



Governance: Challenges and Solutions for a Sustainable, Secure and Affordable British Energy System

Meeting Report

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This document is a report by the organiser of a technical meeting set up as part of UKERC's research programme. It is believed to be an objective record of the meeting but has not been separately reviewed by the participants

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The Energy Policy Group at the University of Exeter provides an academic hub for the interdisciplinary study of energy policy, specialising in the transition from the current unsustainable energy systems to sustainable, secure and affordable ones. Research carried out by the group is interdisciplinary and collaborative, both within the University and with outside organisations. The group provides objective research, analysis and policy advice to policy makers, industry, NGOs, and the public. The research work of the group is funded by grants from UK research councils and also through consultancy with national and international stakeholders.

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Summary

The meeting brought together around 100 energy professionals from academia, business, the public sector, and nongovernmental organisations to discuss governance challenges and solutions for achieving a sustainable, secure, and affordable British energy system. The organisers approached this from a wide range of expertise including policy, law, regulation, energy provision, energy efficiency and behavioural change.

The day began with a plenary in which four speakers introduced the topic. This was followed by breakout sessions to cover six themes:

- Technologies and investment
- Behaviour and lifestyles
- Local governance
- Institutions, decision making, and legitimacy
- International governance issues
- Business, new entrants, and new practices

During a closing plenary five speakers reflected on the key messages from the meeting.

Emerging themes

The challenges and solutions highlighted through the course of the meeting mainly related to the following themes.

Uncertainty

➤ *How to promote change when faced with uncertainty?*

Uncertainties in technologies and energy supply mean that energy systems need to retain flexibility. This has consequences for infrastructure, policy, decision making, and beyond. For example, DECC's focus on electrification in the Power, Heat and Transport sectors might not be flexible enough.

➤ *How to create more stability for investors at all levels?*

Uncertainty is a block on investment: by energy companies into new technologies, and by other businesses and households into energy efficiency. There are several different kinds of uncertainty which are important here, including volatility in the prices of energy and carbon, and uncertainty in policy.

- Energy prices

Stabilising energy prices might be beneficial, but is difficult to combine with smart grids.

Possible Solutions

There is a need to revalue fuel, so that it is viewed as a precious commodity, whilst also eliminating fuel poverty by improving the infrastructures of demand (primarily housing, heating systems, appliances, vehicles).

- Carbon price

A higher carbon price is needed to ensure investment in low carbon technologies.

Possible Solutions

This is unlikely to be delivered though the Carbon Price Floor: a tighter cap is needed at EU level. The price of carbon could increase if some EU ETS permits were set aside.

- Policy

Global, EU, and UK policies are all uncertain. In the UK there is a lack of consistency, with a plethora of new energy bills and initiatives which add more and more complexity and are not effectively implemented.

Possible Solutions

There is a need to move towards “TLC”: transparency, longevity, and consistency (as opposed to a “total lack of certainty”). More realistic planning is also required to encourage investor confidence, for example current policies rely on nuclear reactors being set up in an unrealistic timeframe.

Innovation

- *How to promote the innovation required to meet energy and climate change targets? How to facilitate change?*

The market currently suits incumbents and favours the status quo. Process for change in the market is extremely complex, and decision making is weighted towards inertia. There is a potential need for diversity and new entrants, but the lack of financing for small scale projects (e.g. the Green Investment Bank focuses on large projects) prevents them from doing so.

Possible Solutions

- Further research is needed as there is a lack of understanding on whether innovation is more likely in monopolies or with competition.
- Inclusive policies and less complex regulation will allow incumbents to participate.
- Funding for small scale projects could come from Green Deal, Green Investment Bank or community bonds.
- Funding for transmission networks to experiment with new systems is available through Ofgem's Low Carbon Networks Fund

Role of consumers

- *How to create a more efficient, demand driven energy system?*

Under the current system the energy industry is very supply driven, with businesses outside the industry and the general public seen only as passive consumers of energy. One perspective is that in order to move towards a sustainable energy system this needs to change, to allow for demand reduction and different sorts of energy production.

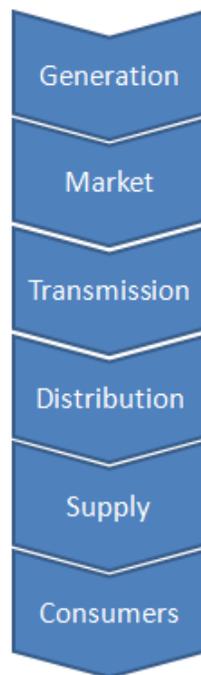
'Consumers' might be required to change the way they use energy, change their energy suppliers, and produce energy through micro generation.

Possible Solutions

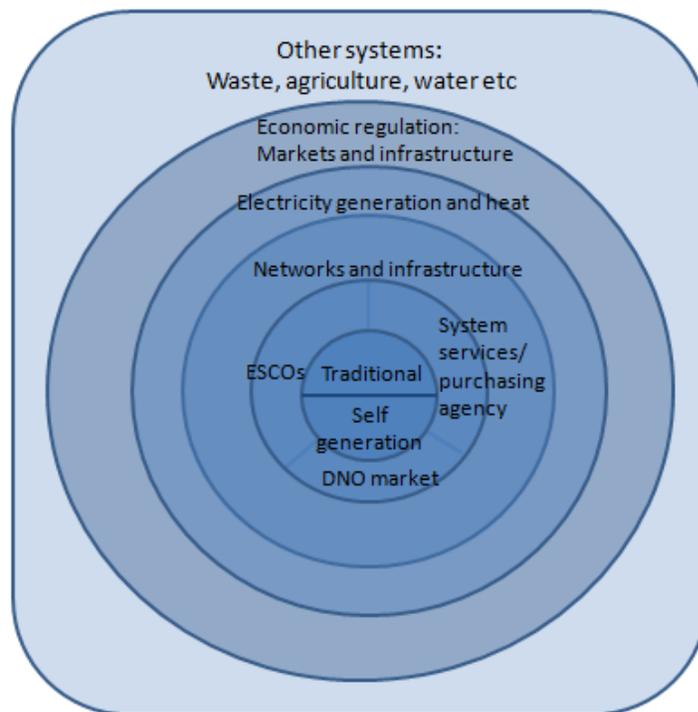
The challenge is to create a more demand driven industry which places people at the centre, so that they are no longer only consumers. The challenge is to move from a linear energy system with consumers at the end, to concentric circles with people at the centre. This requires changes to the industry, related to infrastructure and regulation, but also changes to consumer behaviour.

During her presentation, Catherine Mitchell used the following diagram to illustrate this.

Supply orientated energy governance



Demand focused energy governance



➤ *How to change behaviour?*

The extent to which the general public can be relied upon to change their behaviour is debated. Some suggest that they might not want change, especially if they are guided by the media, which is misinforming people

about the cost of renewable energy for example. Plus the level of awareness-raising required might be unrealistic.

