



Energy and Communities

REPORT OF THE SCOPING WORKSHOP

**Tuesday 3 March 2009
The Studio, Birmingham**

Executive Summary

Demand reduction is a priority area of the Research Councils' Energy Programme and one in which it is looking to increase its portfolio. As part of a range of activities in the demand reduction area a workshop was held in March 2009 to consider the scope for an activity in "Energy and Communities". A call for attendees for the workshop was met by very large demand from non-academics and academics across a wide range of disciplines.

At the workshop interactive sessions were held to identify priority topics for any future activity. A number of over-arching themes were agreed and for each of the themes the key research challenges were identified, together with who should be involved in taking these forward. Participants also sent in further thoughts after the workshop (annex 2)

Overarching themes were agreed as:

- Energy literacy and visibility
- Lifestyle
- Communities and ownership
- Policy and legislation.

The potential for action research methods was also highlighted across the themes.

For "Energy literacy and visibility" the following key research themes were identified:

- How can energy use be made visible to the user in a form that is useful to them? –creation and use of tools by individuals and communities.
- What is the connection between visibility and behaviour?
- Tracing impact that local energy projects have on visibility.
- How can the multiple connections of energy use to other factors be taken into account?
- How are the results of research translated into actions and research aims altered to take into account results of actions?

For "Lifestyle" the following key areas of research needs were identified:

- Linking lifestyle with system of provision.
- Understanding pathways to systematic change.
- Resilience of new values.
- Awareness raising models.
- Metrics and indicators.

For "Communities and Ownership" the following key areas of research needs were identified:

- Which forms of technology and resource ownership facilitate sustainable energy use, and in which context?
- The changing relationship between institutions and communities.
- Understanding the current policy hypothesis that there is a catalytic effect of sustainable energy projects on people.
- Representation: How do you engage different communities, identify engaged communities, how communities affect each other, who is missed out?
- Community dynamics.
- Building collective evidence.
- What is more effective/unique about action at community level?
- Knowledge sharing (or lack of) across international and sectoral boundaries.
- Understanding linkages (policy/community) (law/level) (supply/demand) in terms of scale, ownership and business models.

For "Policy and legislation" the following key areas of research needs were identified:

- The need for paradigm shift: removing the barriers to real sustainability – entrenched interests – to enable transformation.
- Empowering local government and localism.
- Community-driven removal of barriers.

Following the workshop ESRC have agreed to take the lead on this activity on behalf of the Research Councils' Energy Programme, given the key role that social science research will play in moving this multi-disciplinary area forward. The Research Councils' Energy Programme is making a case for funding for the area and if successful a call for proposals will be issued. All participants and applicants for places will be notified of any call that is issued as a result of this workshop.

Contact

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Introduction

The mission of the Research Councils Energy Programme is to position the UK to meet its energy and environmental targets and policy goals through high quality research and postgraduate training. Key drivers for the programme are:

- Tackling climate change by reducing carbon dioxide emissions both within the UK and abroad.
- Ensuring energy security.
- Ensuring energy affordability.

Over 2008-2011 the programme has £319m to invest and as part of this plans to grow its portfolio in demand reduction. One area in demand reduction that was felt to have potential was in "Energy and Communities". Accordingly a workshop was arranged to scope the potential for a research activity in the area and to identify whether there were any communities we could work with. Applications were invited for spaces at the workshop and the response was overwhelming with 170 applicants for 40 places including from 36 non-academic organisations. Participants were selected in order to obtain a spread across disciplines, expertise, organisations, backgrounds, strategic plans and interests and against the extent to which their Expression of Interest fitted our plans.

Energy and Communities

There is clearly a need for the UK to reduce green house gas emissions, to make informed choices on energy linked to other natural resource use and to encourage low carbon lifestyles. The workshop considered technological, environmental and social aspects in the context of communities and the need to reduce energy consumption.

Challenges in this area will require multidisciplinary input including researchers from environmental, economic and social sciences as well as from the engineering and physical sciences. Local authorities, councils and community action groups as well as academics will play an important role in finding applicable solutions.

