UKERC
UK Energy Research Centre

Research Fund Workshop Report -

London, October 2016

ABOUT UKERC

The UK Energy Research Centre (UKERC) carries out world-class, interdisciplinary research into sustainable future energy systems. It is a focal point of UK energy research and a gateway between the UK and the international energy research communities. Our whole systems research informs UK policy development and research strategy.

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Research Councils UK
Energy Programme
For a Low Carbon Future

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1 Introduction

The UK Energy Research Centre is currently in its third five-year phase of research and engagement activities, which will run up to April 2019. In addition to the core programme of research, a number of mechanisms have been put in place to ensure that participation in UKERC is broad, flexible and addresses the needs of the wider UK research community.

A flexible Research Fund of around £3.3m (valued at 80% FEC) has been set up in order to commission new research and facilitate the integration of the existing programme. The Research Fund is overseen by UKERC's independent Research Committee. The key aims of the Fund are:

- To allow the research programme to develop flexibly in the light of new scientific insights or external developments, e.g. in energy policy;
- To bring a wider range of researchers and disciplines into UKERC's research programme, including researchers from outside the 'traditional' energy community;
- To promote integration in the UKERC research programme, and to fill gaps where needed;
- To build collaborations between the UKERC research community and other research communities – including other energy researchers, groups and centres; and
- To scope and develop new research agendas in partnership with funders, the research community and other stakeholders.

The Fund is being allocated through three consecutive targeted calls for proposals, of which the first two took place in 2015 and 2016. The third call for proposals will be announced either in late 2016 or early 2017. Each funding call is preceded by a round of consultation among the UK academic, policy and industry communities. The allocation of the first and second rounds of funding was completed in late 2015 and 2016 respectively. The successful projects were selected following a competitive two-stage application process that was led and overseen by UKERC's independent Research Committee. Full applications were subject to independent peer review, and four projects were chosen for funding in each of the rounds.

One area that was popular in the consultations for the second round of funding was the impact of non-energy policies on the energy system. The Research Committee decided that further investigation of the current research landscape and the associated opportunities was required before making any final decisions on funding any new research in this area. For this purpose a scoping paper was commissioned in the summer of 2016.

On the 3rd of October a workshop was held at Imperial College in London in order to identify potential priority topics for the third round of funding. The interim outcomes of the scoping paper on non-energy policies were presented during the workshop. The attendees were then split into three groups where they had the opportunity to suggest potential topics for the third round of funding. This included specific discussion of potential research on the impact of non-energy policies. The participants also discussed the potential for funding smaller projects of up to £50k with the specific aim of building new collaborations. Towards the end of the day the participants undertook a prioritisation exercise to determine which potential topics they would prefer to see funded.

This report outlines the discussions that took place during the workshop. Section 2 outlines the outcomes of the voting exercise in the three breakout groups and identifies the key emergent priorities. Section 3 provides a summary on the deliberations on the opportunity for small projects.

2 Prioritisation of suggested research areas

In the breakout groups the participants were allowed some time to identify potential research topics both in general and also specifically relating to the area of non-energy policies. These ideas were then discussed within the group and in some cases clustered together into wider research areas. The participants were also given the opportunity to discuss if there would be merit in allocating part of the available funding to smaller research projects to support the development of new collaborations. Finally, the participants undertook a prioritisation exercise in order to identify their preferences for future funding. This section sets out the results of the prioritisation exercise that took place in each of the breakout groups. Each participant was given six votes.

2.1 Detailed prioritisation exercise outcomes

2.1.1 Breakout group 1

Chair: Jim Watson, UK Energy Research Centre

In breakout group 1 the participants voted for the general ideas and the ideas on the effect of non-energy policies at the same time. This means that there is a potential bias towards ideas on the effect of non-energy policies, and that the results should be interpreted with some care. Participants were also asked to vote for their preferred research clusters, not the individual research topic ideas. The results of the voting exercise are set out in the Table below.