Possible Solutions

- Progress might be made through challenging media perceptions and encouraging energy literacy amongst journalists.
- The right financial incentives for users, for example ensuring that the energy sources with the highest levels of pollution are the most expensive, would require less awareness-raising.

➤ *How to engage the public?*

Genuine engagement of the public would be required to put people at the centre of the energy system.

Possible Solutions

- At the moment we do not know enough about what users want, so more dialogue is needed.
- Transparent and less complex policies will help with public acceptance of change.
- Psychological research suggests that information is not sufficient to engage the public: more involvement in decision-making and communities would be more effective.

Role of national government

➤ *How to balance the role of national government with other institutions?*

The role of central government is crucial. Research shows that the public often assume if a problem is serious enough the government will do something about it. However, the role of the government needs to be balanced with:

- the industry

Possible Solutions

- There are some solutions which might be better provided by the energy supply industry, for example demand reduction. It is

argued that they have expertise, so the government should give them incentives to reduce demand. There is a basic credibility problem with this, however: many people have difficulty believing that their supplier wants to sell them less. An alternative is to encourage an energy services approach (ESCOs), or to boost demand-side initiatives through local government.

- The government can also put checks in industry, for example in California, utilities cannot get permission for a new power plant until they show that they cannot balance demands by reducing energy use.

- the EU

There are tensions between the UK privatised energy industry and EU command-and-control, and there is a gulf between ambition in the UK and EU. Integration of EU and UK energy policy runs the risk of leading to greater complexity.

Possible Solutions

The UK should put more pressure on EU to increase ambition while considering the case for re-bundling its own energy supply industry into local/regional monopolies.

- local governments and communities

Community groups have a lot of potential to innovate and deliver demand reduction, but suffer from a lack of funding.

Possible Solutions

- Local government can help community groups by connecting with them and providing an enabling environment.
- Central government needs to engage with local level, and find a way to scale up innovations.

Possible Solutions

The UK Climate Change Act was presented as an example of good governance. It was suggested that a similar act for energy might provide solutions, particularly if it was accompanied by an equivalent to the Committee on Climate Change, i.e.

a committee of experts on energy policy, to allow for independent expertise supporting policy.

The current Energy Bill needs to include measures to ensure diversity of the players in the energy market; to reduce complexity of market rules; to ensure measures to enable customers to become more active; and to link more closely with EU policy.

Introduction

The aim of the workshop was to bring together researchers and practitioners from all areas of energy systems to discuss the governance challenges for achieving a sustainable, secure and affordable British energy system.

Rationale

The UK has a challenging set of goals to fulfil before 2050, relating to sustainability, security and affordability. There is a great deal of uncertainty about which technological pathways the UK will follow in order to meet those targets. What has become clear is that getting the governance right is essential if the UK is to move forward in a transparent and legitimate manner which enables that transition, supported by stakeholders. Discussions about energy often return to the costs and benefits of particular energy sources, and rarely focus on governance. Yet, energy is a very complex system, which requires a great deal of governance. The event provided a forum to concentrate on this.

International Women's Day

The event was held on International Women's Day and all of the 37 speakers were women. The organisers were aiming for a conference of expert speakers who could contribute a great deal to the debate. This was achieved, and there were many more female energy professionals who could have been invited to speak, illustrating that it should be possible for any conference to have as many women participating as men. Many of the attendees commented that it was a refreshing change, given that most energy events are male dominated.

Objectives

This workshop aimed to explore, and provide insights into, the governance challenges and potential pathways towards a sustainable, secure, and affordable energy system. These pathways may involve reforms of the current system or entirely new processes. There was a particular focus on the need to:

- attract new investment from existing and new entrants

- enable the appropriate institutional, and legitimate decision-making arrangements to be in place
- assess the role of behaviour and lifestyles in achieving a transition to sustainable, secure and affordable energy systems
- maximise local potential and benefits

Steering Committee

Catherine Mitchell, University of Exeter

Richard Hoggett, University of Exeter

Jillian Anable, University of Aberdeen

Amal-Lee Amin, E3G

Aoife Brophy Haney, University of Cambridge

Nicola Hole, University of Exeter

Sarah Darby, University of Oxford

Juliet Davenport, Good Energy

Joanne Wade, Independent

Bridget Woodman, University of Exeter

Timothy Cooper, UKERC Meeting Place

Lenka McAlinden, UKERC Meeting Place

Meeting Content

The meeting consisted of plenary discussions at beginning and end of the day, with breakout “cafe parallel” sessions forming the core of the event. Throughout the day participants were encouraged to write their thoughts on hexxie post-it notes in order to record key insights, gaps, and overlapping issues (for details see Appendix A). These were collected on a “Key Insights” board, and a “Parking Lot” for ideas which were unexplored in the main sessions.

Opening Plenary

During the plenary session, chaired by Rebecca Willis, the attendees heard presentations from:

- Catherine Mitchell, University of Exeter
- Leigh Hancher, Allen & Overy
- Juliet Davenport, Good Energy
- Baroness Worthington, Sandbag

Catherine Mitchell, University of Exeter

The UK faces a huge challenge to reduce emissions 80% by 2050. The government plans to achieve decarbonisation of energy through nuclear and renewables, heat pumps, electric vehicles and demand reduction from the Green Deal. To date, governance of UK energy policy has been very “top-down” and supply orientated. The policies reflect the interests of large energy suppliers rather than their customers. However customers are crucial to the success of the policies, but their preferences have largely been ignored.

Governance is currently constraining rather than enabling legitimate policy making. There needs to be more transparency of decision-making, and more dialogue with customers. Policies should be inclusive to encourage new entrants and practices, enabling innovation. The energy system needs to be refocused from supply to demand: currently there is a linear system which is orientated around supply with customers at the end. This should be transformed to a system whereby customers are at the centre, so demand leads supply, and

consumers can also generate their own energy (see diagram above, on p4). This would be more efficient, and the only way to have an affordable energy system is to have an efficient one.

Leigh Hancher, Allen & Overy

European energy policy has three drivers: the internal energy market, security of supply, and sustainability. The only resource the European Union has to tackle these is rule-making; they do not have financial resources for it, and since the Treaty of Lisbon in 2009 there has been an increasing number of rules. Most of the focus has been on creating an internal energy market. There have been several innovations including:

- Structural Unbundling: separation between energy networks and energy producers.
- Enhanced powers and independence of National Regulatory Authorities
- ACER (Agency for the Cooperation of Energy Regulators): a step towards greater centralisation
- New powers for the European Commission through comitology (the committee system which oversees delegated EC acts without involving member states directly).

Implementation of these has been slow. There are tensions emerging between market-based systems and EU command-and-control. Governance will be crucial to resolve these tensions, but there has been little focus on it.

Baroness Worthington, Sandbag

The UK Climate Change Act might provide some lessons: it is an example of good governance. This was the world's first comprehensive legal framework on climate change. Before it was implemented, UK governance strategies were failing. DEFRA was in charge of climate change, but had many other priorities, so there were not enough resources to tackle the problem. The UK Climate Change Act created a new system of governance, including DECC, and legally binding emissions budgets for each department.

