



Innovation and Governance for Future Energy Systems

Event report

8th March 2018, Coin Street, London

Introduction

Energy systems in the UK and around the world are going through a period of fundamental change due to the emergence of new technologies, energy economics, business models and changing social preferences. Much of the momentum for change is closer to the demand side and at the local distribution level, where the opportunities for taking a whole systems approach across electricity, heat and transport are easier to identify and act upon. Such an approach to system transformation is based on the principles of creating a system which is smarter, flexible and more integrated, and that puts people at the centre. To enable this to happen in Great Britain a new approach to energy governance is required, based on new ideas, new institutions and new people.

This year's IGov conference focussed on these themes and took place on International Women's Day. To celebrate the achievements of women in energy all speakers and chairs were female, representing women in different stages of their careers across industry (conventional or grid-edge), academia, regulation, government, communities and civil society.

The conference format consisted of presentations and roundtable discussions with a 100 people discussing cutting-edge innovation and the governance issues for Future Energy Systems. This report summarises some of the key discussions and themes from the day. Copies of presentation and further information on the event are available at <http://projects.exeter.ac.uk/igov/innovation-and-governance-for-future-energy-systems/> you can also view tweets from the event at <https://twitter.com/hashtag/iwdenergy>

Opening Plenary: Governance needs for innovation in the Future Energy System

Professor Catherine Mitchell chaired the opening plenary session in which innovators presented their views on the key governance changes required to enable energy system change. Presentations were heard from Vidia Pallaram (Electron), Alice Tyler (Open Utility), Felicity Jones (Everoze), Jane Lucy (Labrador) and Maria McKavanagh (Verv).

Discussions points included:

- The complexity of current governance arrangements was highlighted and several people called for greater agility in regulation. However, historically certainty (stability?) and stable consumer protection have been valued in energy governance and regulation so the challenge is how to achieve a balance between stability and agility?
- Several of the presenters emphasised that their approach to agility was to take an iterative approach in live trials, which allowed assumptions to be tested. 'Learning by doing' to test innovations in a 'safe' environment is important to inform future regulatory and policy changes.
- The governance approach to agility is not necessarily consistent or predictable. For example the capacity market was written in a fit-and-forget way, which doesn't work with changing technologies and the need to experiment, so it is difficult to be agile in this space. In other policy areas (battery derating) policymakers have been able to affect change more rapidly. Policymakers tend to be receptive to the need for change but the process is slow and there are only certain windows of opportunity for change to happen.
- Many innovative models are currently reliant on grant funding. Although this may be useful in testing and developing learning is doesn't address wider governance issues and there is a need to develop a more sustainable process for innovation and experimentation.
- The benefits of drawing on international experience and collaborating/sharing knowledge more effectively to accelerate change were highlighted.
- There was wide agreement that data is at the heart of both the future system and value streams for new business models. Customer ownership of smart meter data is an opportunity to rebalance the market as consumers (nominally) own their own data, but there is a need to create value from data assets for customers. The incoming EU GDPR (April 2018) was framed as providing strong protection. This may suggest there is no need for further sector-specific regulation, but may also have the potential to create a barrier for new entrants.
- The current regime is geared up to promote competition but there is a big question about whether we can work within this regime at the same time as being transparent.
- The issue of vulnerable consumers (defined in various ways) came up at several points. In a period of rapid innovation there is a real risk they will be left behind (for example many services require access to broadband, so exclude households without). There needs to be a requirement to think about innovation for consumers with additional needs.
- Trials that realize value for vulnerable customers are really important but funding is difficult to secure. Schemes tend to be reliant on short-term grant funding.

- Using technology to change demand patterns is a key part of many emerging models. However there is a need to ensure that incentive structures are developed to enable this value to be realised. Speakers noted that in many cases demand response price signals aren't likely to be high enough to incentivise consumer to act, so we will need to automate response. Regardless of this, if consumers don't receive benefits for changes (automated or otherwise), they aren't likely to participate.
- A long-term integrated view of system change is needed to enable the appropriate investment in infrastructure. In particular decarbonisation of heat remains key and under discussed. Additionally governance needs to be undertaken at the appropriate level – in line with the principle of subsidiarity – with top down (clear government policies) and bottom up coordination.
- Protection must be given to the most vulnerable/least able to afford energy.