Table 1 Voting exercise results, group 1

Group 1	Research clusters	Votes
General ideas	Changing demand	7
	Resilience	6
	Flexibility and storage	5
	Health and welfare	4
	Environmental impacts	3
	Aviation	
	Shipping	
	Innovation	
	Bridging models and social science	
	Data and privacy	
The effect of non-energy policies	Local energy & planning	9
	Economic growth & taxation	5
	Practices in homes	5
	Teleworking & ICTs	4
	Brexit	3
	Oceans	1
	Skills	1
	Welfare	
	Non-CO2 GHGs	

2.1.2 Breakout group 2

Chairs: Rob Gross, Imperial College; Gordon MacKerron, University of Sussex and UKERC Research Committee

In breakout group 2 the participants only voted on general research ideas and not on ideas on the effect of non-energy policies. As in group 1, the votes were given to research clusters, not individual ideas. The outcomes of the voting exercise are set out in the Table below.

Table 2 Voting exercise results, group 2

Group 2	Research clusters	Votes
General ideas	DSR ○ What do we mean by DSR? A quick scope of DSR as a topic. ○ Customer issues ○ Consumer proposition ○ Business model ○ Focus on social science and consumers ○ Questions of trust ○ Questions for heat and gas networks as well as power? ○ Why is DSR important? ○ Is it only important in a low carbon system?	24
	Low carbon heat ○ Use of waste heat ○ Building performance ○ Business models ○ Consumer preferences ○ Heat storage ○ Community ○ Regulation	22
	Aviation ○ But what? ○ Tech fuel ○ Demography ○ Equity	12
	Industrial energy ○ Energy policy into industrial policy ○ Industrial regions, local supply and demand	12

2.1.3 Breakout group 3

Chair: Ioanna Ketsopoulou, UK Energy Research Centre

In breakout group 3 the participants voted at the same time both on general research ideas and the effect of non-energy policies area, in a similar way to breakout group 1. Votes for the general ideas were awarded to research clusters and in two cases to individual ideas that were not clustered. On

the other hand for the non-energy policies area the participants voted for individual ideas. The outcomes of the prioritisation exercise are set out below.

Table 3 Voting exercise results, group 3

Group 3	Research clusters	Votes
General ideas	Heat & DSR	8
	Justice & ethics	8
	Energy & climate	8
	Land use	8
	Digitalisation	4
	Models & tools	4
	Future pathways	3
	International development	1
	Individual research ideas	**Votes**
	Efficient and optimal management of complex systems	2
	Unintentional energy market consequences of energy policy	1
The effect of non-energy policies	**Research ideas**	**Votes**
	At an international level to what extent does energy appear as a priority in policy making?	3
	Digitalisation and its energy impacts	3
	Are we just arguing to have energy costs and externalities fully integrated into any assessment of a new policy	2
	To what extent is non-energy policy a source of uncertainty in assessing the response to energy policy? Can/ should this be quantified when examining energy policy? Eg in 'whole systems models'	2
	Education policy and energy and transport demand	1
	Links between gender and energy systems	1
	Future energy costs for CO2 emissions	1
	CO2 emissions or energy?	1
	How does energy policy relate to other policy objectives? (e.g. poverty alleviation, risk management, development goals)	1
	The requirement for an economic framework, i.e. the need to cost energy usage appropriately	1
	Broadening the definition of 'impact' when looking at policies- going beyond supply/ demand calculations and numeric understandings of energy	1

2.2 Summary of key points

This section outlines the key themes that emerged from the breakout groups' discussions and the prioritisation exercise that took place towards the end of the workshop. The key themes from across the three groups are discussed below.

General topics:

- Demand side response

DSR was a popular topic among all three groups. Firstly, it was considered essential to clarify what we mean by DSR and why it is important. For this purpose a scoping piece on this issue was suggested as a starting point. If we follow this route it will be essential to be clear on the scope and not duplicate existing research, e.g. research by the Supergen HubNet consortium. It was also proposed to explore whether DSR only has merits in a low carbon system. Another view was that a project under this topic would have to address heat and gas systems, as well as power. Involving social scientists in a relevant project and focusing on consumers, e.g. issues of trust, privacy and cyber attacks, was another popular idea. Again we would need to be clear about the additionality of any new research. Finally, the workshop attendees suggested that changes in lifestyles and energy demand patterns should also be explored under this broad research area.

