Future of Gas Workshops Summary

April 2017

National Grid Gas Transmission

Introduction

During February and March 2017, National Grid Gas Transmission ran a series of Future of Gas (FoG) themed workshops. The workshops followed on from the launch of the FoG project in November 2016 at the Gas Customer Seminar.

At the Seminar we facilitated themed discussions, which provided the opportunity for customers and stakeholders to tell us their views on the UK's gas future. The output of these discussions helped us to identify common topics that customers and stakeholders view as important. To enable more focused debate we used these topics as the basis for this series of FoG workshops:

Gas & Electricity Interaction	Heat	Supply	Industrial Demand

The workshops were held as four one-day events in which we sought to gain further insights into what our customers and stakeholders believe the future energy landscape could look like, and what risks, challenges and opportunities this creates for Great Britain, and for their businesses. Additionally we wanted to gain further insights into how the gas and other energy markets may need to adapt in the future. This will enable us to consider how the gas transmission system can help meet future energy needs.

The following slides provide a high-level summary of the themes emerging from workshop discussions.

What questions did we ask?

Gas/Electricity Interaction	Heat	Supply	Industrial Demand
• What does successful interaction between gas/electricity by 2030 look like? • What are the barriers that are preventing success? • What do you believe is the cause of these problems? • What impact will this have on your business?	• To what extent is the future of heat likely to involve regional rather than national solutions? • What public policy is needed, and when? • How do we encourage and bring forward innovation? • How do we balance consumer disruption with meeting the challenges of the trilemma?	• How will the GB Gas market interact with the European and Global gas markets into the future? • What are the likely triggers for accelerated growth in unconventional and new indigenous gas sources (biogas, shale)? Will growth be national or localised and what drivers may influence this? • What role will gas storage play in GB's energy future as we progress towards 2050?	• What impact will current and future emissions legislation have on the way you use gas? • With regard to your gas supply, what would you change and what would you want to protect?