Workshop 1A: Directing or delegating the future energy system?

The 'directing or delegating' session was chaired by Silke Goldberg (Herbert Smith Freehills LLP) and presentations from Cathryn Scott from Ofgem; Laura Sandys from Challenging Ideas and Sonia Brown from Visa Europe. Key discussion points include:

- The current governance system was designed 30 years ago and is now outdated. There is often (rightly) frustration at the slow pace of regulatory change, but regulatory processes (including legal processes, requirements for consultation, challenge etc.) are designed to deliver legitimacy and fairness so we need to recognise the importance of these checks and balances.
- There are many competing visions for a new system (each with different risks/benefits), but more radical change will require changes in Government policy with the support of Parliament. A key role for government/regulator is to give an early and clear indication of the direction of travel in order to allow industry to innovate. However there is a need to recognise that energy regulators have lost their legitimacy in the eyes of the public.
- There were varying perspectives on whether change needs to be customer, public or industry led and recognition that regulation also needs to be consistent on environmental and social goals. There is a need to have ambition driven regulation to ensure wider social goals are addressed.
- There was discussion regarding whether twin tracking regulation – phasing out incumbent business models whilst phasing in a smart, low carbon and flexible system architecture – was possible.
- The key political issues for energy are currently renationalisation and price caps and not how to better organise the system. Brexit is taking up much of the political and parliamentary space.
- Regulation is still focused on supply side and there is insufficient investment in energy efficiency.

- Laura Sandy's presented a proposal to shift from the current licence/code system to an enhanced registration and assurance process. This would provide different levels of regulation for actors with different risk profiles rather than a one size fits all approach. Greater freedom would mean strict enforcement and higher penalties for breaking the rules.
- There was a lot of confidence that freeing up competition will drive innovation. This may be correct but we need to remember that stepping back and letting companies lead has a poor record in the energy sector (e.g. smart meter roll out, developing energy services). Is it different this time because of technology?
- Funding from the Industrial Strategy Fund can support trials/new activities, but there is a danger that public money goes to support activities that would be profitable under a different regulatory system. At some stage regulation needs to change rather than just ongoing funding of trials.
- When the Regulatory Sandbox was set up, many of those wanting to take part couldn't articulate which regulatory barriers they faced. Ofgem has found their assumptions have been challenged. They thought initially that they could tweak a few regulations to enable change, but have learnt through Sandbox that innovations are hugely disruptive for business models. Existing regulations assume the existence of set types of separate actors (suppliers, generators, networks) which increasingly will not apply. Increasingly recognised that it's not one part of the regulatory jigsaw that is the problem but the whole thing.
- Tensions were identified between incremental and rapid changes to regulation. Incremental transition was framed as taking too long ('contactless wouldn't have happened through a Sandbox process – we just need to get out and do it') and being constrained by existing structures. However rapid transformation of the regulatory system would likely become out of date rapidly. There is a need for more adaptive regulatory processes that can incorporate change.
- We need to regulate differently going forward. This would provide a more open approach but with clear perimeter conditions ('negative regulation', i.e. not saying what you must do, but rather saying what you must not do and everything else is allowed)
- There was discussion of the price cap being temporary, with pressure to end it within 2-3 years. This suggests there is a window of opportunity to develop proposals for a more enduring arrangements during this time.
- Ofgem needs to change and are too focussed on economic regulation for customers rather than the wider public interest and future generations. They were however largely seen as undergoing significant, proactive changes in their approach. There was discussion regarding whether they are constrained by organisational legacy and whether a new institution (or Chair) is required?

- One view was that all regulators will change as boundaries between Ofgem, Ofcom, and financial regulation become blurred. This may suggest a case for a single overarching Consumer Regulator. Comments on this was that it is a good idea in principle but getting there by merging existing regulators would be slow, hard work.

Workshop 1B. How to pay for networks in the future energy system

This session was chaired by Janet Wood (New Power) with Katy Black (National Infrastructure Commission), Charlotte Ramsey (National Grid) and Catherine Mitchell (University of Exeter) discussing how the approach to energy networks needs to change to deliver a sustainable, affordable, flexible energy system?