- Welfare and health

The relationship between energy and welfare was another popular topic among the workshop attendees. This topic could complement the two projects on equity and justice in energy systems that were commissioned in the first round of funding under the Research Fund; however we would need to be careful not to duplicate existing research both within UKERC and in the wider research landscape. Energy poverty in specific UK regions and the potential effect of the UK leaving the European Union were suggested topics. Another recommended topic was the relationship between energy demand, sustainability, health and well-being. A different approach that was expressed during the workshop was to examine the connection between welfare and energy efficiency, e.g. the acceleration of transitions and the governance of energy efficiency.

Welfare was also popular as within discussions about the effect of non-energy policies. A dedicated analysis of the relationship between welfare policies and fuel poverty was recommended. A different angle on this broader topic would be to explore whether welfare benefits should be put in place for energy services, and what the benefits are, if any, from welfare policies in relation to energy services.

- Heat

Heat is a topic that is becoming increasingly prominent, both within the UKERC research programme and in the wider UK research community. Therefore commissioning new research in this area would perhaps require further investigation about the gaps of the current research landscape. One aspect of this wider research area that was explicitly suggested during the workshop was the relationship between peak heat demand and overall heat requirements. Changing lifestyles and the effect on heat demand could also be a relevant topic.

- Storage

Storage has also been popular in previous UKERC consultations, though other research topics were prioritised for the Research Fund. One option under this research area would be to undertake a system-wide assessment that would explore changes in storage at different scales in the recent past

and also provide an analysis of potential future requirements. A specific question to address could be what type of storage will be needed in the future and which technologies would be most appropriate. Other topics that were suggested were the role of variable energy pricing in relation to storage and the potential for storage and renewable energy to be implemented as a whole.

- Resilience

The broad area of resilience was also popular, particularly in breakout group 1. One issue that was discussed was the implications that adaptation strategies could have for energy systems, and whether there are adaptation strategies that would not lead to lock in. Another option would be to explore the impact of climate uncertainty on the performance and viability of the energy system as a whole, and not only on a single component, as has been the common approach until now. It was also suggested that it would be beneficial to establish stronger links between the energy and climate research communities in order to be able to better evaluate the impacts of climate change on the energy sector. If we decide to commission a project in this area we would need to be careful not to duplicate existing research, e.g. EPSRC-funded research on the resilience of the electricity system.

Other topics on the effect of non-energy policies

- Economic growth and taxation

The broad issue of economic growth and taxation was a popular topic under the effect of non-energy policies research area. In breakout group 3 a discussion took place regarding whether it would be sufficient and appropriate to incorporate energy externalities in cost-based decision making or whether we should aim to engage with non-energy policy domains in a more fundamental way. There was a suggestion to investigate future carbon prices and what type of economic framework or scheme would be required for the costing of energy usage. Another option would be to explore whether signals such as carbon prices would be applicable across different economic domains and what the appropriate alternatives would be. Exploring the relationship between taxation policies, income distribution and energy demand was also recommended, although it is worth noting that this area is also covered under the current research programme under Theme 4 on Energy, Economy and Societal Preferences.

- Planning

Planning policies and their impact on energy demand was a popular topic, particularly in breakout group 1. This area is quite broad and can encompass a number of distinct directions and research questions. One suggestion was to explore areas in which non-energy policies can have a positive effect on the energy system, e.g. waste and agriculture policy. Another option would be to research the impacts of governance and planning policies at a local level on carbon emissions, also addressing how these might change as the energy system evolves. Assessing the planning processes for renewable energy technologies would be another possibility. Finally, the relationship between transport demand, journey distance and the degree of centralization of public services and other amenities was another suggested topic.