One governance challenge is the interaction between UK and EU policy. There is a gulf between the ambitions of the UK and the EU, which creates uncertainty for

investors. The UK needs to put more resources into achieving a climate policy resolution at an EU level.

A second governance challenge is to create stability and confidence in the market. There is uncertainty about policy, because new energy bills are released so frequently.

A third challenge is to be fair and realistic. Some of the current policies are not credible, for example building eight new nuclear reactors. If policy is not seen to be realistic then investors will lack confidence.

Juliet Davenport, Good Energy

Increased renewable energy generation in the UK would tackle energy security and climate change. Innovation is vital, and this can be delivered through increased competition. It is important to enable new small suppliers to enter the market, as these have been shown to provide better customer service and more innovation in metering. Currently, small suppliers can enter the market but it is difficult for them to grow. There is a need for a more simple and transparent market, and to move the market away from creating power towards delivering service and interconnectability.

The speakers came from four different perspectives, but some common themes emerged from their talks, including the need for:

- diversity, to bring more players into the energy market
- stability, to reduce volatility in energy prices, and volatility in energy policy
- reduction in complexity of market rules
- a change in the role of consumers, from passive to active
- balancing of EU and UK energy policy

A wide ranging discussion followed the presentations.

The EU Emissions Trading Scheme (ETS) was debated. The low carbon price was highlighted as a problem. Under the EU ETS, demand reduction benefits big energy suppliers and does not always lead to lower emissions. Consumers are not usually aware of this and if they become aware it could be problematic.

However, there are ways in which we can improve the current system, for example through community groups setting aside permits.

The EU focus on supply rather than demand was questioned. There was also discussion on how to resolve tensions between the UK and EU, given that integration will lead to complexity, and investors need stability, simplicity, and transparency.

The role of consumers was a focus for discussion. The speakers highlighted a lack of dialogue with consumers, and some participants offered information from surveys showing that consumers had little awareness of how policies affected them, were tired of the profits received by large energy producers, but were not ready for self-generation. There was some debate as to whether we should encourage consumer choice of fuel mix in their electricity supply, and counter the media's encouragement for the public to reject low carbon technologies. Access to information would be important to enable consumer choice, but the volume of information is so high, that it might be preferable to focus more on economic fixes, ensuring that 'the dirtiest' energy sources are the most expensive.

It was further suggested that the term consumer is no longer appropriate, if people are to be placed at the centre and able to engage in energy production, as through the People's Power Station in Oxfordshire.

The role of local authorities was raised, and ways in which they are inhibited from taking a prominent role, for example local tariffs.

Some specific technologies and energy sources were discussed, including the role of gas, shale gas, biogas, heat pumps, nuclear, Desertec, and supergrids. The merits of local production versus large scale integration were also discussed. It was noted that DECC was pushing for electrification in order to reduce fossil fuel emissions, but this was not necessarily the most effective pathway due to expense, shortage of sufficient low-carbon supply and lack of flexibility in end-uses such as heat pumps.

Energy Service Companies (ESCOs) and ways in which energy companies could play a role in demand reduction were discussed. It was suggested that energy suppliers should be given a broader incentive to reduce energy use. This could

be very effective because the energy companies have better insights than government as to how to reduce demand, for example through voltage optimization, which is never mentioned in policy documents. These incentives are particularly needed for large energy companies, whereas smaller energy companies already have more incentives to help customers save energy as part of building distinctive customer relations.

Café Parallel 1

Process

Participants had the choice of joining any of the following three groups:

- Technologies and investment
- Behaviour and lifestyles
- Local governance

During each Café Parallel session, speakers made five minute presentations introducing a number of interventions which were discussed in turn. All participants were encouraged to contribute to the discussion, as well as recording their ideas on hexxie post it notes (see Appendix A). At the end of the session, the chair from each group reported back to the plenary.

Technologies and Investment (including infrastructure)

This session was chaired by Sarah Beacock (Energy Institute) and interventions were introduced by:

- Sarah Samuel, Ofgem
- Aoife Brophy Haney, University of Cambridge
- Liz Hooper, Bradford University
- Emma Fraser, DECC

The challenges raised were mainly related to changing the industry structure and engaging customers.

ENERGY INDUSTRY

Transmission companies

- **CHALLENGES:** Transmission companies need to change their operations, strategic thinking, and culture. Historically they have been structured in a way that allows large companies to cope better than small companies.

- POSSIBLE SOLUTIONS: Ofgem are using environmental discretionary awards as an incentive for change, but this is proving to be quite complex.

Distribution networks

- CHALLENGES: Under the current system distribution networks are passive: they take energy to people's homes. This needs to change very quickly, but it is difficult to know quite how things will change, therefore they must remain flexible. How to do this while providing enough certainty for investors is a challenge for regulation. There is interest in incorporating new technologies such as hydrogen and biogas into networks, but there is currently no safe method for this. There is a need to allow anticipatory investment in networks, following the offshore grid example.
- POSSIBLE SOLUTIONS: Ofgem have launched the next price control on distribution networks, and they have established the Low Carbon Networks (LCN) Fund, to encourage innovation and support transmission networks to experiment with new systems. There is potential for this to expand to other sectors, such as water utility.

Market structures

- CHALLENGES: There is a need to promote innovation, but there is a lack of understanding of which kind of market structures lead to the most innovation in energy systems. The nature of the energy supply market differs between UK and EU, but similar companies dominate, partly due to liberalization. Has this stifled innovation? Is there enough transfer of data and knowledge? This is a question for the EU commission.
- POSSIBLE SOLUTIONS: More research on innovation and technology transfer would be helpful.

CUSTOMERS

Encouraging businesses to invest in energy efficiency

- CHALLENGES: Financial incentives are important but are not enough on their own. There is a need to change business culture to embrace carbon reduction. How can we mainstream energy efficiency in business, in the same way as health and safety? Also, uncertainty is a big challenge which stifles investment.
- PROPOSED/POSSIBLE SOLUTION: The Carbon Reduction Commitment has important elements, for example reporting and structural change.

Government initiatives should avoid over-prescription. Flexible policies will allow businesses to innovate. It was also noted that if companies employ people whose job it is to focus on energy efficiency it might lead to more change. Some businesses in the retail sector have progressed, e.g. Marks & Spencer. To some extent, the driver for this was demand from customers.

Engaging the public

- **CHALLENGES:** If customers were demanding low carbon technologies, this would drive investment. There is a need to make consumers see emission reduction and energy efficiency as genuinely valuable.
- **PROPOSED/POSSIBLE SOLUTION:** Customers have demanded change in other markets, so should be possible in energy. There is a general move towards customer interest in where products come from, and in local self-sufficiency. It potentially needs more effort to make the public, media, and policymakers' energy literate. The Green Deal and other mechanisms also have a role to play.

