



Department
of Energy &
Climate Change

Consultation on ensuring regulation encourages innovation

January 2016
URN 15D/554

The consultation can be found on DECC's website:

<https://www.gov.uk/decc>

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Contents

Contents.....	3
1. General information	4
2. Introduction and consultation questions.....	5
3. Current DECC and OGA activities	7
4. Stakeholder engagement by other energy sector regulators.....	11
5. Next Steps	12

1. General information

Purpose of this consultation:

The department is seeking comments on how DECC's and the OGA's regulatory activities interact with innovation in the energy sector in the form of emerging technologies and new business models.

Issued: 14 January 2016

Respond by: 11 February 2016

Enquiries to:

Better Regulation and Appraisal Team

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Consultation reference: URN 15D/554 – Consultation on ensuring regulation encourages innovation

How to respond:

Your contribution will be most useful if framed in direct response to the questions posed, though further comments and evidence are also welcome. Responses can be provided in electronic format only.

Confidentiality and data protection:

Information provided in response to this call for evidence, including personal information, may be subject to publication or disclosure in accordance with the access to information legislation (primarily the Freedom of Information Act 2000, the Data Protection Act 1998 and the Environmental Information Regulations 2004).

If you want information that you provide to be treated as confidential please say so clearly in writing when you send your response to the consultation. It would be helpful if you could explain to us why you regard the information you have provided as confidential.

A summary of responses will be placed on the [GOV.UK website](#). Unless a respondent opted for a confidential response, the summary will include a list of names or organisations that responded but not people's personal names, addresses or other contact details.

2. Introduction and consultation questions

Innovation in energy and role of regulation

Innovation is a key driver of productivity and competition in markets. In the energy sector, innovation in the form of new technologies, business models, and ways of governing the energy system can benefit energy consumers in many ways. Innovation in the energy sector can deliver lower costs, greater resilience and reliability of energy supply, as well as enable cost-effective decarbonisation.

To ensure the UK benefits from innovation and competition in energy, the right conditions need to be in place. Economic, environmental, and other regulations can have significant effects on the ability of businesses to innovate in energy. Regulations therefore need to be flexible enough to enable innovation, while continuing to deliver their intended objectives. Equally, innovation can pose important challenges to regulations if it makes them no longer fit-for-purpose.

The government's 'Innovation Plans'

In its Productivity Plan¹, the government required all departments to publish an 'Innovation Plan' by spring 2016. The purpose of each Plan is to set out how departments and regulators are adapting legislation and enforcement frameworks to enable innovation in the form of emerging technologies and disruptive business models.² Consultation about draft plans will enable stakeholders to offer their views to departments and regulators on how effective the current regulatory framework is in enabling innovation.

DECC's Innovation Plan will address activities of the department in this area, as well as those of the Coal Authority, Oil and Gas Authority (OGA), Environment Agency and Office for Nuclear Regulation (ONR). The Office of Gas and Electricity Markets (Ofgem) will produce its own Innovation Plan in light of the progress they are already making in exploring how to take a more principles based approach to retail market regulation which would provide room for innovative business models.

The stakeholder engagement process

All regulators in the energy sector except the OGA are conducting parallel stakeholder engagement exercises. DECC's consultation exercise will also cover the activities of the OGA because of the department's fundamental role in developing the rules under which the Authority will operate. The findings from the separate stakeholder engagement exercises will then be brought together and reviewed to assess whether the regulatory framework in energy

¹ Available online at: <https://www.gov.uk/government/publications/fixing-the-foundations-creating-a-more-prosperous-nation>.

² These Plans are not intended to set out departments' plans for spending on innovation.

remains fit-for-purpose in an environment of rapid technological change, with a view to informing DECC's final Plan.

As such, we are seeking specific responses relating to DECC's and the OGA's activities to the following three questions:

- 1. How can legislation and enforcement frameworks help support new technologies and business models to encourage growth?**
- 2. How is new technology likely to shape the energy sector? and**
- 3. How can regulators better utilise new technologies to generate efficiency savings and reduce burdens on business?**

We would welcome general views on the overall theme as well.

If your comments relate to an area directly managed by regulators other than the OGA, please direct them to the relevant contacts set out in Section 4. While this consultation does not cover any regulation relating to devolved powers, we would also welcome any comments related to relevant knowledge sharing between DECC, the OGA, and the devolved administrations.

For all questions please include specific examples where possible, and/or provide detailed explanations and evidence to support points made. Where relevant, please also include links to information or other evidence that should be taken into consideration.

The following section sets out at high level some examples of DECC's and the OGA's key activities in this area.

3. Current DECC and OGA activities

Energy is an area of active innovation, driven by the underlying economics of producing and using energy more efficiently, and the long-term objective of decarbonising energy. There is a challenging role for the government in ensuring that regulations and market frameworks support technological innovation and new business models, while ensuring effective safeguards, particularly around safety and consumer protection, remain in place. DECC and regulators are conducting significant work to adapt legislation and enforcement across a wide range of technologies to enable innovation, as well as to assess how technology will and can shape the energy sector in the future.