- Digitalisation and its energy impacts

The effect of digitalisation on energy was another topic that proved to be popular among the workshop attendees. It is worth noting though that during the workshop discussions it was not clear whether the energy impacts of digitalisation are policy-driven or not. Emphasis could be placed on the role of non-energy policies as potential enablers or disablers of specific energy policy choices. The aim of such a project could be to identify those key interdependencies. Another approach could be to explore the effect of efficiency and other improvements in ICT.

- Practices in homes

The effect of practices in homes and everyday life was another topic that gathered interest during the workshop. One suggestion was to explore the reversible and irreversible trends in human behaviour. Another option would be to address how trends such as cars electrification affect the energy system. Emphasis could also be placed on how everyday behaviours can inform novel interventions in order to reduce energy demand. This could touch on broader issues such as fuel poverty, and build on current UKERC research on energy justice and ethics.

- Salience of energy policy

The importance of energy policy, particularly when compared to other policy domains and objectives, was another topic that proved to be relatively popular during the workshop. One suggestion was to study whether and to what degree energy is a priority in policy making at an international level. Such a project could explore what the variation is across different geographies, resources availability, etc. It was also suggested that it would be useful to examine how energy policy relates to other policy objectives, such as poverty alleviation or development, and whether they enhance or detract from each other.

3 Discussion on the funding of small projects

This section outlines the discussions that took place during the breakout sessions on the opportunity to fund small projects in order to support the development of new collaborations.

3.1 Breakout group 1

The participants in breakout group 1 expressed mixed views on the proposal to fund smaller projects that would support new, interdisciplinary research collaborations. Points raised in the discussion included:

- It is not clear whether UKERC is uniquely placed to add something new here. Many universities already have their own ‘seed funding’ schemes for new research ideas, and these often include

an encouragement to form new collaborations. Some also allow researchers to work with those in other institutions.

- Having a small project funded by UKERC might be good for researchers in giving their work a kind of 'stamp of approval' or legitimacy.
- UKERC is encouraged to stick to its core focus of UK in an EU / global context, and not to use this or other potential strands of the Research Fund to support work on energy and development. The Global Challenges Research Fund (GCRF) is much bigger, and there is little UKERC could add to that in terms of research funding.
- If we do this, we need to have a streamlined process with quick decisions.
- Scoping papers (of the kind produced on non-energy policies) may be more useful to commission than pilot research projects.

3.2 Breakout group 2

In breakout group 2 the participants were generally supportive of allocating some funding to smaller projects. The following topics were suggested during the discussion:

- Brexit
- Owner occupiers & community switching
- Outcome based policy
- Spatial planning

3.3 Breakout group 3

In breakout group 3 differing views were expressed on whether and how it would be appropriate to allocate funding to small projects. The key points of the discussion follow:

- This option might be useful for allocating UKERC funding towards the end of Phase 3.
- This type of funding could be a starting point for early career researchers. Should we impose this as a requirement in the call? However if we tailor this funding accordingly, we need to make sure they will still be eligible to apply for their first grant.
- This process should not be too bureaucratic. The application and submission processes should be kept 'fast and easy'.
- We should keep the process open. That means not specifying the call and allowing people to bring in their own ideas. However this approach would significantly complicate the application process.
- What about quality control? Is whatever output that is produced from this process going to be subject to a full peer-review? While this might complicate and delay the process, it is something we need to be aware of.
- Commissioning shorter projects could be appropriate in some cases, but it shouldn't divert funding from larger projects.
- We should also be considerate of the time applicants would devote to submitting an application.

- It would be a good idea to use this type of funding for a workshop.
- We need to be realistic regarding our interdisciplinary aspirations in this context. Interdisciplinarity takes time; therefore there are limitations to what could be achieved in a small project. Should we specify in the call that a minimum of two disciplines should be involved? There could be a risk that 'whole-systems' research will turn into another academic silo.
- The links between energy and climate models could be a good topic for a small project.