Behaviour and Lifestyles

This session was chaired by Catrin Maby (Severn Wye Energy Agency) and interventions were presented by:

- Sarah Darby, ECI
- Jackie Burgess, UEA
- Jillian Anable, Aberdeen University
- Lorraine Whitmarsh, Cardiff University

The participants had a broad range of interests in behaviour research, stakeholder involvement and consumer incentives in the areas of transport, heating, electricity and climate politics. The following challenges were raised.

Perceptions of behavioural change

- **CHALLENGES:** Research and suggested policy measures that focus on behavioural change are often expected to provide more evidence than technology-related measures, in regards to funding of research and policy implementation.

- PROPOSED/POSSIBLE SOLUTION: The need to recognise that behavioural change is complex and must be presented in ways that link it clearly to other factors e.g. policy, technological development, and local conditions. Behavioural changes happen all the time, can happen quite quickly, and reasons for the change might be diverse and complex.

Social relations

- CHALLENGES: Individuals are embedded in a tight net of social relations in the household and in the workplace. Research into the use of energy display monitors illustrates this, showing how a new piece of equipment (the display) can contribute to anxiety and tensions between household members as they argue over 'good' and 'bad' energy use, as well as contributing to more productive outcomes.
- POSSIBLE SOLUTIONS: Analysis of interventions for behavioural change should consider households and workplaces as consumption units – not just individuals.

Diverse influences on behaviour

- CHALLENGES: energy demand is an outcome of other conditions; e.g. the demand for fuel for transport is generated and affected by policies in the areas of housing, labour, health, etc.
- POSSIBLE SOLUTIONS: An understanding of the complexities of behaviour change should be better explained by researchers if it is to be incorporated into policy.

Public support for policy

- CHALLENGES: Introducing sufficiently ambitious policies that will be publically acceptable.
- POSSIBLE SOLUTIONS: Some policies will have to be implemented despite opposition. We know that attitudes to new policies and technologies do change and often become more positive once they have been introduced and people can either see that they work and become persuaded of their benefits (as in the case of the London Congestion Charge), or just get used to living with a new system. Planned public engagement may also help.

Public engagement

- CHALLENGES: To gain public support for policies and behavioural change. This may be difficult due to opposition to specific policies, or due to general

disenchantment with politics. There is also the problem that issues that are distant in space and time tend to be perceived as less real, less important and less relevant to personal decision-making.

- **POSSIBLE SOLUTIONS:** Information is not enough on its own, and more genuine involvement of the public in decision-making is needed to build trust, and promote deliberation, learning, and empowerment. This can be achieved by giving people experience of political involvement, and through civic education. It is also possible to make energy more relevant and visible through direct experience with micro generation or energy displays, for example.

Training

- **CHALLENGES:** There is a need to encourage the development of practical know-how about energy use and energy infrastructure. The relevant types of knowledge are wide-ranging and include, for example, knowing how to source and cook seasonal food, understanding public transport timetables, being able to repair and maintain buildings and being able to construct them to a high standard.
- **POSSIBLE SOLUTIONS:** formal training and informal education from pre-school onwards, offer the prospect of more skills, employment, innovation in energy systems and more sustainable resource usage.

Local governance

This session was chaired by Barbara Hammond (Low Carbon West Oxford) and interventions were presented by:

- Joanne Wade, Independent
- Jo Hamilton, Oxford Climate Exchange
- Caroline Lucas, MP for Brighton Pavilion
- Rachel Francis, Sharpening Pencils

Over dependence on markets

- **CHALLENGES:** the UK relies too much on market mechanisms. Companies are struggling to improve consumer take-up of energy efficiency schemes. The Green Deal is a commercial-rate loan; this may deter people from participating. In Germany, 100,000 people signed up for a

similar scheme where the rate was 2.5 % per year. The UK government wants 20 million people involved by 2020 but the interest rate is likely to be much higher than in Germany. The government is introducing market mechanisms but withdrawing taxpayer-funded programmes, which is likely to increase fuel poverty. An element of Green Deal was meant to help those in fuel poverty, but it is funded by a levy on all fuel buyers.

Energy efficiency at a local level

- CHALLENGES: Energy efficiency is key to getting emissions down. A street by street comprehensive rolling out of energy efficiency schemes is required and local authorities should have a significant role in this.
- POSSIBLE SOLUTIONS: If local authorities were mandated to take control, this could improve cost effectiveness and lead to greater take up. Local authorities should have more rights to set their own agenda. Need to empower local authorities and local businesses, and adopt more measures to help small and medium enterprises, as this will increase jobs and economic benefits at community level.

End the 'big six energy fix'

- CHALLENGES: providing 'consumers' with greater choice. Discussions should talk about citizens rather than consumers, to get people more involved in energy issues.
- POSSIBLE SOLUTIONS: campaign to end the 'big 6 energy fix'. Big 6 should have windfall tax, fund from this could be ring-fenced to make homes more energy efficient (prioritising the homes of the fuel poor). Regulators should have the ability to fix prices. Need to look at measures to get new entrants into market.

Policy implementation impeding community groups

- CHALLENGES: Community groups have excellent reach and can be a huge asset, with lots of expertise. However, they are being undermined by frequent changes in policy e.g. change in Feed-in Tariffs. This undermines groups and sets them up to fail. Who is responsible for big framework issues, and should this be tackled at a local or national level?

Local and national organisations are struggling for funding. There is a need to share learning e.g. from research projects in areas of social deprivation.

- POSSIBLE SOLUTIONS: share findings from the workshop. Establish joined up thinking between DECC, Defra and regional intermediary organisations. Also discuss what it means for communities and local authorities to have power? Support community groups with more funding.

Monitoring and evaluation

- CHALLENGES: Monitoring is a time consuming and confusing task due to the lack of easy to use and accessible evaluation tools. Monitoring is very time intensive and there are difficulties in showing the full range of impacts a project has
- POSSIBLE SOLUTIONS: New tools e.g. act on CO₂ calculator, updated tools, and accessible data on a scale that is useful for community groups. Toolkits for monitoring and evaluation, as effective evaluation aids for groups in conducting reflective learning.

Role of local government

- CHALLENGES: Local authorities have tried different approaches, such as using technology, becoming an energy supplier and promoting community action. What roles should local authorities take, and who will support the authorities that are not leaders in their field?
- POSSIBLE SOLUTIONS: The government should provide guidance to local authorities (e.g. a route map for beginners). There should be guidance on local authority responsibilities and investigation into who will take which roles.

Funding for local actions

- CHALLENGES: Finance for local action is perceived as risky. It is hard to get finance for things that do not have a monetary return e.g. community wellbeing, and also takes time to see results from projects.

- POSSIBLE SOLUTIONS: Innovative social finance options. National government could underwrite funding for local schemes to reduce risk.

Complexity of the system and lack of energy literacy

- CHALLENGES: The system is complex and information is hard to understand; a greater understanding of the energy system would lead to more trust and a willingness to act.
- POSSIBLE SOLUTIONS: Education for community leaders so they can then share the messages at a local level.

