Sustainability first

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Driving transformational innovation in the utilities sector: a briefing paper

1. Sustainability First is a think tank and charity that works in the energy, water and telecoms sectors. We have significant experience of consumer and public interest issues; regulation, innovation and the demand side of these sectors (see www.sustainabilityfirst.org.uk). We have experience on the evaluation panels for both the Ofgem and Ofwat innovation funds.

2. In our reports on innovation in the energy and water sectors, we have distinguished between three different categories of innovation: long-term / transformative; short-term / incremental; and enabling. We highlighted that innovation can be technological, consumer facing, process based, commercial and institutional – and that all are important in the sectors. The reports also explored the appropriate role for government and regulators in delivering public interest outcomes in regard to these different types of innovation and proposed a set of principles that they may want to consider to enable a more adaptive future approach to transformational change (see table below).[1]

3. Our paper 'circling the square: rethinking utilities regulation in a disrupted world'[2] noted that monopoly can create a number of market failures of which a tendency to underinvest in long term R and D/innovation is one. Far from addressing this market failure, past economic regulation may even have exacerbated it through an excessive focus on short to medium term price controls aimed primarily at ensuring there is downward pressure on bills. In a disrupted world, with the burning platforms of climate change adaptation and mitigation and significant technological change, we believe the time is right, if not overdue, for a review to how best to incentivise long term innovation, assessing how far the energy systems catapult, the net zero innovation portfolio, with the Ofwat and Ofgem innovation funds, and projects such as Hynet, the hydrogen production scale pilot, are meeting this need and how they can work better together.

4. We rather doubt that concerns about innovation are anything like as prevalent in telecoms as they are in energy and water.

5. We are unconvinced that much more needs to be done to incentivise what we would call shorter term incremental innovation – where returns are within price review periods. Examples here include internal process reengineering, investment in some forms of IT (e.g. billing software), and lean/six sigma approaches.

[1] https://www.sustainabilityfirst.org.uk/images/publications/new-pin/New-Pin_Innovation_in_Energy__Water_and_Regulation_and_Government_Interventions_FINAL_Discussion_Paper_-min.pdf

[2] https://www.sustainabilityfirst.org.uk/images/publications/other/SF_Future_of_utilities_regulation_Discussion_Paper_FINAL.pdf

6. We should stress that some good practice exists. The opening of regulator's innovation funds to bids from outside water and energy companies is welcome. Some of the focus of the funds is well judged (e.g. Ofgem's 'strategic themes'). There appears to be good access to smaller utility companies.

7. A final issue concerns the plethora of pilots in utility sectors, but particularly in water. There is an urgent need to review how to move to systematic mainstreaming of successful pilots, and how to create pilots at 'production scale' to enable easier mainstreaming: a notable production scale pilot would be Hynet, and we hope the government's approach to small modular nuclear reactions may follow this example.

8. Further issues around long-term transformational innovation include:
    a. The issue of scale. For many fundamental innovations a co-operative approach across companies is required. Such approaches have been a weakness of the water sector in particular, in part due to a real or perceived risk from competition law and a focus on comparative / yardstick competition. Our work with Slaughter and May indicates that these legal risks tend to be overstated.
    b. The question of where Intellectual Property (IP) best sits, and how it can be exploited in a world where many companies have (and have tacitly been encouraged to move towards) debt which is in effect securitised on a regulated only business. This can inhibit IP exploitation and therefore reduce incentives to innovate (though we acknowledge that the idea of company's making profits out of customer funded innovation is difficult).
    c. The fact that even when they have related non-regulated businesses utility companies have not traditionally been successful in exploiting international markets, whereas parts of their supply chain have been. This may suggest that in order to most benefit UK plc in a post Brexit world innovation needs to be conducted with and through supply chains, alongside appropriate safeguards for English and Welsh water bill payers.
    d. The absence of a water catapult, meaning that there is no 'testbed' for many riskier innovations. Innovation support in the sector (particularly for tech innovation) might work best where it can utilise and work through other centres – such as the high tech manufacturing or connected places catapults.
    e. A primary focus in innovation funding on direct network benefits, rather than on the kind of multiple outcomes projects which are often needed in todays interconnected world.
    f. We are not convinced that UK Research and Innovation (UKRI) who seem to co-ordinate much of the Ofgem funds – have succeeded in meaningfully taking forward collaboration between innovators/funds and sharing across networks. Co-ordination with the universities is welcome but there is also a possible capability gap in terms of learning lessons/evaluation and mainstreaming.

How to embed innovation – A possible schema for different types of innovation

Type of innovation	How to get this type of innovation embedded?
Short-term	Revenue / cost pressure – 'No other way' & 'why wouldn't you?'
Incremental /	Pressure from new staff with different skills / experience – 'Why don't we…'
	Supply chain pressure – 'This is the new normal'
	Customer / stakeholder pressure – NB scope limited where no competitive pressures
	Communication & dissemination – of lessons learnt within the business and between businesses
	Training in new approaches – changing / normalising 'professional' expectations
	Open culture – space and time to accept failures as learn / refine new approaches
	Test / trial facilities – sandboxes, innovation labs etc to experiment and build confidence in new approaches
	Risk-reward sharing frameworks for delivering co-benefits – enabling value stacking etc
	Clear external policy & regulatory signals / goals on outcomes to be delivered - particularly important if there is no immediate obvious financial business benefit (eg innovation around vulnerability), where there are externalities, where the benefits extend beyond the company to the wider system in which they operate etc
	Incentives / rewards to deliver new approaches – which are aligned with desired outcomes – external (regulatory) & internal (performance and remuneration)
	Changing standards / introducing new standards to mandate new approaches
	Facilitated strategic collaborations – by policy makers, regulators or other third parties
Long-term	Funding – clear simple frameworks that bridge the 'valley of death'
Transformational	Institutional frameworks that enable cross sectoral collaborations to thrive

Source: Sustainability First. NB – approaches not mutually exclusive.

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