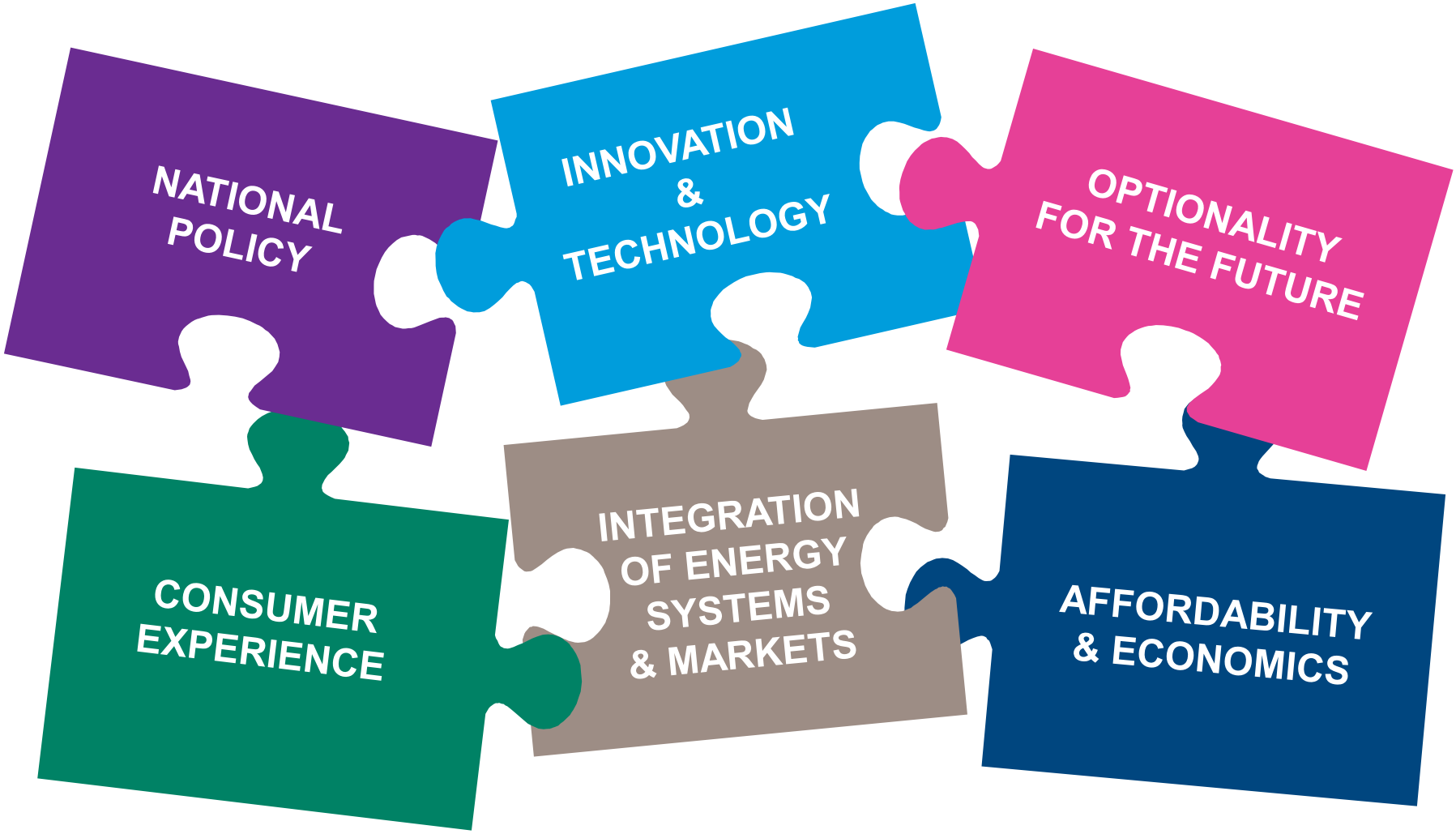
nationalgrid

Who attended the workshops?

Gas/Electricity Interaction	Heat	Supply	Industrial Demand
• London Energy Consulting • MAJOR ENERGY USERS COUNCIL (MEUC) • New Power • Energy Networks Association • Pöyry Management Consulting • Centrica • EDF Energy • Statoil.com • Chemical Industries Association • BEIS • DNV GL • E3G • Lagoni engineering • Inflection Point Energy Consulting • Citizens Advice • Energy UK • OFGEM • Imperial College • ESB	• BEIS • CCS Association • Centrica • Chemical Industries Association • Citizens Advice • E.ON • E4tech • EDF Energy • ENA • Energy Networks Association • Energy UK • Eon UK • HSE's Health and Safety Laboratory • Imperial College • Inflection Point Energy Consulting • KPMG • National Infrastructure Commission • New Power • Npower • Ofgem • SGN	• ICIS • London Energy Consulting • Energy Networks Association • Centrica • Statoil.com • BEIS • Imperial College • Centrica E&P - UK Shale Gas • Gazprom • Anaerobic Digestion and Bioresources Association	• Major Energy Users Council (MEUC) • British Ceramic Confederation • Centrica • EDF Energy • E.ON • ESB • National Grid Distribution

nationalgrid

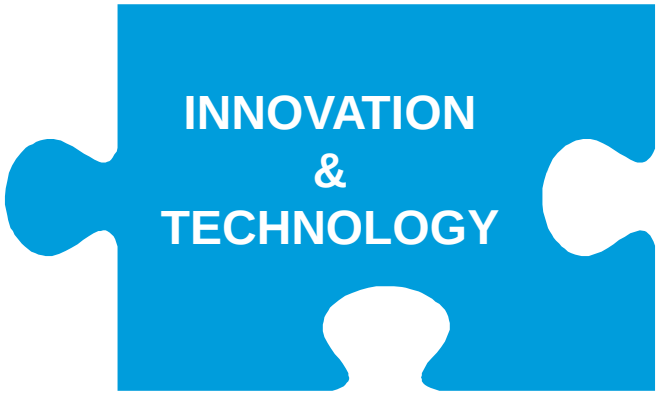
What the workshops told us: common themes



What the workshops told us: common themes

- There is uncertainty around the direction and timing of future decarbonisation and energy policy for the UK; understanding this will be key for achieving the right long term solutions and appropriate levels of investment. This includes the approach to power, heat, storage and transport.
- Setting a timetable for those decisions, targets, carbon budgets, energy efficiency initiatives, etc. in the interim may provide some clarity to enable investment.
- In the absence of national policy, indications are that a ‘patchwork’ of regions or cities adopting their own approach may emerge. This may be driven in part by local supply sources. Further work is required to understand the risks and opportunities associated with this, and what the accompanying policy and regulatory framework may look like.

What the workshops told us: common themes



- To reliably and affordably meet the UK's future energy needs, whilst delivering on the 2050 climate targets, there is a need to promote innovation and new technologies in the gas industry.
- A coordinated & expanded approach to innovation funding may be helpful in ensuring that new technology is embraced across all aspects of the supply chain and whole energy networks.
- Technology can benefit consumers by helping to manage energy costs, as well as providing data and trends to industry.
- 'Willingness to pay' considerations are key to keeping long term projects on track.
- Resolving uncertainty around the UK's approach to Carbon Capture and Storage infrastructure and investment was also felt to be a priority.