Appendix

Record of outcomes of the breakout groups

This section provides a record of the detailed discussions that took place in each of the three groups. In each case the discussions were structured around the identification of general future research topics and research topics that would fall under the effect of non-energy policies research area. The discussions on the opportunity to fund small projects to support the development of new collaborations are summarised in Section 3.

Breakout group 1

General research topics

- Changing demand
    - How does technology alter demand patterns?
    - How practices might change, and what it means for demand
- Aviation
    - opportunities for demand management and technical transition
- Shipping
- Flexibility and storage
    - The role of storage in the system: what has it been historically, how is it changing, what is needed for the future, what scales and technologies are most appropriate.
    - Storage: the role of variable energy pricing.
    - Should energy storage and renewable energy implemented as a whole?
- Innovation
    - What has the role of disruptive innovation been in the evolution of our energy system? How robust is the system to accommodating such change and ensuring that it is low carbon?
    - What is 'effective innovation' in an energy system context and what do we have to 'get right' to deliver it?
    - Renewables are integral in the Kent region: how Brexit may effect this, windfarms, carbon emissions to be cut 60% by 2030, huge employee base, in relation to Brexit ChristChurch is CEFEUS, excellent EU expertise
- Health and welfare
    - Accelerating transitions in energy efficiency, governance of energy efficiency, modelling of energy demand.
    - Energy poverty in the Kent region: Gravesham Borough Council working on a number of projects tackling winter mortality due to cold housing, lack of money to fund cars in winter, how a Brexit could affect this.
    - Interdisciplinary research bringing together experienced groups to develop specific research aspects.
    - Energy demand, sustainability, health and well-being
- Bridging models and social science

    - Data analytics and social science narratives. How to inform numerical models of demand by narratives from declared intentions etc?
- Resilience
    - Climate science and IAMs
    - Resilient energy systems: energy system implications of adaptation, non- lock in adaptation. Resilience and diversity- resilient practice as adaptation.
- Data/ privacy
    - Access to data for research purposes
    - Smart meter transport (oyster, TFL)
    - Ownership of any arising IP from 'free' data
    - Transfer of benefits to fuel poor
- Environmental impacts
    - What regulatory frames are missing or unclear? Eg seismicity from non-shale effects?
    - What are the environmental emissions or impacts from each energy option. Anything but carbon.

Topics under the 'effect of non-energy policies' research area

- Economic growth & taxation
    - Scheme to properly internalise energy related externalities into cost-based decision making (similar to carbon tax)
    - Are the signals for change that the energy industry calls for (eg price of carbon) applicable and effective across the whole economy? What are the alternatives?
    - Asset lifetimes/ values
    - Tax policy- Income distribution- energy demand (& supply?)
    - Sustainable growth and energy demand
- Oceans
    - Ocean spare and offshore demand energy
- Brexit
    - How will leaving the EU effect on funding for offshore power such as windfarms both locally in Kent and nationwide.
    - Brexit could have an impact on the human assets capability, will we have a lack of talent in some areas?
    - What could Brexit mean for the Euratom treaty?
- Skills
    - Education policy- skills- energy supply
- Welfare
    - Welfare policies and fuel poverty (dedicated analysis)
- Teleworking and ICTs
    - Home working, tele-working, as they influence energy in commuting & office/ home.
    - ICT policy (internet currently seen as technology rather than policy), eg broadband roll-out and energy
- Local energy & planning
    - Where non-energy policy is needed to have a positive impact on energy, e.g. bioenergy- policy around waste and agriculture

    - How significant are the impacts of governance and planning processes at a local level on GHG emissions. How might those change as the system changes.
    - What are the likely emissions of different energy options and how do these compare to existing (or planned) non-climate related regulation?
    - What are the environmental limits to energy production and use, eg a limit on shale might be where extensive groundwater protections
    - Decentralisation of energy generation and policies: district heat networks (eg Glasgow), localised energy generation and systems (eg microgeneration and storage), new business models, new policy, new technologies, system integration
    - Renewables and planning processes
- Practices in homes
    - Look into reversible and irreversible trends in human behaviour, eg steps and peaks
    - My organisation does look to energy (especially carbon) in building management, travel etc. Who else and how?
    - Electrification of cars (transport) and energy generation
- Non-CO2 GHGs
    - Non energy policy impacts on non-CO2 GHGs (eg from food and agricultural policy) and the implications for the energy system.

