Adapting regulatory models to drive innovation

ESMAP Knowledge Exchange Forum: Strengthening Energy Systems in a Time of Technology Disruption

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29/11/17
• Context – the British energy sector
• What innovations are we seeing?
• How should regulation respond?
Electricity value chain

Key features:

- Unbundling
- Competition in generation, support contracts for renewables (and new nuclear) and for capacity
- Competition in retail – two-tier market, price caps coming back
- Revenues capped for monopoly networks
Electricity supplied by fuel type

2017 records:

21 April: first day in over 100 years with no coal generation

7 June: renewable generation peaked at over 50%, renewable + nuclear at over 70%, grid mix CO2 content fell below 100g/kWh

11 Sept: offshore wind at “£57.50”/MWh

GB power sector greenhouse gas emissions down 64% from 1990 to 2016 – biggest change happening since 2012
Case study – solar PV
Outturn vs expectations. Cumulative capacity now stands at approx. 12GW
The energy sector is changing

We expect...

- An increasingly flexible system
- A more decentralised energy sector
- Increasing interdependence
- A more diverse commercial environment
- New innovative services for consumers
- Whole systems innovations

Driven by...

- Technological change
- New business models
- Behaviour
- Economic developments
- Decarbonisation agenda
- Policies / incentives
### How should regulation respond?

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<th>Use regulatory principles</th>
<th>Design for outcomes rather than being prescriptive</th>
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<td>Flexible and iterative</td>
<td>Recognise a changing sector while protecting consumers</td>
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<td>Allow breathing room</td>
<td>Foster safe regulatory spaces for new ideas to be trialled: Sandbox model</td>
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<td>Open and available</td>
<td>Designate specialist teams to work with entrants; Listen and learn, be open to radical change <a href="http://www.ofgem.gov.uk/innovation-link">www.ofgem.gov.uk/innovation-link</a></td>
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**Fundamental uncertainty: prioritise agility, markets, economic analysis**
What are we seeing?

Innovating existing services

- Retail: switching services, apps
- Energy storage and efficiency business models
- Smart devices and demand response services

Disruptive ideas

- Electric vehicle charging concepts
- Integrating smart homes with smart grids
- Peer-to-peer trading
- Blockchain use cases
- ‘Disintermediation’ and disaggregation of energy supplier services
- Network management: AI, robots

Centrica, Nov 2017: “What was recently considered the future (like storage and microgrids), is now considered the past. Things we thought were 10 years away (like peer-to-peer energy sales and local energy markets) are happening now.”
The RIIO Framework

Revenue = Incentives + Innovation + Outputs

Constraint set up front to ensure:
- Timely and efficient delivery
- Network companies are financeable
- Transparency and predictability
- Balance between costs faced by current and future consumers

Deliver outputs efficiently over time with:
- 8 yr control
- Rewards/penalties for delivery
- Upfront efficiency rate

Technical and commercial innovation encouraged through:
- Core price control incentives
- Option to give third parties a greater role in delivery
- Innovation stimulus package

Outputs set out in clear ‘compact’, reflecting expectations of current and future consumers

RIIO 1 controls started in 2013 and 2015
Conclusions for GB

Change is accelerating

Technology, business models, consumer behaviour...

A great opportunity

Regulatory response:

- Balance predictability (regulatory stances) and change
- Markets where feasible – more flexible
- Cost and value reflective pricing; minimise distortions
- Principles where outcomes matter, prescription for consistency
- Network regulation based on outcomes and incentives (RIIO)
- Support for trials and demonstration
- Practical help for innovation
Our core purpose is to ensure that all consumers can get good value and service from the energy market. In support of this we favour market solutions where practical, incentive regulation for monopolies and an approach that seeks to enable innovation and beneficial change whilst protecting consumers.

We will ensure that Ofgem will operate as an efficient organisation, driven by skilled and empowered staff, that will act quickly, predictably and effectively in the consumer interest, based on independent and transparent insight into consumers’ experiences and the operation of energy systems and markets.