

# INNOVATION IN UK UTILITIES:

A STATE OF THE NATION REPORT

**UtilityWeek™**

— In association with —



## UtilityWeek™ Live

**Innovation** is a key theme at **Utility Week Live 2016, May 17-18.**

Presentations and debate sessions will address sector specific and pan-utility innovation challenges, including those identified in this report.

For more information go to [www.utilityweeklive.co.uk](http://www.utilityweeklive.co.uk)

Utilities have the tools and technologies available today to do this. Digitisation, mobile, cloud computing, simulation and virtual reality, social media, the Internet of Things and big data combined with powerful analytics. All of these technologies have transformed parallel industries like manufacturing and retail and the time is now for utilities to embrace that transformation too. Utility regulators know this and, as contributors here have recognised, they are finding a range of ways to incentivise and allow room for innovation across utility market segments.

All that said, it is one thing to recognise the drivers and potential tools for innovation and quite another to achieve it in a sustainable and strategic way. Organisations across all sectors find it difficult to build self-sustaining and effective innovation cultures – especially when collaboration is required across business units and with external partners. As this report resoundingly proves, utilities are no different. But with improved awareness of best practice in accelerating innovation, gaining workforce buy-in and tracking the impact of innovation on business as usual, the potential for redefining utilities as nimble, creative and forward thinking organisations is much greater than cynics might think.

**Arun Krishnamurthi**  
Vice President and Global Head, Utilities, Wipro

This research was compiled and written by  
**Jane Gray**, deputy editor, Utility Week

**D**ecades of pressure from regulators, policymakers and investors have cemented a culture of caution in the UK's utilities industry. Innovation, often regarded as chancy and tricky, has therefore been forced to take a back seat while secure investments in long-term infrastructure, which can offer modest but reliable returns, have taken precedence.

But despite the particularities of their regulatory environment, this report shows that in many ways utilities are like any other business and today, more than ever, they need to innovate to survive. Utilities must find ways to be resilient amid a crescendo of competition from unconventional players, climate change, cyber threats and rising customer expectation. They must maintain and create new ways of delivering the highest levels of service, and they must satisfy their shareholders.

Such a combination of pressures cannot be successfully addressed without innovation - innovation moreover which reaches into every part of the organisation to reinvent business processes and ways of thinking about service as well as technical solutions and operations.

Those who succeed in building strong, smart innovation cultures which make the most of available resources – both in terms of people and technology – will form a pivot point for the industry, swinging it in a new direction. They will find ways to bring new products to market, create new pricing models and new ways of delivering services and connecting with customers.





- 1 Context & scope
- 2 Executive summary & innovation barometer results
- 3 Water companies
- 4 Gas & power networks
- 5 Energy supply companies
- 6 Conclusions

**It is well established and widely reported that energy systems globally are facing radical transformation at the hand of intractable forces such as climate change and demographic shifts. Water networks too are increasingly grappling with ominous – sometimes immediate – resource problems and a requirement to become smarter and more efficient in the way they manage water for urbanising societies.**