Breakout group 2

General research topics

- Industrial energy
- Relationship between energy policy and industrial policy (BEIS)
- Regional/ city scale system including industrial energy use
- Is local production use possible?
- Business models? ESCOs.
- Building performance & attribute questions. Which analogy?
    - Car?
    - Or congestion management?
- Aviation, drivers of air travel demand growth
- Levels of government
- Difference between regions, eg building stock
- Cyber security and power networks
- Urban regeneration and community renewal under private ownership.
- DSR / time of day
    - Consumer aspects
    - Industrial aspects
    - More ‘smart’ stuff
    - Privacy issues
    - Cyber attacks
- How do we un-cover consumer preferences in a smart/ new energy services world?
    - Both consumers and SMEs
    - Attributes of energy service taken for granted

Topics under the 'effect of non-energy policies' research area

- Centralisation/ travel
    - Impact of policy on journey distance, eg school choice, shopping centres
    - What is new UKERC question?
- Body of work on environmental policy that could inform non-energy policy
- Could energy policy learn from this experience?
- 'Ranking' of energy?
- How to reflect optimisation of multi-objective (policy?)
- Broad cross-optimisation question
- Lessons from other sectors? Mainstreaming of en…. Or health and social care
- Something on business models

Breakout group 3

General research topics

- Heat & DSR
    - Demand side response
    - Heat demand: peak vs overall requirements
    - How to respond to efficiency
    - Lifestyles and energy demand
- Justice and ethics
    - Welfare benefits for better/ more energy services. Are we still benefitting a lot? What are the goals from R&D?
    - Energy justice at different scales, risks and potential benefits, distribution, participation
    - Energy ethics and politics, e.g. gender, poverty, contestation. Building on previous UKERC research on energy & justice. How does energy figure in our collective understanding of a shared future? How is this contested?
    - Small project: scoping review of gender and energy systems, possibly leading to a larger project. Links to UKERC Theme 4.
    - Big project: ethnographers, sociologists and designers work together to look at everyday adaptations (behaviours) in homes and how these can inform new interventions to reduce demand and address fuel poverty.
- Future pathways
    - Long run dynamics of energy systems: trajectory and cycles, lock-ins, links with industrial clusters, loss to society from being locked into a sub-optimal energy system.
    - Critical pathways in future energy systems.
    - Nuclear power and its impact and integration in the energy system.
- International development
    - International development policy, SDGs
    - How are non-energy policy impacts on energy use overseas considered? DFID policy.
    - Energy development & sustainable development goals. What this means on the ground. Terms of provision, social objectives.
- Energy and climate

    - What if we miss our climate targets? Uncertainty about future global climate change mitigation activity reduces incentives to limits CO2 emissions.
    - To what extent do we understand the impact of climate uncertainty on the performance and viability of future whole energy systems? Global climate change is not controlled by UK policy so future UK systems (including supply lines) must be climate resilient, yet most research has only looked at climate impacts on single components (eg individual power plants), not a whole-system approach.
    - Establishing better links between the energy and climate research communities to understand climate impacts & adaptation in the energy sector.
- Land use
    - Importing renewables, bioenergy feedstocks and biofuels: environmental impacts and benefits, land use and conflict
    - Drivers of land use change due to renewable energy (solar, wind, bioenergy)
- Digitalisation
    - Digital smart cities and processes: mobile apps, open data platforms, social media, big data. The computational world and energy: there is a socio-technical revolution going on, how does energy figure within it?
    - The role of artificial intelligence in future energy systems.
    - Connection between energy use and information use.
- Models and tools
    - Model shifts in transport: active transport, autonomous vehicles, change in ownership (eg uber generation)
    - Energy modellers and policy analysts work together to incorporate non-energy policies into energy models. Big project- probably focus on a few specific sectors.
    - Understanding uncertainty in whole system models. What do they and can they really tell us about future energy scenarios?
- Individual ideas that were not clustered
    - Efficient and optimal management of complex systems, eg those incorporating renewables, especially in the presence of uncertainty.
    - Unintentional energy market consequences of energy policy.
    - Fragmented world and energy systems.
    - Ways of knowing and understanding 'energy', beyond modelling, cost and quantitative dimensions. We need new languages and new ways of thinking about energy across systems.
    - Governance and decision signals that work for whole systems