Myths and stigma regarding renewable energy

- CHALLENGES: Myths in media and use of spin to influence public opinion. Dynamics of media/public/local & national government. Current funding cuts are damaging relationships between community projects and government.
- POSSIBLE SOLUTIONS: engage with communities and give them roles/sense of ownership. Bring in energy wisdom and understanding to challenge myths. Develop effective communication strategies.

Café Parallel 2

Process

Participants had the choice of joining any of the following three groups:

- Institutions, decision making, and legitimacy
- International governance issues
- Business, new entrants, and new practices

Institutions, decision making, and legitimacy

This session was chaired by Catherine Mitchell (University of Exeter), and interventions were presented by:

- Becky Willis, Independent
- Brenda Boardman, ECI
- Dorcas Batstone OBE, ELEXON

In this session each intervention was followed by small group discussions, which were reported back to the group at the end of the session. The following challenges were discussed.

Making the energy problem bigger than the energy industry

- **CHALLENGES:** The energy challenges for governance go beyond the energy industry. Energy is intrinsically linked with politics and social progress. Even since our parents' generation, our energy behaviours have changed dramatically. Energy professionals tend to focus on the technical without asking big questions about behavioural change. They should stop trying to own the problem, because it is a much wider issue. Part of the problem is that the government is not prepared to talk about sustainable consumption, or how much energy each person should use, as there are too many ideological issues.
- **POSSIBLE SOLUTIONS:** Need to tackle the drivers of demand, such as settlement patterns: planning for denser urban and rural environments. One planning authority has regulated for this already. Carbon targets need to be factored into other government departments besides DECC, e.g. for aviation. We need to see all policies through the lens of the Climate Change Act.

Filling policy voids

- **CHALLENGES:** several key policy voids were highlighted:
 - **International transfer** –UK reporting on energy use does not include embedded emissions.
 - **Strategy for energy and buildings** – the UK lacks a strategy for buildings.
 - **Electricity use** – Most policy focuses on gas (EPCs, CERT, Green Deal), but electricity is an increasing proportion of the energy we use. Individuals are largely unaware of how much electricity they use, and also unaware that the EU-ETS means that reducing their own domestic demand will free up carbon allowances elsewhere/earn profits for energy companies.
 - **Fuel poverty** – Warm Homes and Energy Conservation Act 2000 seeks to eradicate fuel poverty by 2016, but fuel poverty is increasing, and existing energy efficiency programmes are inadequate
- **POSSIBLE SOLUTIONS:**
 - Use Energy Performance Certificates more thoroughly, set a minimum standard for all housing (A or B) by 2050, and make knowledge about energy use part of the job description for estate agents. This will make help to make energy-efficient buildings more valuable.
 - The EU is focusing on efficient products, for example fridges. This is not enough because it does not control the number of appliances individuals own, or the size of those appliances. Personal Carbon Allowances might be a better solution.
 - Give local authorities the responsibility to implement low carbon zones. Minimum standards for EPCs should include support for low income households to upgrade their homes.

Inertia in electricity markets

- **CHALLENGES:** It is difficult for new companies to enter the market. The process of change in the market is extremely complex. Decision making is weighted towards maintaining the status quo. This is because it is set up to support incumbents who need continuity and because privatization of the energy industry requires rules and regulations which create a drag on the system.
- **POSSIBLE SOLUTIONS:** more accessible and transparent rules and regulations.

International governance issues (related back to the British Energy System)

This session was chaired by Farhana Yamin (CIFF) and interventions were introduced by:

- Amal-lee Amin, E3G
- Sonja Klinsky, University of Cambridge
- Smita Nakhooda, ODI

The importance of tackling international governance issues was recognized, not least because it can promote national action. The following challenges were raised.

Relationship between international and national

- CHALLENGES: Climate change is an international problem but so far attempts to tackle it have been organised at national or regional level.
- POSSIBLE SOLUTIONS: It was generally agreed that without an international governance system, there will be difficulties to reach domestic climate change and energy goals, including maintaining security of supply and triggering sufficient investments.

Choosing policy instruments appropriate for diverse countries

- CHALLENGES: What should global policy instruments be? Potential options include trading schemes such as the EU ETS, or taxation. It is difficult to find solutions which work for multiple countries. Developing countries have very different regulatory structures and most of them are heavily involved with long term planning for development goals.
- POSSIBLE SOLUTIONS: A solid international framework for energy and climate policy needs to be based on 'hard' governance', which includes legal contracts, as well as 'softer' types of governance or international agreement, such as the European Energy Charter. The EU ETS requires a strong cap; other elements are not nearly as important.

Deciding on focus and fora

- CHALLENGES: Where should the focus be and where should we discuss it? Should other greenhouse gas emissions such as F-gases have more attention on international level? What should be the defining metrics: temperature rise,

level of emissions per year, or other metrics? Recognition that the UNFCCC has been the main focus so far, but should not be the only one.

- POSSIBLE SOLUTIONS: Climate change policy is traditionally discussed directly at international level, without migrating up from below. National initiatives could help in understanding how international institutions and agreements can best be embedded.

Planning for the future

- CHALLENGES: It is difficult to know how international governance structures will affect the UK in 10 years time. It was pointed out that the overall development seems to follow 'international learning cycles', such as privatisation versus need for planning.
- POSSIBLE SOLUTIONS: The situation in ten years will heavily depend on the actions of developing and fast growing countries, in how they position themselves in these learning cycles and how their national governance 'experiments' will turn out.

Business, new entrants and new practices

This session was chaired by Juliet Davenport (Good Energy) and interventions were presented by:

- Rachel Broquard, Eversheds LLP
- Ingrid Holmes, E3G
- Caroline Digby, Eden Project
- Bridget Woodman, University of Exeter

Finance – finding funding for new projects

- CHALLENGES: traditional funding is drying up. Single developer funding is now becoming harder to find. These changes to the single project approach are driven by credit rating agencies, with the aim of diversifying risk.
- POSSIBLE SOLUTIONS: new forms of funding and structures are needed, such as: capital markets, institutional funders, consortiums, private equity and joint ventures. Government policies are needed to meet the needs of new funders.

- Pension funds only invest about one percent in infrastructure (from around a trillion invested overall). Create pension investment platform.

Regulatory challenges

- CHALLENGES: How do you tweak regulations to meet the needs of investors? Investors want transparent, consistent approach. The policies of other European countries are more certain and attractive to investors
- POSSIBLE SOLUTIONS: energy market reform. There needs to be incentives for investors in terms of certainty.

Competition

- CHALLENGES: competition for funding; need to make the sector more attractive and the country more attractive to international investors.
- POSSIBLE SOLUTIONS: More certainty is required around regulatory regime.

Creating scale in investment opportunities

- CHALLENGES: in the UK, a lot of the market sizes are set by Europe.
- POSSIBLE SOLUTIONS: The Green Deal will open up the energy efficiency market to new entrants.