- Katy Black suggested that there are some key questions relating to heat decarbonisation, CCS and nuclear which will have significant effects on the way networks operate in the future. Equally the assumptions you make about networks also affect how you approach these wider technology issues. These uncertainties raise many questions including how much decentralisation is good, how do you incentivise actively managed distribution networks and how should we think about investing in networks during this transitional period?
- Charlotte Ramsey highlighted that the forthcoming legal separation of the SO and network ownership is drawing a clearer distinction between paying for current networks and planning future networks. This emphasizes the challenge of balancing stability and driving change.
- Catherine Mitchell suggested that GB energy system governance is not fit for purpose and a network costing method is needed that is open to different options and scales. This requires an area based system (DSO/DSP) and costing methodology which understands decentralized values through distributed energy resource (DER) plans.
- Questions posed by the presenters included: Do you believe that greater competition in networks could deliver lower overall costs? Given that transmission assets still need paying for but it's increasingly likely that vulnerable customers will pay for a higher proportion of these costs, how do we ensure equity? Is the current way we pay for networks, based on a centralised, static costing methodology past its sell by date? Should we move to a new costing methodology which better reflects the features of a sustainable energy system?
- Discussions highlighted agreement that smart operation is going to be critical in future networks. This emphasizes the need for system solutions and optimization rather than network solutions. However the current approach to DUoS, TUoS, losses, market structures, and so on, are siloed and not integrated.

- Additionally the integration of heat, electricity, transport may suggest that policy fundamentals need to change. Currently s.105 of the Electricity Act prevents interaction between gas and electricity system operators. Does legislation need to change in this area?
- There are also wider questions regarding whether networks still need to be regulated. Do we still have assets that justify being regulated assets?
- The distribution network costing methodology needs to be open to different network solutions and scales of solution. In particular an area based system needs to be supported (DSO/DSP) which understands decentralised values in an open and transparent way. This is an essential building block for future network charging. Catherine Mitchell gave the example of the New York REV process which has challenged the traditional focus of network charging and incorporated public policy goals into 30% of incentive payments (including climate change and vulnerable customers).

Workshop 2A. Accessing value in future energy systems

Helen Poulter (University of Exeter) chaired the session on new value streams and local energy markets with presentations from Nicola McCheyne (Centrica), Jo Gilbert (Smart Change Solutions), Poppy Maltby (Regen) and Robyn Lucas (Open Energi).

- Nicola presented on Centrica's work on local energy markets, particularly the Cornwall Local Energy Markets (CLEM) trial that will test the use of flexible demand, generation and storage across the domestic and business sectors. Increasing focus on the distribution level and more connected networks are emphasising the need to enable local energy systems and markets. The need to aggregate local energy and distributed sources of flexibility will require simple routes to access markets and a trading platform. She posed a question to the audience regarding the system problems that are likely to be significant in the next 5, 10 and 15 years and how to design future markets to address these problems?
- Poppy presented on Regen's work in identifying value in local supply models and local balancing, in particular virtual private wire models. She highlighted that the work of the Charging Futures Forum and the Targeted Charging Review will have a significant impact on local energy business cases and the need to develop support proposals for local balancing.
- Jo Gilbert highlighted how change is already happening in consumer values driven by smart data, more diversified tariffs and increases in decentralised generation. As more rapid switching (next day, same day, half hourly?) become a reality this will change the customer/utility relationship with the emergence of automated switching, multiple services from a single entity and potentially multiple suppliers for a single consumer.

- Robyn Lucas emphasised the centrality of flexibility in decarbonised energy systems but that a number of uncertainties, such as the future of nuclear, the role of interconnectors, heat electrification and electric vehicle uptake influence the nature of flexibility requirements. In the shorter terms there are questions relating to how balancing market reform, changing network costs and de-rating factors will affect the viability of flexibility. The increasing complexity of flexibility markets is driving increased sophistication in offerings which seek to integrate distributed energy assets with flexibility services.
- Discussions centred on how a number of key themes are disrupting energy networks including increased access to data, access to multiple markets and the emergence of local energy including P2P. However market access is currently limited to commercial and industrial actors.
- There is a liquidity barrier for local energy markets so we need a local market trading platform.
- Need to consider how to 'sell' local supply in terms of DNO investment and lower use of system charges.
- Need to have a price structure that can encourage/enable/reward behaviour change.
- Local energy markets need to consider consumer protection and how to engage consumers.
- There is a need more flexibility within markets for DSR e.g. stacking value for batteries as there is already over capacity for FFR services.