DECC and the OGA are encouraging innovation by adapting regulation in many aspects of the energy sector. The following examples provide a brief account of some of this ongoing work. They are not intended to be comprehensive but rather illustrative of the interaction between innovation and regulation in the sector.

UK Continental Shelf (UKCS)

Following the government's decision to accept fully the recommendations of the Wood Review³ and establish the OGA, DECC and latterly the OGA have conducted significant engagement with industry to establish a new regulatory framework (MER UK Strategy)⁴ in order to maximise the economic recovery of hydrocarbons from the UKCS. This engagement has included, in particular, discussions about changing ways of working to encourage innovative business models and collaboration amongst the upstream industry. In addition, the Energy Bill, currently before parliament, places an obligation on the OGA to have regard to innovation when exercising its functions. Future work will similarly explore innovative approaches to regulation, in order to set up a business environment favourable to new business models and technologies.

The OGA is also working to unlock potential benefits by assessing the status of technological and business operations. Some of the areas currently under consideration in the upstream oil and gas sector are:

- Small Pools – 1.5 billion barrels of oil equivalent locked reserves could be economically recovered by reducing costs by 30 to 50%. Small pools could generate up to £200bn of new investments.
- Wells – Reducing all-in wells costs by 50% could increase drilling activity and enable the development of significant resources.
- Asset Integrity – Enhancing asset inspection could deliver significant benefits by improving production efficiency and reducing maintenance costs in the long term.
- Decommissioning – New solutions could be explored to deliver cost reductions in the decommissioning process.

³ Further details about the implementation of the Wood Review can be found at: <https://www.gov.uk/government/groups/wood-review-implementation-team>

⁴ The consultation on the Strategy can be found here: <https://www.gov.uk/government/consultations/maximising-economic-recovery-of-offshore-uk-petroleum-draft-strategy-for-consultation>

In addition, the OGA is developing a technology strategy and five-year road map to support a 30-40% efficiency improvement, working closely with industry and government to encourage collaboration, innovation, consistent evaluation, and early-stage technology planning across the value chain.

Smarter energy systems

A smarter energy system, based around new forms of flexibility, could help the UK meet its energy needs more cost effectively. Over the period to 2050, this could mean that less power generation needs to be built and energy networks could require less reinforcement. It could also reduce the cost of balancing the energy system in real time. These smarter solutions include demand side response (DSR), storage, and smarter networks. Interconnection also plays an important role. Together, these solutions could help to reduce overall system costs, and move the UK towards a more flexible energy system. External estimates suggest that overall system costs could be reduced in the order of tens of billions of pounds in the period to 2050 under a smarter, more flexible, system.

The government has already committed to ensuring that every home and small business in the country is offered a smart meter by the end of 2020. Smart meters are a critical building block towards a smarter energy system, creating new opportunities for DSR and storage. In addition, decisions taken in this Parliament will influence the extent to which smarter, more flexible, solutions become widespread in the 2020s. The growth in distributed generation and new market entrants are already changing the face of our energy system. New smart products and services are also giving consumers more control over their energy use and helping to lower their bills.

Going forward, DECC will be working closely with Ofgem over the coming months to:

- Consider shorter-term policy options to deliver a smart energy system, including a timetable for their implementation, if appropriate. This includes:
 - Removing regulatory barriers to storage and DSR;
 - Delivering clearer price signals to allow more flexibility from consumers; and
 - Catalysing innovation, so that new solutions can emerge and compete in the market.
- Assess whether more fundamental changes are required to deliver a future smart system, including in the operation of the market and existing institutional arrangements.
- Develop a better understanding of the potential costs and benefits associated with delivering a smart energy system.

The department wants to engage stakeholders broadly as part of this work, and plans to consult in spring 2016. Ahead of this, the department has published *'Towards a smart energy system'*⁵ which sets out the potential benefits of a smarter energy system in more detail, as well as the potential barriers and market failures that could stand in the way of developing smart energy.

⁵ Available online at:

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/486362/Towards_a_smart_energy_system.pdf.

Innovative Nuclear Technologies

The government is doubling spend on energy innovation to boost energy security and bring down the costs of decarbonisation. As part of this, the 2015 Spending Review and Autumn Statement committed at least £250m over the next five years in an ambitious nuclear research and development programme that will revive the UK's nuclear expertise and position the UK as a global leader in innovative nuclear technologies. This opens up opportunities for innovation in the nuclear landscape, including those areas which have been identified by the government's Nuclear Innovation and Research Advisory Board:

- Advanced nuclear fuels
- Advanced reactors
- Fuel recycling and waste management
- Essential enablers and supporting tools
- Small Modular Reactors
- International collaboration
- Medical isotopes
- Nuclear Data management

In parallel to DECC, the ONR is also working on accommodating nuclear innovation and, as part of this exercise, is consulting on their regulatory work. If your response relates to an area managed by ONR, please consider directing your contribution to them, following the guidance in Section 4.