Sharing risk

- CHALLENGES: pre 2007 there was a 'wall of money', and now there is a lack of investment. It is more expensive to source funding. New and unproven technologies are seen as risky.
- POSSIBLE SOLUTIONS: The Green Investment Bank will share risk; equity will be available for new technology. The government is sharing the risk and offering protection for companies.

Facilitating access to capital

- CHALLENGES: how do we get money into infrastructure? Previously it was through banks and utilities. How do we re-finance assets? Public banks have a role in financing. Insurance companies and pensions funds want safe investments.

- POSSIBLE SOLUTIONS: Green Investment Bank as a conduit for institutional investment and infrastructure investment. The bank could refinance existing projects, perform aggregator function or allow joint investment with pension funds. Direct investments by the bank and whether the bank could issue debt to the capital market to allow it to invest in green mechanisms and technology is being investigated.

Social equity on Feed-in Tariffs

- CHALLENGES: Employee/employer engagement on renewable technologies
- POSSIBLE SOLUTIONS: The Eden Project is currently trialling a solar share offer. 5kW of photovoltaic cells installed on warehouse roof within the Eden Project site. Shares are being offered for £1 per share; looking at individual investments of £200–£10,000 from staff members. Eden gets the electricity from PV cells and staff get the Feed-in Tariff income. First employee/employer project in the UK.

Geothermal

- CHALLENGES: to help DECC to understand scale of opportunity of proven technology (e.g. France and Germany). DECC currently using old facts and figures relating to geothermal. Lots of potential with resource and as a technology.

Collective purchasing

- CHALLENGES: changing dynamics with fuel suppliers. Working together to purchase energy collectively and negotiate better deals/rates
- POSSIBLE SOLUTIONS: Eden has 500 staff and a large electricity bill. Working with Cornwall County Council, Cornwall NHS and 2 private sector organisations. Combined, the organisations employ 35,000 people; EDEN is piloting a scheme with all staff and businesses for collectively purchasing oil/LPG/gas. If successful, the scheme could be rolled out to national procurement hubs. Collective purchasing changes the dynamics of purchasing power. Looking at changing dynamics with fuel providers.

Complexity of decision making and policy

- CHALLENGES: policy making and regulation do need to be treated as a complex thing. Civil societies need to accept it is complex problem. Ignoring that is a complex issue creates atmosphere of public misunderstanding information and public hostility.
- POSSIBLE SOLUTIONS: we do need to recognise that different systems need to coevolve. Focus on domestic behaviour is extremely important but behaviour in others sectors of the economy is being neglected. Co-evolution, long term strategic views

Address new entry across the board

- CHALLENGES: Limited new entry in generation
- POSSIBLE SOLUTIONS: need to encourage new entry all the way along the chain; generation, supply and distribution. Scale is an issue that needs to be considered in terms of new entrants. Need new entrants to be able to work with others on a similar scale to get better rates etc. for new suppliers.

Closing plenary session

During the final session of the day, chaired by Catherine Mitchell, the following speakers gave their reflections:

- Kate Smith, Shell
- Julia King, CCC
- Catherine Inglehearn, FCO
- Gaynor Hartnell, Renewable Energy Association
- Jill Duggan, Doosan Power systems

Kate Smith, Shell

A key challenge is the uncertainty in energy supply. Recent events shaping where we will source our energy from include Fukushima, the Arab Spring, shale gas discoveries, and the financial crisis. There is also uncertainty in how technologies will develop and how much they will cost.

Important solutions include:

- Increasing the carbon price. This is unlikely to be delivered through the Carbon Price Floor. We need to get a tighter cap at EU level.
- Developing a framework for optionality and optimisation.

Julia King, CCC

A key challenge is the privatised energy system. Previous countries which decarbonised their energy systems did so under nationalized systems, so we don't have a model to follow.

The government is important in solving the issues discussed today. Governance by the market is not enough. The government must deliver a strong carbon price and Electricity Market Reform. Consistent messaging will improve public support.

Catherine Inglehearn, FCO

One of the challenges for the UK is how to position itself within emerging energy markets. India and China are growing markets; the UK's relationship with the Middle East is changing and there is increasing competition for UK oil and gas industries. The UK is engaging in the International Energy Forum for cooperation towards energy security.

Gaynor Hartnell, Renewable Energy Association

One challenge for public engagement is to raise awareness that energy prices will inevitably rise, but renewables are not solely responsible for this.

Challenges for the renewable energy industry include defending favourable policies through the financial crisis, including Feed-in Tariffs and the Renewable Heat Incentive. The renewables industry has lost faith in the government's ability to implement policies such as the Feed-in Tariff, Renewables Obligation Banding Review, and EMR.

The solution to this is longevity of policies. There is a need for a *portfolio* of projects to be assured (rather than projects in isolation), and for technologies to be subsidised consistently, based on reasoned assessment, rather than because they are the "flavour of the month". The government should prioritise subsidies for technologies which have most potential to become profitable, or where the UK has the potential to lead technological development, or where they have co-benefits, for example plastics from biofuel.

Jill Duggan, Doosan Power systems

Europe is the first region of the world to have implemented comprehensive actions to address climate change, in the 2020 by 2020 Climate and Energy Package.

The EU ETS has been a success. The targets, when negotiated, were considered but what has followed was an unforeseeably deep recession that has indeed led to a drop in the carbon price. This is a sign that the market is working effectively. Without this we would have had 27 different and less ambitious responses.

The UK has gone further than most with the Climate Change Act and the Climate Change Committee. The UK has a unique position:

- political consensus on the importance of tackling climate change
- regulatory framework in place
- public acceptance of CCS and nuclear as ‘least worst’ options

The Electricity Market Reform is in danger of throwing this away whilst attempting to do the right thing. We need a higher carbon price in Europe, not just the UK Carbon Floor, plus direct investment in emerging technologies and their development. We should use the EU ETS, as it is simple and transparent, but throw away half the allowances – research shows this would benefit the UK economy.

Further information

- A full programme and attendee list are included in the appendices.
- Presentation slides from the opening plenary are available at:
http://www.ukerc.ac.uk/support/tiki-index.php?page_ref_id=3140

Appendix A – Notes from Hexxies

- Profitability – consumers need better understanding of the level of profit required to support necessary investments i.e. what is an acceptable level of profit?
- Consumers – powerless end user. Citizen= involves decision maker
- Are suppliers collecting Green Deal customer payments funded to administer this and how much is it costing!
- Did big 6 scupper FITs? Local Government involvement
- Engineered geothermal systems. 41/2 km down come up at 180oC. Collective purchasing – Cornwall together UK together
- Attracting investment for social enterprises
- Aggregation mechanisms for financing
- Green Deal – why not require local authorities to ensure a basic level of energy performance in LA housing, and fund that requirement. LAs have already been required to meet decent home standards, and this requirement has driven investment. The requirement would ensure retrofits of a large portion of the housing stock, reduce fuel poverty, and have a relatively high degree of certainty around both total cost and total energy reduction (not withstanding uncertainties around rebound etc.)
- Role of renewable gas? Heat pumps? Who is climate change committee?
- How do we maintain/pay for grids? Gas: declining numbers of customers on grid if there is a move to electric heating.
- Desire for local tariffs and avoiding grid charges given reduced use (but still same assets).
- EU – overall policy might be sensible but detail so often a compromise = vested interest and complexity
- Markets = innovation and change but also complexity so how do you get the balance right?
- Moving from supplying energy to energy services. For heat: 0C of comfort vs. kWh
- Politics of incrementalism