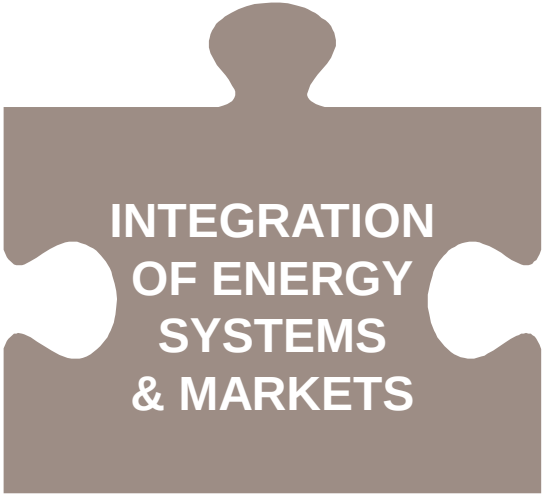
What the workshops told us: common themes

- There is uncertainty around what a future decarbonised UK energy landscape will look like, therefore options for future use of energy networks and markets should be kept open at present, as far as it is possible and economical to do so.
- A timetable for delivery of targeted policies and framework revisions that promote greater optionality in GB's energy markets and systems would be helpful in providing a greater degree of investment confidence.
- In the meantime, an approach to identifying and incentivising 'no regrets' options is required.
- In addition, projects should be identified which reduce barriers to the market, and support emerging innovations and technology e.g. improving network connections, reviewing gas quality, considering the role of storage, CCS etc.

What the workshops told us: common themes

- Consumer buy-in will be key; the end consumer needs to be part of the energy debate, rather than simply being told the answer.
- This will mean providing sufficient clarity on the drivers for change in order to involve them in the decision making about the right solutions.
- It was felt that the gas industry could do more to explain to consumers the role of gas as a cost effective energy source for heat.
- In addition to affordability and the impact of change on consumer bills, policy-makers and energy industry participants should consider the impact of disruption to end consumers (domestic and industrial) as we transition towards the future.

What the workshops told us: common themes



- Current market design may not provide the right signals to deliver long term solutions for products and services that customers will need in the future.
- Running the gas and electricity markets in isolation of each other may lead to inefficient solutions, or may cause insufficient investment in one area that may be needed to support another e.g. gas storage and CCGTs to support intermittency in power generation.
- It would be beneficial to better understand the cross-market interactions, and the impact of a potential ‘patchwork’ of regional energy diversity.
- In the interests of facilitating greater operational and cost efficiencies that benefit customers, it may be appropriate to consider new approaches, including:
  - removing some barriers to integration
  - introducing greater consistency and alignment of policies across gas and electricity
  - sharing of modelling, analytics and planning processes

What the workshops told us: common themes

- Moving to greater regional diversity in energy sources and technology is likely to open a debate about the impact of targeting costs (e.g. within energy markets and regional areas), versus socialising the costs nationally. One area for consideration will be how this could impact end consumer bills in the different regions.
- Industrial users in particular were concerned that being the ‘last on the pipe’ would leave them bearing the full cost of the gas network, with no available alternative to gas, and hence felt that revisions to some elements of the market may be needed. The link to wider GB industry prosperity was stressed.
- Global economics will play a key role in whether the GB market attracts gas supplies, including LNG.
- Charging regimes in the future should meet future investment needs and encourage security of supply.

nationalgrid

Other topics identified

Gas & Electricity Interactions	Security of supply	Increased uncertainty and unpredictability of energy supply and demand (volume, location, technology and resilience), when combined with the lack of interconnected energy systems, may potentially decrease security of supply across GB.
Heat	Consumer engagement	There was some debate over who should lead the engagement with end consumers about the future of heat, and how they could take advantage of online data modelling and social media.
Supply	Storage	Continued availability of storage may help manage exposure to price volatility; storage should be considered in future modelling and scenarios.
	System flexibility	Introducing system flexibility would better manage volatility of gas demand however there is currently no mechanism to signal flexibility requirements.
Industrial demand	Gas quality	Increasingly diverse ranges of supplies, quality and demand patterns means an increased need to manage those variable gas specifications.

Next steps

- We are currently using the feedback received during the workshop discussions, along with feedback from bilateral meetings, and industry and academic papers, to develop an update report on the FoG project, to be published at the end of May 2017.

- If you have any questions in the meantime please get in touch through the FoG microsite: http://futureofgas.uk

We would like to take this opportunity to thank everyone who participated in the workshops