Shale gas

The government has prioritised support for development of a domestic industry to produce shale gas. This industry would be based on technology (principally directional drilling and high-volume hydraulic fracturing) which is new to the UK, though in widespread use in the US for some time. DECC, through the Infrastructure Act 2015, amended mineral rights provisions to streamline and clarify the position of landowners and set additional legislative requirements of operators designed to meet public concerns around the technology.

The principal regulators (including the Environment Agency, Health and Safety Executive, and the OGA) of the industry have also adapted existing processes (for example, for the regulation of other extractive industries) to the expected demands of shale gas projects, as well as creating new bespoke processes. For example, the OGA has worked on the requirements of operators to monitor levels of seismic activity.

Legislation sets high standards for oil and gas extraction to protect people and the environment. Regulators do not specify particular techniques that oil and gas operators need to use, although they would expect the technique to be in line with established good practice and meet the required regulatory standard. This allows new technologies to emerge and innovation to happen.

Heat Networks

Heat networks currently represent a small proportion of total UK heat use – providing around 2% of heat demand from buildings. However, they offer a cost-effective route to decarbonising heat in denser urban areas, with the potential to supply between 14% and 43% of total UK heat

demand from buildings by 2050. Given this potential, DECC is supporting the wider deployment of heat networks as an important part of our transition to a secure and affordable low carbon future.

Heat networks are largely unregulated with the exception of metering and billing regulations introduced as a result of the EU Energy Efficiency Directive. Given the current size of the sector, DECC has supported industry-led initiatives that represent a form of self-regulation, in order to promote an approach to regulation and enforcement that is compatible with the business models in the sector. Some of the ways in which DECC has supported the adaptation of regulation to new business models are:

- Providing start-up funding for an independent voluntary consumer protection scheme – ‘Heat Trust’ – launched in November 2015. The scheme will enable consumers to access an independent process for settling disputes via the Energy Ombudsman, to compare their bills, and to have consistent, common service standards and levels of protection. A cost comparator tool will also be published.
- Supporting the Chartered Institution of Building Services Engineers (CIBSE) and the Association for Decentralised Energy (ADE) to develop a technical code of practice for heat networks, launched in July 2015. The code sets out minimum technical standards to drive up the quality and efficiency of networks. It covers standards on initial design, construction, commissioning, and on operation and maintenance.

Going forward the government will be monitoring the impacts of the industry-led measures and the EU regulations and will assess, based on their record, whether further action is needed. In addition, as part of the Spending Review announcement, the Government will provide over £300m of funding on heat networks over the next five years, generating enough heat to support the equivalent of over 400,000 homes and leveraging up to £2bn of private and local capital investment. This funding will provide an opportunity to drive new network development, new business models, and support innovation, such as recovering heat from industrial processes and transporting it to homes and businesses.

Energy Efficiency

DECC is supporting the Bonfield Review⁶ into Consumer Advice, Protection, Standards, and Enforcement, to explore opportunities to improve outcomes for consumers looking to invest in energy efficiency and renewable energy, with a focus on improved monitoring and enforcement of poor quality and ineffective installations. In addition, further areas of the department’s work also have potential to stimulate demand for innovative products or the creation of new business models. For example, the longer-term certainty provided by the Spending Review announcement that energy supplier obligations to provide energy saving measures will continue to 2021/22. The government has also consulted on improving the business energy efficiency policy landscape to create a simpler, more effective regulatory framework that increases business investment in energy efficiency measures.

⁶ <https://www.gov.uk/government/publications/bonfield-review-terms-of-reference>.

4. Stakeholder engagement by other energy sector regulators

All energy sector regulators except the OGA are conducting parallel stakeholder engagement exercises which will also cover how innovation can enable regulators to reduce business burdens. Any comments as to how innovation can reduce regulatory burdens resulting from the OGA's activities can be sent to DECC via this consultation. If your comments relate to an area directly managed by regulators other than the OGA, please direct your comments to the relevant contacts below:

- Ofgem: mark.wagstaff@ofgem.gov.uk
- ONR: webpage: <http://www.onr.org.uk/consultations/2016/innovation-plan/index.htm>
 email: onr.policy@onr.gsi.gov.uk
- Coal Authority: claremccallan@coalauthority.co.uk
- Environment Agency: futureregulation@environment-agency.gov.uk

5. Next Steps

DECC and regulators will consider stakeholder responses to develop a final Innovation Plan that will be published in spring 2016. This will include an account of how DECC and regulators are working to adapt regulation and enforcement to support innovative technologies and business models. Stakeholder feedback from this exercise will be reviewed to assess whether there are further areas to explore in order to ensure the regulatory framework remains fit-for-purpose in an environment of rapid technological change. Ofgem will be producing a separate Innovation Plan covering their activities in this area.