Achieving large reductions in energy consumption and conserving natural resources will require behavioural, structural and economic change, technological knowledge and intervention. This event will help us move toward addressing the challenge of working with community organisations (such as local authorities, councils or housing associations) to consider how they, together with their communities, can achieve a balance between realising a high quality of life for all with the need to reduce energy use and their impacts on the environment. Achieving this balance may require local regulatory bodies, communities and individuals living and working in them to make significant changes to lifestyles and businesses practices.

Some of the questions participants were asked to think about for the day included:

- How can communities reduce their energy consumption and carbon footprint?
- What are the best energy technologies to employ to make best use of land resources?
- Which methods for reducing energy demand work in different situations and why?

Working with community organisations to address such questions offers exciting new research opportunities and challenges if we are to be in a position to measure change in different scales and contexts, and understand the factors leading to successful change.

The provision of a reliable, secure supply of energy to homes and businesses is arguably the greatest challenge faced. The publication of the White Paper, 'Our Energy Future – Creating a Low Carbon Economy' in February 2003 highlighted the need for revolutionary change in the generation and supply infrastructure. The impacts of Climate Change and depletion of fossil fuels, together with increasing public awareness of energy security, set a global context for action.

The Energy and Communities initiative has sustainability at its core and will support world-class academic research which promotes step change in future energy scenarios. In addition, it will work with users and stakeholders within the energy sector to establish exploitation routes for the research it delivers.

Objectives for the event

The workshop was intended to help to develop and promote a strategic research agenda to address sustainability of Energy in Communities and to strengthen the capability of the UK research base in Energy and Communities.

The main objectives of the event were:

- To identify the potential for a call in the area of "Energy and Communities" and to help shape any forthcoming call.
- To identify suitable case studies and communities to work with on this activity.

Secondary objectives included:

- Encouraging involvement in the next stages of the programme from stakeholders and other funders;
- Raising awareness of Research Councils' Energy Programme and dissemination of activities so far;
- Providing networking opportunities.

Presentations

Jacqui Williams from the Research Councils' Energy Programme described the objectives of the workshop and then set the day in context by giving background information on the Energy Programme.

Jacque Burgess, Professor of Environmental Risk at the University of East Anglia then gave the keynote speech. She stressed the need for urgent action and described some relevant research which is underway but how much more needed to be done.

Paul Rouse from the Research Councils' Energy Programme then introduced the workshop sessions.

Summary of workshop structure

Following the initial plenary session and presentations participants were put into 3 groups and focused on:

- What are the major challenges in "Energy and Communities" that need addressing?
- What are the key research issues with the potential to make a real impact on these challenges?
- Who should be involved?
- Who should we work with?

Summary of workshop outputs

Key challenges

The groups were all asked to brainstorm the following question: What are the major challenges in “Energy and Communities” that need addressing to enable sustainable communities in 25 years time? They were then asked to prioritise the challenges and bring them back to a plenary session to share with the other groups. 4 themes were then agreed for the groups to work on in the later sessions.

The following 4 overarching themes were agreed:

- **Energy literacy and visibility** – for example how to make energy use visible and what’s appropriate for communities with different income levels.
- **Lifestyle** – for example maintaining quality of life or coping with reductions in it, reducing emissions from buildings.
- **Communities and ownership**– for example informed shared problem/issue formulation, facilitating positive action, the change process.
- **Policy and legislation** – for example impacts of other services, the need to review legislation and policies to ensure they enforce sustainability.

Other topics raised were wrapped into these overarching themes and these included:

- Implementation of low carbon transport.
- Incorporating action research.
- Equity.
- Community engagement.
- Vision – covered a variety of issues including: reviewing energy/ environmental/planning legislation, why it’s the way it is and why it isn’t having the right effect; together with ideas of ‘equity’.
- Whole systems understanding of energy.

Further background to the themes can be found in annexes 1 and 2.

Research to make an impact on these challenges

The groups were then each asked to tackle 2 or 3 of the key challenges and for each of them identify the key research issues with the potential to make a real impact on the challenges identified. If time permitted they were also asked to consider who should be involved in the research and which communities or case studies, and other organisations could we work with?

Outputs from Group 1

Communities and Ownership

The major research questions/issues that the group came up with were:

Which forms of technology and resource ownership facilitate sustainable energy use, and in which context?