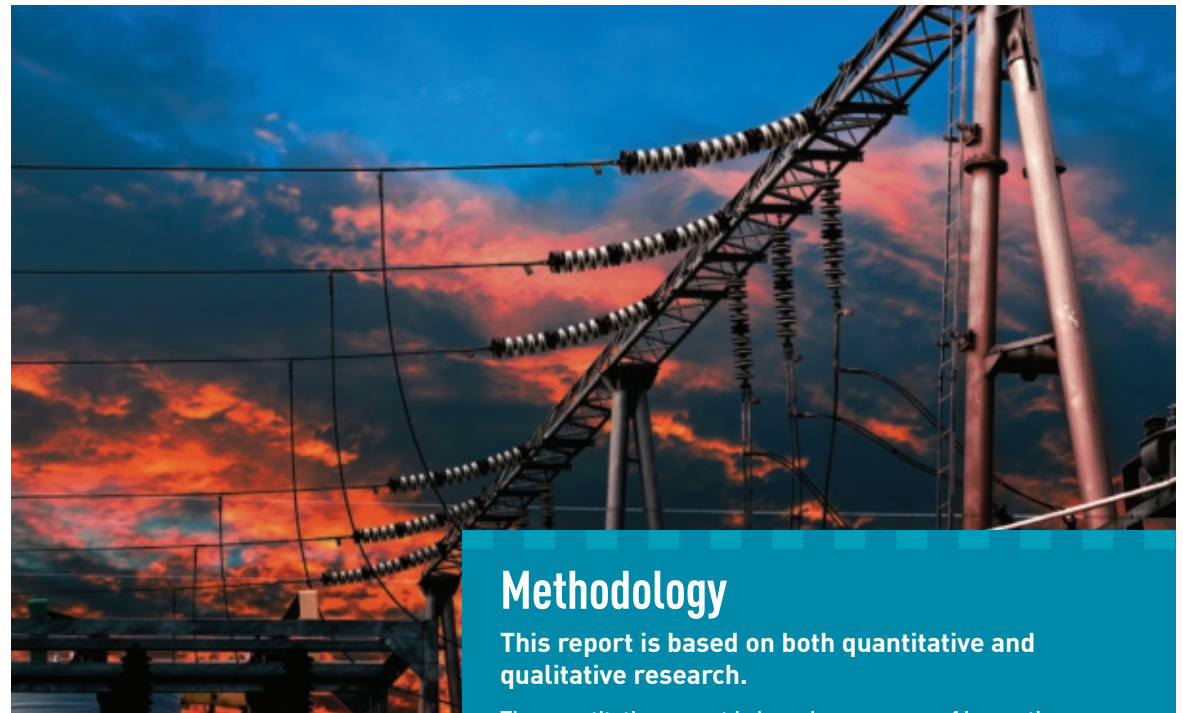
The UK is not immune to these challenges, though they are set in the context of a unique – many say world leading – environment of policy and regulation.

In recent years, a number of changes have been made to this environment in an attempt to encourage and better foster innovation within individual utility companies and across the sector. Across gas and power transmission and distribution, for example, the iterative introduction of the RIIO (Revenues = incentives + innovation + outputs) regime and innovation funding streams are commonly thought to have brought benefits in terms of the quantity, focus and pace of innovation in the energy system. In water, the introduction of outcome delivery incentives (ODIs) during PR14 has similarly altered the emphasis of

regulation in a way which allows greater ingenuity and flexibility in achieving broadly desirable outcomes.

This report, commissioned by global technology and consulting firm Wipro, explores current sentiment among those responsible for innovation within UK utilities. It investigates the extent to which they feel their organisations have acknowledged and are adapting to disruptive forces which require innovation – both independently and in response to regulatory incentives. How well do they feel their organisations are doing in accepting and responding to the need to change the technologies they use, the markets they operate in and the services they deliver in order to be resilient and successful businesses in years to come? How successful have they been in building cultures and governance structures which nurture innovation?

The scope of this report takes in opinion from a wide range of organisations operating in: gas transmission and distribution, power distribution, energy supply and water networks. Organisations representing suppliers and individuals with regulatory expertise were also asked for their input. Power generation and transmission companies were not approached in the course of the research.



## Methodology

**This report is based on both quantitative and qualitative research.**

The quantitative aspect is based on a survey of innovation and technology leaders in UK utility companies, the results of which have been aggregated and anonymised. There were 29 respondents to this survey, the vast majority of which were from utility companies, with small representation from technology suppliers and training partners.

The qualitative aspect of this research is based on 15 in-depth interviews with innovation leaders in the UK utilities sector. The majority of these are employed by gas, power and water network operators as well as energy suppliers and mostly held roles at head of department, senior management or director level in terms of seniority.

Energy supply contributions included input from independent and start-up suppliers as well as incumbents. Again, the insight provided via these interviews has been anonymised for the purpose of this report.