- Catherine's Governance model: – where does govt. strategic direction/policy factor. Where are the links to other sectors (transport and link to energy storage/use)
- Governance not just operational, also organisational – organisational inconsistency key barrier to moving forward
- Strategy for buildings and energy. Green Deal – how well will it work? What about 0% finance? Is it an education programme? A means of engaging and involving people?
- UK energy and carbon budgets to be delivered to county/local authority levels. Energy localism agenda
- A new co-operation movement (at green bank)solely devoted to sustainable and low carbon energy system
- Advise Eric Pickles that LEAN (energy) is good
- Individual and non-tradable carbon and energy budgets. A NSW discipline. Carbon and energy accountancy/annual personal reporting
- What regulatory and other changes would be needed to promote development of ESCOS?
- EU – comitology – trade-offs between 1 policy and another e.g. electricity vs. agriculture. How 'expert' are officials – do they understand impacts and costs?
- International relations. Is sourcing CSP – DC a safe and secure way of supplying electricity to the mix in Europe?
- EMR creating uncertainty – CFDs. Competition challenge. Competing vs. against? Competing for people for off-shore
- Drivers of energy demand Need positive future vision work towards it. Recognise diversity of demand-geographical, time splitting energy out in e.g. local govt. misses opportunity to tackle drivers of demand
- Ban all air source and ground source heat pumps unless powered by solar PV
- Accessibility Need to reduce risks to small new entrants e.g. government supported research/credit. Could be limited to bigger companies who have expertise to understand complex policies. Privilege access to decision makers for some.

- Finance. Balance sheet is drying up. Single funders going consortia. Credit agencies dislike all eggs in one basket £200bn finance challenge
- IPO for geothermal? Free entry to Eden. John Lewis model filled in 2 weeks
- Can we make C emissions a 'liability' for local authorities – so that they see spending on sustainable energy as investment in reducing this liability
- “Consumer” participation. Remember who will be decision makers in 2030/50... the EU Crisp Project engaging with school age citizens about low carbon transition
- Does the treasury still worry about financial penalties for failure to achieve EU targets on CO₂, renewables and energy efficiency
- Simplify the structure of electricity & gas bills and increase transparency
- Energy demand developing standards for energy efficient appliances. Making these standards binding. EU member countries shouldn't allow appliances which are below standards
- Aggregation of purchasing power
- Invite Adam Twine to advise DECC on community energy production/reduction
- Local tariffs – great! Community – aggregated investment for pension funds. Green investment bank in August HOORAY!!
- Substantive or procedural equality/fairness for energy technologies/companies. What does “level playing field” mean? Do we need affirmative action for energy technologies and business models?
- Comitology procedures e.g. transparency/data
- We spend lots of time worrying about how to legitimise and enable new clean technologies; we don't think enough about how to de-legitimise dirty incumbents and constrain them
- Support for small community initiatives. Mentoring and support for CPD. Enabling funding from renewable sources.
- Should we scrap EU ETS? Focus on downstream policy
- Innovative retail pricing. Why have we not seen 2/3 year fixed tariff as in e.g. Nordic MRT

- Role of DNOs in facilitating investment of network which is low carbon
- Comitology procedure should be focused on technical issues. In energy, the technical issues are critical – can be barriers to wider policy objective or drivers of change (e.g. trans. changing and renewables)
- Find out what “consumers” want, listen to their questions, not just their answers
- Consumers/customers – citizen
- Revise MARKAL
- Misinformation of information in the energy market
- Electricity losses on distribution. We have local tariffs (?), ETS (?)
- A Leveson review on energy governance in the UK
- Is oil really convenient for the UK? Go to a war-zone, appropriate some land, pipe oil to a port, sail through pirate filled seas, refine in the UK and re-pipe. Is this easy? Is renewable energy hard?
- Would it have been ‘cheaper’ in energy terms to have invested in renewables than to have invaded Iraq?
- How to involve others? Communities creating policy through practice (e.g. transition towns, low carbon, car clubs) These people need support and help with scaling up
- Current focus on generation. What role demand reduction? Green deal: interest payback. E.DO – new department role? CCC forecast little reduction in heat demand 2009–2030. Reliant on decarb supply and electrification of heat. Failure likely
- Carbon Trade? Defend carbon sinks (rainforests, grassland etc.) rather than carbon sources (oil wells, gas fields etc.)
- UK Carbon imbalances. Match 50% of UK energy CO₂ with equivalent CO₂ sinks outside the UK
- Planning law/governance – Is it easier to get planning permission for a nuclear power station than for a community owned wind farm?
- Low energy culture/s. New social & economic movement in the style of the ‘dissers’, ‘levellers’ etc.

- No point in complaining about poor journalism and representation...lets get together and set up a programme that a) educates journalists, b) system message to combat negative press
- Policy stability. Now interacts with EU. Regulatory impact assessments
- Not consumer – person or citizen
- In carbon reductions (CRC) the optimum carbon saving option depends on the carbon intensity of gas and electricity. These change over time. In particular, electricity will de-carbonise (we hope). So today, gas fired CHP might be the best solution – in 20years, electricity-based heat pumps might be better for example. How to avoid inappropriate technology lock-in
- If we hand it over we'll all lose our jobs!!
- Putting consumers at the centre/talking to consumers to inform policy. How practically do we do this?
- Provenance of energy: What is role of fuel mix disclosure requirements?
- Interventions – property right as an issue for technology
- How will projected increases in customers' energy bills affect the public acceptability of investment in low carbon generation/supply technologies?
- Who is undertaking the necessary public engagement activities?
- How should the governance regime between HMG and Ofgem, change to meet the challenges
- Shame there isn't a supplier here to explain the challenges of running sustainable business
- In a nationalised system where will innovation and customer interest/choice come from/develop?
- WIND – whose voice is given authority – diversity of voices into the debate e.g. young people pro-wind – meetings/public consultations – 12 peer consultations
- LOCAL GOVERNMENT – if 'add on' then can develop off – energy official role – regeneration and affordable warmth – economic development opportunity – visionary

- Reframing the issue – need to shift emphasis not just about climate change/energy security
- Stronger local role – how? More authority but also more expensive to be ‘the implementer’ – capacity, guidance, support
- Local Governance of energy – community, local authority
- Gaps – transport: add in a long-haul flight and this can contribute a third of household emissions. Separation of supply and demand in café parallel means that energy issues are partly decontextualized. Competing expectations and demands on the system
- Is it possible to reap the benefits of decarbonisation initiatives in electric city? When the energy intensive sectors such as water don’t have the same guided visions on incentives to invest and take up low carbon technology in water treatment and other processes. Interdependent sectors (e.g. water and energy & energy & transport) require more collaborative governance cutting across silos (Ofgem/Ofwat) for more sustainable transformations. E.g. on current arrangement OFWAT doesn’t incentivise low carbon re energy in water utilities.