As a follow on, when this is decided, how to make these happen?

It was felt that too often a “one solution fits all approach” was pursued not taking into account geographical, economic and cultural factors. As an example, what’s good on

a remote island in Scotland may not be the same as what's needed in the centre of Birmingham. There needs to be context specificity and a variance of applicable models to diversity.

There is also considerable resistance to municipal ownership. Why is this and could a change facilitate a more sustainable energy supply?

The changing relationship between institutions and communities. Is there a help or hindrance from current energy producers, infrastructures and institutions? There is also a need to understand the influence of legislative structure in this area and the liberalisation of the energy markets. What is the history behind how we lost public ownership of the energy supply and what can we now learn from this? In addition, what are the challenges to a collectively owned energy supply? Research is needed around how energy is distributed and how would any profits be distributed. Who would be the decision makers and what would be the relationship to elected officials. There is much to research on the interface between local groups, co-ops and communities and the ownership of energy and its assets. Linked to this legislative question is what could be termed the 'planning gain'. Who benefits from this, who are the losers and how is this played out between communities and developers or companies.

Understanding the current policy hypothesis that there is a catalytic effect of sustainable energy projects on people. Is this the case or vice versa. There is an assumption that by being involved in such a project automatically increases peoples' energy citizenship. Research is needed to better understand whether this is the case and what other factors influence sustainable energy use. People taking ownership of projects does not always bring about a change in their behaviour and if we can understand why then we can move towards bringing about change in energy behaviour.

Energy Literacy and Visibility

How can energy use be made visible to the user in a form that is useful to him?

This could, for example, be as a cost but the form needed to be tailored to the particular user? Methods could involve thermal imaging (of communities or individual dwellings), smart metering, energy (carbon) footprinting for embedded energy in food, electronic goods etc. and other methods. The increased visibility could then be used to improve the 'Energy Literacy' of users. Users could be individuals, businesses, local authorities, policy makers or other groupings.

How can the multiple connections of energy use to other factors be taken into account and/or used?

Energy use is connected to the well being of the user, health and food issues, water use and many other human factors. Directly targeting energy efficiency may not be the most efficient approach to achieving that efficiency, for example it could lead to increased energy consumption if the money saved is used to buy energy intensive goods or alienate users if their lifestyle suffers.

How are the results of research translated into actions and research aims altered to take into account results of actions?

This could mean changing aims as a result of feedback of the results in a manner similar to that used in 'action research'. It also could involve amalgamating different kinds of data to help reach conclusions (using systems such as Bayesian belief networks for example).

Outputs from Group 2

Energy Literacy and Visibility

- 1 Creation and use of tools by individuals and communities, eg. footprinting/ feedback displays – to make energy and energy use more 'real' for people
- 2 Tracing impact that **local** energy projects have on visibility - local people can associate with them and see relevance. Does it actually have any impact?
- 3 What is the connection between visibility and behaviour? Is there one?

Who should be involved, including communities and other organisations

Energy analysts
 Local communities
 Media/new media
 Local authorities
 Engineers
 Public-facing businesses
 Mapping – GIS
 Sociologists/anthropologists
 Sustainability appraisals
 Educators: teachers/schools/universities
 NGOs – People and Planet
 Carbon Trust etc
 Quangos

Communities and Ownership

- 1 Representation: How do you engage different communities in climate change; how do you identify engaged communities; how do communities affect each other; who is missed out of 'community' definition/dynamic?
- 2 Community dynamics: interpersonal influences/champions; what community dynamics promote sustainability; how do different types of community conceptualise energy and their own use/impact; what size/ shape/type community 'works best'?
- 3 What is more effective/unique about action at community level?

Who should be involved?

Communities/diverse groups - champions
 Banks/financial/lending models
 Action groups – Transition Towns
 Eco schools
 Mappers
 Communities at risk
 Lawyers
 Small businesses/local employers
 Planners

Policy and Legislation

- 1 Need for paradigm shift:: removing the barriers to real sustainability - entrenched interests - to enable transformation.
- 2 Empowering local government and localism.
- 3 Community-driven removal of barriers.

