for hydrogen.	Prof Jim Watson, UKERC / UCL	Imperial College, UCL, Cardiff University	http://www.ukerc.ac.uk/publications/uk-energy-security.html
			Heat, incumbency and transformations (2016-18)	To explore the potential impacts of different low carbon heat futures on actors in the heat supply chain, energy network companies, appliance manufacturers, heat suppliers and major industrial heat users. It found significant differences between a heat future based on hydrogen and a future focusing on electrification	Dr Bridget Woodman, Exeter University	Exeter University	http://www.ukerc.ac.uk/programmes/decision-making/heat-incumbency-and-transformations.html
			Integrated analysis of flexible low-carbon heat pathways (2017-19)	To explore the flexibility of the current gas network, and the implications for future transitions to low carbon heating.	Dr Paul Rowley, Loughborough University	Loughborough University and Birmingham University	
			Decarbonising domestic heat: national and local systems (2015-19)	To model local energy systems for heat in urban, suburban and rural contexts; to explore the potential role of a range of technological options including natural gas, hydrogen, district heating, heat pumps and thermal storage; and to improve representation in national models.	Professor Keith Bell, Strathclyde University	Strathclyde University, UCL	
			Investigating regulatory frameworks for local energy systems (2020-21)	To explore how regulatory frameworks could change to facilitate local energy systems, with a particular focus on regulation of gas networks and the transition to low carbon heat.	Professor Jan Webb, University of Edinburgh	Edinburgh University, Strathclyde University, Cardiff University	
			Regional economic and industrial transitions (2020-24)	To analyse how local industrial strategies can contribute to delivering the UK's low carbon agenda while addressing regional economic disparities; and to promote international learning about such strategies.	Professor Peter Taylor, University of Leeds	Leeds University, UCL; International partners: IGES (Japan) and Wuppertal Institute (Germany)	
			Modelling synergies and tensions between local, regional and national energy transitions (2019-21)	To develop a regionalised energy system model so that the consequences of divergent policy decisions across the UK can be explored (including on heat and industrial decarbonisation)	Dr Paul Dodds, UCL	UCL	
			Public attitudes to heat pathways (2019-21)	To understand public attitudes to different low carbon heat pathways, including those with a substantial role for hydrogen.	Professor Nick Pidgeon, Cardiff University	Cardiff University	

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			Heat systems as a source of flexibility (2021-23)	To investigate the flexibility implications of low carbon heat. It will quantify flexibility from individual heating assets and co-ordination of multiple assets, in terms of energy flows, rates of change, durations and costs.	Prof Jianzhong Wu, Cardiff University	Cardiff University	
			Heat supply in local and regional energy systems (2020-23)	To assess and quantify the different low carbon heat options at a local scale, including interdependencies between heat and other energy vectors and the potential contribution from industrial waste/residual heat.	Prof Jianzhong Wu, Cardiff University	Cardiff University	
			Development of a bottom-up, technology rich, whole systems model of industry (2019-22)	To develop a thermodynamically rigorous, technology oriented, whole system energy model for industry to 2050 that will include details of the non-energy intensive sectors and explicitly incorporate heat flows so that it can consider the full range of abatement options for industry - including hydrogen and CCS.	Professor Peter Taylor, University of Leeds	Leeds University, Bath University	

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			Assessing potential, feasibility and impacts of bioenergy with CCS in the UK (2017-19).	To assess the role of BECCS in energy system scenarios, quantifying implications for bioenergy resources of land availability, water and nutrients; examine life cycle emissions and impacts on ecosystem services; and define implications for trade and climate change policies	Prof Pete Smith, Aberdeen University	Aberdeen University, UCL, Imperial College	http://www.ukerc.ac.uk/programmes/resources-and-vectors/assess-beccs.html
			Bioenergy with carbon capture and storage, and direct air carbon capture and storage: examining the evidence on deployment potential and costs in the UK (2018-19).	To provide evidence to support the Committee on Climate Change's advice to the UK government on the implications of the Paris Agreement for the UK's long-term emissions reduction targets.	Dr Rob Gross, Imperial College	Imperial College	http://www.ukerc.ac.uk/programmes/technology-and-policy-assessment/bioenergy-with-ccas.html
			Development of a bottom-up, technology rich, whole systems model of industry (2019-22)	To develop a thermodynamically rigorous, technology oriented, whole system energy model for industry to 2050 that will include details of the non-energy intensive sectors and explicitly incorporate heat flows so that it can consider the full range of abatement options for industry - including hydrogen and CCS.	Professor Peter Taylor, University of Leeds	Leeds University, Bath University	
			Modelling synergies and tensions between local, regional and national energy transitions (2019-21)	To develop a regionalised energy system model so that the consequences of divergent policy decisions across the UK can be explored (including on heat and industrial decarbonisation)	Dr Paul Dodds, UCL	UCL	