## Interpretations of innovation

In compiling this report it is important to acknowledge that there are many different interpretations of innovation. This report includes reference both to incremental and disruptive innovation, with an emphasis on the latter. We define innovation as:

*“The application of new or novel technologies and ideas in ways which significantly alter or improve established ways of working in the sector.”*

**“ Utility companies around the world know that transforming their businesses comes down to a question of ‘when?’ – not ‘if’ ”**

Arun Krishnamurthi, global head of utilities, Wipro



adapt and thrive in a complex environment of change, significant sums must be set aside for innovation.

Levels of actual and proportional investment in innovation vary significantly between regulated utilities and energy supply companies. Funds allocated to innovation in large energy supply companies such as RWE and British Gas far outstrip the budgets available within regulated utilities, ranging up into the £100s of millions. Meanwhile, in start-up energy suppliers, innovation budgets are difficult to quantify but are considered to account for significant proportions of turnover since most are attempting to bring inherently different business models and customer propositions to market.

The reasons behind the wide gap in levels of investment between networks and energy supply are very clear, however. They relate to differences between market segments in terms of competitive drivers, regulation of company revenues and the risk appetite of investors.

**Despite varying levels of investment across different market segments and organisation types, all participants in this research agreed that investment itself is not a barrier to innovation in their organisation.** Far more challenging were issues faced around building strong cultures for innovation and ensuring the benefits of innovation are realised in business as usual.

In terms of regulation, which can often be seen as a barrier to innovation, participants in this research were largely positive about the extent to which their regulatory environment supports innovation. The least enthusiasm was shown by energy supply participants where there was, at best, a neutral feeling about the current landscape and a very clear message that regulation, while protecting consumer interests, should “get out of the way” of ambitious business- and service-model innovation. That said, there were some mixed feelings expressed about the potential for a government or regulatory fund for innovation in energy supply which might target the trialling of new service models or “pre-competitive” issues that would bring benefits to all consumers. There was little clarity on what these issues might be, however.

## Investment and regulation

**F**inding money to support innovation in utilities has been seen as difficult in the past due to the generally risk-averse nature of certain market segments – especially water networks and energy transmission and distribution. The often cumbersome nature of large utility companies, which have traditionally had capital-intensive long-term asset bases to support, has also been a blocker to investment.

Yet evidence given in the course of this research shows this is changing across the board. Investment is increasing and while in regulated utilities, this still relies to varying extents on regulatory incentives or funding mechanisms, there is a universal appreciation that for organisations to

## KEY FINDINGS

### Investment and regulation

- 1 Investment levels for innovation across energy and water networks are broadly similar in terms of percentage of turnover/revenues allocated to innovation. This is despite the different approaches taken by Ofwat and Ofgem to funding innovation
- 2 Innovation leaders in water and energy networks are broadly positive about the regulatory environment for innovation, although they highlight some areas where structures lead to unintended consequences (see relevant sections for more detail)
- 3 Investment in innovation among energy suppliers is seen as a priority across the board, although the actual amounts invested vary widely in accordance with the diverse mix of company types now active in the market
- 4 Larger energy supply firms find it much harder to adopt innovation outputs in business as usual operations
- 5 Innovation leaders in energy supply urge regulators to “get out of the way” of innovation.

### Culture and governance

- 1 Drivers for innovation are very similar across utilities, although innovation projects are very different in nature
- 2 Difficult to address aspects of innovation culture and governance are very similar across utilities
- 3 Collaboration, although commonly seen as essential to strong innovation, is patchy across utilities. Supply chain organisations in particular still complain that utilities are difficult to access and “cross-vector” innovation between utility silos is universally agreed to be nascent
- 4 The use of benchmarking tools to understand organisational approaches to innovation relative to others is sparse. This is despite those who have conducted benchmarking exercises reporting significant benefits as a result. Most prefer to take an informal, ad hoc approach to absorbing such lessons.

The satisfaction expressed across both water and energy networks with their regulatory innovation frameworks is perhaps surprising given the distinct approaches taken by Ofgem and Ofwat in this area. Whereas the former has taken the decision to introduce specific innovation funds for gas and power networks, the latter has preferred to rely on broad incentives to encourage outcome-led innovation. Both approaches seem to have resulted in similar levels of organisational investment in innovation.