Who should be involved:

Local government
 Allies/champions in central government
 Local communities
 Universities

International governments
Communication/media
Economists
Social scientists
Transition management
Built environment
NGOs
Energy companies
Law and regulation

Outputs from Group 3

Communities and Ownership

Main themes identified :

- Building collective evidence (eg by case study)
- Intermediate organisation/communities of practice
- Knowledge sharing or not across international and sectoral boundaries: recycling, water saving, fair trade)
- Action research
- Understanding linkages (policy/community) (law/level) (supply/demand) in terms of: scale, ownership, business models.

Research questions:

What can we learn from international experience of community energy initiatives?

How can we apply these to the UK?

How can business models of energy supply affect energy use?

Community Ownership of the means of production?

What forms of formal and informal knowledge relevant to energy issues exist within communities?

Lifestyle

Linking lifestyle with system of provision.

Main Research questions:

Understanding Pathways to systematic change?

(includes psychology, sociology, environmental economics, history, methods and analysis from anthropology).

Resilience of new values:

What constitutes the good life and to what extent is it contingent? Are there core values and how realistic are they?

(includes philosophy, media, history, cultural geography, sociology, environmental economics)

Awareness raising models:

Social constructs of belief and action

(psychology, sociology, environmental economics)

Metric and indicators; are they different?

Next steps

Participants were asked to send in any further input and thoughts to be included in the report (see annex 2 for contribution received).

Following the workshop ESRC have agreed to take the lead on this activity on behalf of the Research Councils' Energy Programme, given the key role that social science research will play in moving this multi-disciplinary area forward. The Research Councils' Energy Programme is making a case for funding for the area and if successful a call for proposals of some type will be made, once the scope for combining this with other demand reduction activities has been considered. All participants and applicants for places will be notified of any call that is issued as a result of the workshop.

Workshop attendees

Colin Axon	University of Oxford
Bakr Bahaj	University of Southampton
Kathy Bennett	Isle of Wight Council
Noam Bergman	University of Oxford
Aoife Brophrey-Haney	University of Cambridge
Jacquie Burgess	University of East Anglia
Paul Burgess	Cranfield University
Stephen Cains	Swindon Borough Council
Garry Charnock	Ashton Hayes Parish Council
Joe Clarke	Strathclyde University
Patrick Devine-Wright	University of Manchester
Jon Finch	Centre for Ecology & Hydrology
Steven Firth	Loughborough University
Mike Grimsley	Sheffield Hallam University
Jo Hamilton	Oxfordshire ClimatXchange
Geoff Hammond	University of Bath
Anthea Hawke	Environmental Agency
Christian Heitsch	Brunel University
Thomas Henfrey	University of Durham
Jenny Daly	Islington Council
Robin Laney	Open University
Anna Lawrence	Forestry Commission
Ben Light	University of Salford
Sarah Mander	University of Manchester
Geoff Merrett	University of Southampton
Catherine Mitchell	University of Exeter
Michael Peters	University of Surrey
Susan Roaf	Heriot Watt University
William Scott	University of Bath
Adrian Smith	University of Sussex
Ian Smith	Community Energy Plus
Alex Templeton	The Farm Energy Project.
Kerry Thomas	Environmental Knowledge Transfer Network
Miles Tight	University of Leeds
Helena Titheridge	University College London
Dan van der Horst	University of Birmingham
Sabine Von Hunerbein	University of Salford
Gordon Walker	Lancaster University
Sara Walker	University of Northumbria
Lee Woods	University of Portsmouth

Annex 1– additional information from group 2 initial break-out

What are the major challenges in “Energy and Communities” that need addressing to enable sustainable communities in 25 years time?