Appendix B – Programme

09:00 **Registration and refreshments**

09:30 **Welcome and Introduction**
Catherine Mitchell

09:35 **Opening Plenary session: Governance Challenges and Solutions**

Chair: **Rebecca Willis, Independent**

Catherine Mitchell, University of Exeter

Leigh Hancher, Allen & Overy

Juliet Davenport, Good Energy

Baroness Worthington, Sandbag

11:30 *Refreshments*

11:45 **Café Parallel 1**

Governance challenges and solutions for a sustainable, secure and affordable energy system related to technologies and investment (including infrastructure)	What are the governance challenges and solutions for a sustainable, secure and affordable energy system related to behaviour and lifestyles?	Local Governance challenges and solutions for a sustainable, secure and affordable energy system
Chair: Sarah Beacock Energy Institute	Chair: Catrin Maby Severn Wye Energy Agency	Chair: Barbara Hammond, Low Carbon West Oxford
Sarah Samuel, Ofgem	Sarah Darby, ECI	Caroline Lucas MP for Brighton Pavilion
Aoife Brophy Haney, University of Cambridge	Jacque Burgess, University of East Anglia	Joanne Wade Independent
Liz Hooper, Bradford University	Jillian Anable, Aberdeen University	Jo Hamilton, Oxford Climate Exchange
Emma Fraser, DECC	Lorraine Whitmarsh, Cardiff University	Rachel Francis, Sharpening Pencils

13:00 **Café Parallel session 1 Report Back**

Chair: **Joanne Wade, Independent**

13:15 *Light Lunch and refreshments*

14.15 Café **Parallel sessions 2**

Governance challenges and solutions for a sustainable, secure and affordable energy system which are related to institutions, decision-making and legitimacy	International governance issues (related back to the British Energy System).	Governance challenges and solutions related to business, new entrants and new practices
Chair: Catherine Mitchell University of Exeter	Chair: Farhana Yamin, CIFF	Chair: Juliet Davenport, Good Energy
Becky Willis, Independent	Amal-Lee Amin, E3G	Rachel Broquard, Eversheds LLP
Brenda Boardman, ECI	Smita Nakhooda, ODI	Ingrid Holmes, E3G
Dorcas Batstone OBE, ELEXON	Sonja Klinsky, University of Cambridge	Caroline Digby, Eden Project
Caroline Kuzemko, Warwick University		Bridget Woodman, University of Exeter

15:30 **Café Parallel sessions Report Back**Chair: **Amal-Lee Amin, E3G**15:45 *Refreshments*16.00 **Closing Plenary Session: Governance Challenges and Solutions**Chair: **Catherine Inglehearn, FCO**

Kate Smith, Shell

Julia King, CCC

Gaynor Hartnell CEO of Renewable Energy Association

Jill Duggan, Doosan Power systems

17.00 **Networking Session and drinks reception**18.00 **Close**

Appendix C – Attendee list

First Name	Surname	Organisation
Elcin	Ackura	European Bank for Reconstruction and Development
Amal-lee	Amin	E3G
Jillian	Anable	Aberdeen University
Karen	Anderton	Transport Studies Unit, Oxford University
Ian	Bailey	Plymouth University
John	Barton	Loughborough University
Dorcas	Batstone	ELEXON Limited
Sarah	Beacock	Energy Institute
Brenda	Boardman	ECI, University of Oxford
Giles	Bristow	Carbon Leapfrog
Fiona	Brocklehurst	Ballarat Consulting
Mary Ann	Brocklesby	Awel Aman Tawe
Aoife	Brophy Haney	University of Cambridge
Rachel	Broquard	Eversheds LLP
Jacquie	Burgess	University of East Anglia
Catherine	Butler	Cardiff University
Sarah	Darby	University of Oxford
Juliet	Davenport	Good Energy
Lorenzo	Di Lucia	Lund University
Caroline	Digby	Eden Project
Jill	Duggan	Doosan Power Systems
Tina	Fawcett	ECI, University of Oxford
Tim	Foxon	University of Leeds
Emma	Fraser	DECC
Rachel	Francis	Sharpening Pencils
Shane	Fudge	University of Surrey
Nelson	Mojarro Gonzalez	Sussex Energy Group, SPRU, Sussex University
Thomas	Greve	University of Cambridge
Alice	Gunn	SSE
Jo	Hamilton	ECI, University of Oxford
Barbara	Hammond	Low Carbon West Oxford
Leigh	Hancher	Tilburg University
Sarah	Hards	Keele University
Gaynor	Hartnell	Renewable Energy Association
Richard	Hauxwell-Baldwin	University of East Anglia
Nicola	Hole	University of Exeter
Ingrid	Holmes	E3G

First Name	Surname	Organisation
Liz	Hooper	University of Bradford School of Management
Catherine	Inglehearn	FCO
Julia	King	Aston University
Lena	Kitzing	Technical University of Denmark DTU
Sonja	Klinksy	University of Cambridge/University of British Columbia
Matt	Leach	University of Surrey
Sarah	Lester	Grantham Institute, Imperial College London
Noel	Longhurst	University of East Anglia
Catrin	Maby	Severn Wye Energy Agency
Ruth	Mayne	ECI & Low Carbon West Oxford (LCWO)
Will	Mcdowall	UCL
Catherine	Mitchell	University of Exeter
Alison	Mohr	University of Nottingham
Smita	Nakhoda	Overseas Development Institute
Liliana	Ovalle	Goldsmiths
Bindi	Patel	UKBCSE
Michael	Peters	Surrey CES
Jonathan	Radcliffe	Energy Research Partnership
Neha	Rai	Sussex University
Tom	Richardson	Cornwall College
Donna	Richardson	IGEM
Mark	Robbins	Edgiock Consulting
Sue	Roberts	Wallingford
Marta	Rocha	University of Cambridge/New University of Lisbon
Tom	Rushby	University of Southampton
Sarah	Samuel	Ofgem
Liz	Sleeper	Independent
Kate	Smith	Shell
Iain	Soutar	University of Exeter
Robert	Tickner	University of East Anglia
Paul	Upham	University of Leeds
Prashant	Vaze	Consumer Focus
Joanne	Wade	Independent
Sara	Walker	Northumbria University
Gordon	Walker	Lancaster University
Judith	Ward	Sustainability First / University of Exeter
Robert	Webb	power^up
Jan	Webb	Edinburgh
Lorraine	Whitmarsh	Cardiff University

First Name	Surname	Organisation
Becky	Willis	Independent
Bridget	Woodman	University of Exeter
Baroness	Worthington	Sandbag
Farhana	Yamin	CIFF