“ **Regulated innovation funding can be ‘a double-edged sword’ that discourages companies from establishing more independent and sustainable approaches to investing in innovation”**

There is ongoing debate in the water sector about the potential merits of emulating the National Innovation Allowance or National Innovation Competition funding mechanisms that Ofgem has most recently introduced under the RIIO regulatory regime. Advocates feel this would be of particular help in stimulating supply chain innovation and a sense of opportunity for entrepreneurialism in the water sector. On the whole though, participants in this research felt that regulated innovation funding can be “a double-edged sword” that discourages companies from establishing more independent and sustainable approaches to investing in innovation.



## Culture and governance

Despite the varied technical and service delivery challenges face by the different utility market segments surveyed for this research, a number of similarities are apparent in certain areas. Most obviously, there are broadly consistent drivers for innovation and businesses also tend to find the same cultural and governance aspects of innovation difficult to optimise.

### DRIVERS

Regardless of the utility market segment represented, contributors to this report said the key drivers for innovation in their organisation are:

- **EFFICIENCY:** manifesting in; reducing cost to serve, asset performance improvement, process improvement, etc
- **CUSTOMER EXPERIENCE:** manifesting in; service innovation, bringing non-traditional business models to market, improving the reliability of services, engaging with community energy and self-consumption trends, etc

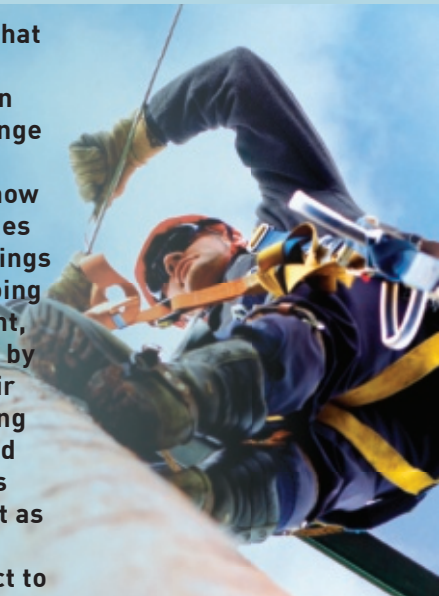
- **CLIMATE CHANGE:** manifesting in; integration of low-carbon technologies, decarbonising energy sources, energy efficiency, infrastructure resilience, etc
- **COMPETITION:** this is among the primary drivers of innovation in energy supply and in the advent of market opening for non-domestic water retail in 2017 it is becoming a significant influence on innovation in the water sector.

Despite the lack of true competitive drivers among monopoly energy networks, several contributors said regulatory structures have been successful in creating a competitive environment for innovation in the sector. (There was some debate over the extent to which this was a positive thing.)

## PROBLEM AREAS

Regardless of the utility market segment represented, contributors to this report said the aspects of culture and governance they find most difficult to optimise in order to support innovation are:

- **TIME:** making time for employees, beyond innovation teams, to engage in innovation activities
- **TRACKING TRANSFER TO BUSINESS AS USUAL:** as companies become more confident at conducting innovation projects and more projects reach completion, the focus of innovation leaders has turned to ensuring that innovation outputs are embedded sustainably in business as usual
- **COLLABORATION:** there is growing confidence and structure behind internal collaboration, which brings in a wide variety of business perspectives for innovation, however external collaboration is still felt to be difficult and laborious – especially “cross-vector” collaboration
- **UNDERSTANDING INNOVATION “BEST PRACTICE”:** as innovation leaders seek to improve the pace, focus and uptake of innovation, there is considerable interest in finding ways to “codify” innovation, measure innovation benefits more accurately and improve processes for managing innovation from concept creation to adoption by the business. One of the most popular ways of achieving these improvements is by learning how other organisations approach innovation. Some also advocate formal benchmarking.



“ Utilities know that they need to increase their focus on the customer and change the way they deliver services. They also know that digital technologies and the Internet of Things are key enablers in doing this, but at the moment, many seem paralysed by uncertainty about their strategies for deploying these technologies and so, maybe, progress is not being made as fast as it could.