Four key challenges emerged covering a variety of issues:

POLICY	BEHAVIOUR/ SOCIAL	TECHNOLOGY	MISC
Independent review of absolute targets for industrial energy use and benchmarking against them	Technology & behaviours	Confusion over numbers/units	What’s the vision of a sustainable community?
Planning! Legislation and enforcement	Trust and scepticism in expertise/science/policy	Media portrayal of transport/air travel	Quality of life vs standard of living; growth paradigm
Delivery of UK govt targets	Apathy and empowerment and harnessing place attachment for collective action	Carbon/energy accounting	Orders of magnitude – lots of people doing a little
Linking top-down and bottom-up initiatives	Spillover effects from collective action to individual	Local energy supply – is it practical?	Different aspects of ownership in communities
Analysis of who you can sue when the system fails – where does the buck really stop!	Technophilia/phobia	Economically viable new technology eg micro generators	Co-ordinating efforts between different stakeholders
Review of environmental and planning legislation	Reciprocal effects of energy conservation on behaviour in homes and communities	Developing masters module on how to measure/monitor emissions	Dominance of industry/finance eg national grid
Equality issues; priority of sustainability issues for disadvantaged groups	Be aware people are starting from different levels of understanding of the issues	Energy and carbon in the built environment	Re-establishing our connection with nature/natural environment; contrast with increasing urbanisation
	Less ‘research’; more support and action	Knowledge centre for energy systems	Mixed messages about the issues (from media/scientists/govt)

	Empowering communities to be aware of ALL the energy they are using	Low carbon transport	Acknowledging environmental constraints on economic growth – challenge illusion that ‘growth’ has to be about increased production
	Taking action in your sphere of influence	Engaging different communities in taking responsibility for their travel	
	Setting up a knowledge centre for sustainable communities	Can we change lifestyles – car use	
	Developing university climate change ambassadors to advise community groups	Technology & behaviours	
	Maintaining optimism and hope whilst acting with sufficient urgency	Inclusion of digital/social communities	
	Challenging green consumerism as the only solution (engage values)		
	Media uptake and convergence		
	Media discourse/ hearts & minds		
	Inter-community cooperation		
	Inclusion of digital/ social communities		

Annex 2– additional information from group 3 initial break-out

What are the major challenges in “Energy and Communities” that need addressing to enable sustainable communities in 25 years time?

Three key challenges emerged covering a variety of issues:

LIFESTYLE	COMMUNITIES AND OWNERSHIP Establishing relationships of trust	POLICY AND LEGISLATION
<ul style="list-style-type: none"> -Reducing emissions from dwelling households especially private housing -Maintaining or improving well being -Understanding the nature of energy use in buildings and the occupants behaviour -Measurement and management of energy use during the transition -Connect demand with supply 	<p>What change process is most suited to which types of community ie does one size fit all or are there multiple paths to change?</p> <p>Understanding synergies within communities between households, small business, industry</p>	<p>Assessing cost effectiveness of community level initiatives and long run implications for competition, fuel poverty</p> <p>Developing regulatory framework to encourage community involvement in demand reduction</p>
<ul style="list-style-type: none"> -Make low carbon lifestyles much more sexy -Reducing CO2 Emissions without significantly compromising lifestyle or economy reduction in standard of living -Will we have to drastically change the way we live? 	<p>Encourage enable new legal and ownership configurations or property of emissions of technologies</p>	
<ul style="list-style-type: none"> -Developing energy literacy -Smart metering -Feedback on energy and use -Social acceptability of major changes in use of energy (water re use) waste 	<p>Identify appropriate communities :which groups provide best potential for action</p> <p>How can we encourage communities to make collective decisions about their travel as opposed to individual / household decisions ?</p>	<p>Consume differently and consume less</p>
<ul style="list-style-type: none"> -How to implement low transport carbon -Spatial and town transport planning -Reduce the need for travel -What is sustainable mobility 	<p>Public opposition to new technologies eg wind farm.</p>	

Annex 2– extracts from additional information sent in by participants

A. May I stress the importance of the law for promoting environmental sustainability on the community level? I strongly believe that an investigation of the extent to which existing law inhibits communities' sustainability as well as developing proposals for changes in law and legislation with a view to promoting sustainable communities would be very worthwhile.

B. From a local authority perspective it was a very interesting learning experience as to how research questions are formed. There appears to be a lot of research taking place which has much to offer to local authorities and in particular planning departments. One comment I would make is about ensuring that those in a position to implement some of the research findings are involved throughout the process. The workshops yesterday were primarily made up of academics and although this was a refreshing change from a room full of planners, I wonder whether a wider cross section of interests (for instance planners, architects, energy managers, sustainability consultants, CLG, DEFRA, DECC) would have added a further dimension.