Workshop 2B. What role for local governance in a flexible, distributed energy system?

The local Governance session was chaired by Jess Britton (University of Exeter) and the speakers were Rachel Cary (Greater London Authority), Dawn Muspratt (OurPower) and Lynne McDonald (UK Power Networks).

- Rachel Cary discussed the current work of the GLA outlining how, as well as setting overall strategic direction, the GLA can also support Borough Councils who may not have the resources or expertise to engage with energy issues. The GLA is currently working with Element Energy to deliver a plan for London focusing on heat. Particular challenges were identified relating to coordination across heat, electricity and transport, aggregation of projects and the need to integrate lots of small income streams to make projects viable. Discussion questions were posed regarding whether there was a need for mandated data sharing and cooperation and who should build pipeline of projects and pool benefits.

- Dawn Muspratt explained the development of OurPower, a not for profit community energy supplier set up by a range of social housing providers. Membership includes housing associations, community organisations and local authorities with a focus on the fuel poor and off grid homes in Scotland. Dawn discussed the importance of understanding the (potentially vulnerable) customer base in order to develop customer offerings to address fuel poverty, be attractive to those with storage heaters and incorporate smart meters. They are seeking to connect consumers to the value delivered by low-carbon generation in Scotland, primarily using wind power and heat pumps.
- Lynne McDonald discussed the work of UKPN and highlighted the importance of capturing learning from innovation activity on decarbonisation and system flexibility, as well as the benefits of incorporating experience from outside of the UK. She discussed the developing role of DNOs towards distribution service operators (DSOs) and the importance of developing enabling market solutions for distributed energy which will support local (and wider) system flexibility. A discussion question regarding the role of distribution networks in supporting local energy growth was posed.
- Discussion highlighted the impact of constrained local authority budgets on limiting the ability of local government to engage with energy. It was suggested that other actors (including national and devolved Governments) may be able to support local authorities and better alignments could be developed between national growth plans (Clean Growth Plan, Industrial Strategy) and local economic growth and energy activity. It was also suggested that local authorities could capitalise better on existing policies such as the RHI.
- There was a discussion around the role of local actors, particularly local authorities, in supporting local experimentation and identifying learning from early adopters. There is significant ambition to innovate in many local areas but coordination and resourcing is not always clear.
- The difficulty in engaging in market and policy design for small/locally based organisations was raised, together with the importance of networking organisations such as UK100. However networking groups often focus on strategic buy-in and high level policy rather than detailed market design.
- New market designs and revenue streams are developing quickly but it's important that all scales and types of actors are equally able to participate. This is also about ensuring that innovation funding is open to a diversity of organisations and actively seeks to engage a range of innovation activity.
- There was a proposal that clean energy plans are needed for all cities which would bring together activity on generation and demand reduction/energy efficiency. Similarly this could facilitate cross-vector integration.

- There was discussion around the idea of local authorities collaborating on general Governance structures.
- Scotland was repeatedly mentioned as an example of more integrated energy system change across scales of governance.
- Finally there was a discussion around the importance of local governance and engagement for the decarbonisation of heat

Afternoon Plenary Session: What does this mean for the role of people and equity?

Maxine Frerk chaired the session on people and equity with presentations from Alice Bell (10:10), Elizabeth Errington (*University of East Anglia*), Afsheen Rashid (Community Energy England), Becky Willis (Researcher) and Antonia Dickman (Ipsos MORI).