“At Wipro we expect to see significant adoption and deployment of digital and Internet of Things-enabled technologies in UK utilities in the next 18 months to two years and I am confident that this will coincide with a step change in the understanding that companies show for customer wants, needs and behaviours. This understanding will then lead to innovations in service delivery.”

Arun Krishnamurthi, global head of utilities, Wipro

## Customer-centricity

It is notable that while customer engagement/satisfaction was identified as one of the common drivers for innovation across all utilities, it was also seen as an area in need of improved understanding and more strategic action.

In interviews, many felt that, while better outcomes for customers are targeted via innovation in their market segment, there is still “inside the box” thinking about how better outcomes can be achieved and that true customer-centricity had not yet been achieved in terms of cultures and strategies for innovation. There was also a feeling that establishing effective measures for customer benefit is still very much a work in progress.

A feeling that utilities lack maturity in their customer-centricity was also reflected in responses to the most recent Utility Week-Wipro Innovation Barometer. In this survey, 35 per cent said they felt their organisation’s innovation strategy is linked to clearly defined customer requirements.

It is reassuring to note when looking at these problem areas for innovation in utilities that leadership support for innovation was not commonly identified as a challenge. Most interviewees were extremely positive about the buy-in and engagement of their own senior management and board-level teams to supporting innovation and some reported directly to chief executives – for priority programmes if not all innovation activities.

This is positive since it is widely believed that establishing board-level behaviours that support innovation can be one of the most challenging areas in building strong innovation cultures. That said, some participants in this research did express the view that there is still room for improvement in terms of ensuring senior leaders are consistent and clear in their support for innovation.

The fact that similarities exist across utilities in terms of the drivers and challenges for innovation suggests that there could be significant value in

greater benchmarking and best practice sharing about processes and approaches to managing innovation, both between utility companies and with companies beyond the sector.

While all participants in this research said they enjoyed learning how other companies are managing innovation on an informal basis – by attending events and occasionally visiting other firms – very few had engaged in formal benchmarking to understand how their own organisational approach compares to others.

Where companies had conducted formal benchmarking exercises, however, all reported that the process had been very useful in highlighting “capability gaps” as well as refining innovation strategy.

The handful of participants who had used formal benchmarking all came from different utility market segments, but all said the process had provided their business with useful tools and knowledge with which to make significant improvements to their innovation processes.

# Barometer results

- 1
- 2
- 3
- 4
- 5
- 6

In addition to the interview-based qualitative research conducted for this report, it is relevant to note the results of the recent **Utility Week-Wipro Innovation Barometer**, which regularly surveys innovation and technology leaders in utilities companies.

The barometer is designed to take a temperature test of sentiment among these leaders about their organisational approach to innovation and the areas they are prioritising for breakthrough improvements/change.

A snapshot of the most recent barometer shows a number of correlations with the interview-based element of this research report:

- There was an almost equal divide between barometer respondents who felt that their organisation invests enough in innovation and those who did not.

This reflects ambivalence in response to the same question posed to participants in the interview-based elements of this report. Interviewees often said they felt their organisation invested enough/a significant amount but also often felt that they could invest more.

- Where barometer respondents felt that their organisation did not invest enough in innovation, the majority said this was because it is risk-averse.

This reflects sentiment expressed by interviewees working in water and energy networks.

Figure 1

## Do you believe your organisation invests enough in innovation?

YES 53.57% <sup>15</sup>

NO 46.43% <sup>13</sup>



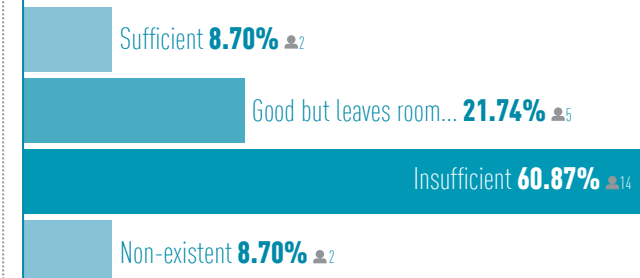
“ It is notable that while customer engagement/satisfaction was identified as one of the common drivers for innovation across all utilities, it was also seen as an area in need of improved understanding and more strategic action”