C. I think the mixture of different disciplines made for an interesting meeting. Having groups with such diverging research interests perhaps made it a little difficult to cover each aspect of energy and communities in any great detail though and my only slight concern from the meeting is that transport or more specifically travel behaviours got somewhat lost a little in the discussions. Given that for many households, their personal travel is their largest (and growing) form of direct energy consumption and in the UK overall transport makes up approximately one third of energy use, I think it is essential that the travel behaviours of communities is included in future research. While there have been a number of studies, some funded by the EPSRC through the Sustainable Urban Environments programme of research, there remains many unanswered questions, which need to be addressed if communities are to adopt less energy intensive travel behaviours. There remains no consensus, for example, as to what the role of built form on travel behaviour is, and also whether or not planning policy can bring about changes to built form given residential preferences for more suburban living.

D. It appeared that engineering was comparatively under-represented at the workshop, with the various brainstorming sessions identifying research in understanding and analysing community behaviour and adoption, as opposed to actually making the ground-breaking developments in developing new technologies and systems for communities. Indeed it was hard to convince colleagues that new technological development was actually required as part of an energy programme.

Through the comments during the sessions and the discussions that I had in the breakout sessions, it appears to me that the 'energy problem' is now at the stage where research is transitioning from evaluating if a problem exists to attempting to actually tackling the problem. Indeed, on many occasions a very dismal picture of the future was painted, requiring radical changes and developments to take place in order for successfully growth into the next century. However, by taking a funding shift towards behavioural studies and social acceptance, it seems that these groundbreaking developments will not take place. As technology and industry is the major consumer of energy and producer of harmful gases (for example consumer appliances, cars, planes and manufacture), it is technological development that is required, albeit as part of a multidisciplinary research program which also explores and addresses consumer/community behaviour and acceptance (and all of the issues that were raised during the workshop).

E. We feel it is useful to pass on the key themes that emerged from a wide discussion and brainstorm from our group of members of local community groups engaged in reducing carbon footprints and university researchers:

- The need for new forms of collaborative research
(Involving both academics and community group, to help deliver viable low-carbon energy solutions that have community support.)
- The potential for participatory action research methods
(These could be important for investigating change within communities - acceptability of new technologies necessary for low carbon life styles, and so on.)
- A need for interdisciplinary research
(This is important especially on the interface between social science and engineering of renewables / energy efficiency, for example to shape technology and delivery for maximal community acceptability.)
- A need for accessible 'testbed' sites
(These can provide provide both generic insight and the ability to provide comparison between communities which exhibit important differences)
- A need for identification of barriers to sustainability within society and communities and methods for overcoming them
- The need for a workable, perhaps bespoke, management structure capable of guiding an ambitious multi-body research partnership

Further recommendations/comments that come specifically from a community group/practitioner perspective:

- Support multiple projects in a single location under a single 'Umbrella Project' Ideally, multiple projects would be undertaken in a single 'testbed' location, both to harness synergies between the projects and in acknowledgment of the fact that on the ground it is frequently the case that multiple problems require solving in order to get a single task done.
- 'Umbrella Projects' are likely to give the best value for money. It is our view that an 'umbrella projects', working intensively with 'testbed' communities over the long term, with the capacity to initiate sub-projects to address specific problems as they arise, will deliver the greatest value to the UK Research Councils and best meet the specific commitments and priorities of the British Government.
- Plan for the long term. A typical 3-year project is not long enough for much of the research that needs doing, especially that in attitudinal and organisational change. We'd like to see a policy regarding project extension built into the original call.
- Support radical proposals, especially with regard to novel decision-making and delivery structures. Rather than changing the behaviours and cultures of 'hard to change' existing institutions (e.g. local authorities), it may be simpler to create new organisations with fresh mandates to undertake work. Projects that adopt this approach should be carefully considered.
- Adding problem solving capacity to existing organisations to examine specific problems as they arise is an approach worth considering. The strategy of using expert teams of academics and practitioners to support front-line staff and stakeholders trying to deliver radical change has been used with good effect in a

project, which also deals with complex problem solving involving individual behaviour change and changes in institutional practice.