- Alice Bell emphasised that involving people is often seen as a nice to have, but is essential for climate and energy. The problem is dealing with decades of terrible public engagement, so even with lots of exciting things happening most people are still disengaged. Climate change will have huge social, economic and environmental impacts and if we're going to address climate change in a fair way we have to involve people and communities, especially given the pace of change that's needed. If we don't involve people they will become a barrier, slow down change and we will lose opportunities to access ideas, knowledge and enthusiasm. Routes to engagement need to come in many and diverse forms – from school projects to political engagement.
- Elizabeth Errington discussed insights from her PhD on competition policy, a project on equity and justice in energy markets, and analysis of CMA submissions. She highlighted that dominate discourses are important as they can set the boundary for what is considered as or counts as reliable evidence. Looking at Ofgem in the early 2000s it was clear that people and equity played little role in their thinking, partly due to lock-in from early regulators. People were framed almost exclusively as consumers with equity and justice framed as government's responsibility. This impacted on the style of regulation with a focus on equal access to markets and provision of information.
- Afsheen Rashid suggested that the energy system not fit for purpose as it's designed for businesses and their needs, rather than the people it serves. People are disengaged, not seeking best deals and mistrust industry. Community energy can help to address this and put people into the heart of the system. Community ownership is one way to engage people though investment and involvement in spending income paid to a community fund. Engaging communities in projects is also important, not just that they have technologies installed on their roofs, but they are given a voice, an opportunity to learn and to do something positive in their area. We need to go beyond awareness and education and engage people through active participation and empowerment.

- Becky Willis emphasised that wider social goals should be part of regulation including equity, social justice and carbon reduction. There's a democratic challenge in responding to climate change. If you speak to MPs they mostly get it but they also say they feel virtual no pressure to act from their party or constituents. The energy system (and climate change) can't be solved in a top down manner, based on how to get a cheap low carbon system that people don't mind too much. We face stark choices and need to make clear decisions. Policy can't just be about cost per unit and needs to bring in values to both individuals and society. Additionally we can't ignore so many of the actors in the system when making decisions. This means supporting innovators and recognising that not for profit models are common in many countries. We all need to incorporate engagement into our work and ask about every policy 'does this build support for engagement and decarbonisation'?
- Antonia Dickman presented key findings from a number of consumer studies on energy. These highlighted that consumers tend to want to feel more in control of energy use, are welcoming the tailoring and innovation being offered by energy data but want to be clearer on who is accessing data and the benefits for them. When offered different scenarios people favoured a renewable communities future, not just because its green and feels nice, but also because it is linked to ideas of control, empowerment, more say on what going on in their area and local decision making within a national framework. However, people also felt that there should be a national framework and that government should lead, so some tensions exist. Studies suggest that people are supportive of wider societal or system benefits (e.g. from sharing data) as long as the benefits are socialised. On innovation people emphasised the need for technologies to be secure and reliable, the need for individual choice to be protected and the importance of (quality) access to services.
- Discussion following the presentations highlighted that energy issues are only on the fringes of MPs time as their focus is on health, education, local services, etc. Need to think about how to better engage MPs (and constituents) so that energy and climate are central topics for them and link to other electoral issues.
- How you talk to politicians in all levels of government is really important for getting results and you have to understand the pressures and priorities for them and fit a campaign to that. For example LED street lighting saves money for saving for local authorities so is a route in to discuss energy more broadly.
- A wider range of actors needs to be brought into discussions of system change within the regulator, government and industry. The expectation that people should turn up at energy sector events is wrong – the regulator and policymakers should be going to community, new entrant, stakeholder events. Additionally system complexity and the pace of change means ensuring a diversity of opinions are heard is essential.

- Short-termism remains a real problem in energy. There is little focus on where the system going, and debate is dominated by price caps and renationalisation.
- To be effective people involved in energy system change need to look outside of our immediate bubble and collaborate more across organisations and groups, especially in terms of helping communities/people engage in decision making.
- There is a policy disconnect. Polls always show support for renewable, but policy seems to go in opposite direction.
- There is a real risk of people being left behind. Vulnerable people can be very reluctant to move away from big name suppliers even if it will save them money. In a world with more tech, prosumers, etc there will be a need for direct support to ensure people aren't left behind?
- There is little action from Government, politicians, Ofgem etc in engaging people in discussions of energy system change. There was extensive discussion regarding how we can make deliberative democracy a more meaningful approach which is formalised in the political systems? For example citizen's bodies/juries have been used in other contexts to explore complex issues (e.g. Scotland). IPPR have used participatory methods to debate economic futures and the Bank of England are going to use citizen processes to inform their work. In Halifax a citizen jury on nano-technology showed how effective people can be in coming up with sensible regulation if they are given the time, space, evidence and political power. Should Ofgem and BIES be working jointly on deliberative processes?