Topics under the 'effect of non-energy policies' research area

- Governance processes in the UK and their energy impacts
- Are liberalisation and decentralisation given?
- Education policy and energy and transport demand
- Links between gender and energy systems
- At an international level to what extent does energy appear as a priority in policy making? Does it vary across geography, energy abundance etc?
- ICT (efficiency improvements), technology clusters

- Digitalisation and its energy impacts. Do non-energy policies act as enablers/ disablers of some energy policy choices? Can these interdependencies be identified? Are they known already?
- Development policy. UK or non-UK? Lock in. Big project.
- Is cutting demand an end in itself?
- Should we be doing something on Brexit and its likely energy impact?
- Pathways and lock-in. Stranded assets. How much has UKERC done before?
- Pragmatically, energy costs are likely to be the main factor in determining policy, we could perhaps look at future energy costs for CO2 emissions often priced into financial assessments by shadow carbon price.
- Are we just arguing to have energy costs and externalities fully integrated into any assessment of a new policy?
- CO2 emissions or energy? Not the same thing.
- Governing nowadays occurring not exclusively through 'policy domains' or areas but ill-defined processes beyond the state- eg smart city initiatives. 'Policy' on its own as the site of analysis falls short.
- How does energy policy relate to other policy objectives? (poverty alleviation, risk management, development goals) Do they help or hinder each other?
- Economic framework required, ie need to cost energy usage appropriately.
- Broadening the definition of 'impact' when looking at policies- going beyond supply/ demand calculations and numeric understandings of energy.
- To what extent is non-energy policy a source of uncertainty in assessing the response to energy policy? Can/ should this be quantified when examining energy policy? Eg in 'whole systems models'.

List of attendees

Name	Institution
Alwyn Hart	Environment Agency
Andrés Luque-Ayala	Durham University
Andy Boston	ERP
Connor Dobbs	University of Canterbury
David Allinson	Loughborough University
David Brayshaw	University of Reading
Emily Cox	University of Sussex
Giulio Mattioli	University of Leeds
Gordon MacKerron	University of Sussex
Harry Horster	University of Lancaster
Ian Masters	University of Swansea
Ian Temperton	Independent
Ioanna Ketsopoulou	UKERC
Jan Selby	University of Sussex
Jeanette Whitaker	Centre for Ecology & Hydrology
Jim Watson	UKERC
John Batterbee	Energy Systems Catapult
Jon Gibbins	University of Edinburgh
Keith MacLean	ERP / Independent
Lars Johanning	University of Exeter
Laura Brown	Newcastle University
Mike Colechin	ETI
Mike Fell	UCL
Rebecca Ford	University of Oxford
Rick Greenough	De Montfort University
Rob Gross	Imperial College
Roger Fouquet	LSE
Ryan Bayliss	University of Oxford
Sarah Bee	EDF
Stan Zachary	Heriot Watt University
Steve Sorrell	University of Sussex
Tadj Oreszczyn	UCL
Thomas Esterle	University of Oxford
Thomas Rushby	University of Surrey
Tim Green	Imperial College
Yongliang Li	University of Birmingham
Zoe Andrews	Newcastle University
Sarah Royston	University of Sussex
Sarah Mander	University of Manchester