# INNOVATION IN UK UTILITIES

- There was an almost equal division between barometer respondents who felt that innovation is embedded into the culture of their organisation and those who do not, with a slightly higher number being more pessimistic (51%). Interestingly, when asked if their organisation had a culture which nurtures innovation, most said “yes” in interviews. However, they always went on to qualify this with ways in which the culture could be more supportive. It may be that the barometer results reflect this room for improvement.
- The two areas highlighted as the biggest barriers to innovation were:
  - Regulatory issues (33.33%)
  - Cultural issues (45.83%)
 These concerns are reflected in the structure of later chapters of this report, which each look at regulatory and cultural perspectives on innovation.
- 54% of respondents feel that their organisation’s innovation ambitions are clearly linked to the big picture challenges of the future; just 35% believed them to be focused around well-defined customer requirements. The confidence of barometer respondents may reflect the clarity provided by innovations strategies and innovation reports required among energy networks. However, it is largely at odds with sentiment expressed in the water sector, where innovation strategy was less confidently expressed. The low proportion of barometer respondents who felt that innovation ambitions were clearly linked to customer requirements should be a source of concern, since all contributors to the interview-based element of this research cited customer experience/satisfaction as a key driver for innovation.

Figure 2

## Do you feel that collaboration between your organisation and organisations outside of the utilities industry to innovate on common challenges, or to improve your approach to innovation, is:





- 65% of respondents feel their organisations are somewhat successful at adopting valuable innovation outputs into business as usual.

This sentiment is reassuring in that it suggests learnings are being adopted, however it also reflects evidence given in interview-based research that the tracking of innovation application in the business is something businesses are keen to improve on.

- 52% of respondents said cross-departmental collaboration within their organisations is an area in which they need to improve in order to support innovation.

This reflects opinions expressed in interview-based evidence that central innovation teams are seeking to improve on the way they interact with those conducting innovation projects in the business, and the way in which learnings from innovation projects are shared across the business.

Figure 3

Do you feel that innovation is embedded into the culture of your organisation?

YES 48.15% 

NO 51.85% 

- 43% of respondents said they felt that collaboration between their organisation and other companies in the utility industry was insufficient, while 61% said they felt that collaboration with companies outside the sector was insufficient.

This reflects similar findings in interview-based evidence submitted for this report, where collaboration with other utilities was often felt to be patchy. It also reflects opinions expressed by supply chain representatives who said that, despite some recent improvements in the expression of innovation priorities, utilities often seem inaccessible to external partners seeking to bring innovative solutions to market – especially small and medium sized firms.

Other notable findings from the most recent Utility Week Wipro Innovation Barometer include:

- 48% of respondents said they felt utilities could learn a lot about innovation from the digital technologist sector
- 67% of respondents said they were somewhat concerned about the availability of skills to support innovation.

Figure 4

Do you feel that collaboration between your organisation and other companies in the utility industry to innovate on common challenges is:

Sufficient 17.39% 

Good but leaves room... 39.13% 

Insufficient 43.48% 

Non-existent 0% 



Figure 5

How successful would you say your organisation is at ensuring valuable innovations are adopted quickly as business as usual/ have a rapid time to market?

Extremely successful 0% 

Somewhat successful 65.22% 

Unsuccessful 34.78% 

Very unsuccessful 0% 

“It’s great that innovation leaders in utilities see the digital technology sector as a source of inspiration. This makes good sense given that digital technologies are so important to the future of smart utilities and there’s no doubt that learning about approaches to digital innovation is something Wipro can help with – it’s our core competency”

Jeremy Leach, head of European digitisation practice, Wipro



**W**ater is fundamental to life. Without secure and reliable access to safe water, society and the economy would collapse.

This underlying imperative has long been recognised as both a driver for and barrier to innovation in the UK water sector. It provided the foundation for invaluable advances in public health over the last century, especially in the years since privatisation of the sector and the establishment of the Drinking Water Inspectorate in 1990.

It is also, however, the root cause for significant risk aversion in the sector and the establishment of a potentially over-cautious attitude to change which has been reinforced over the years by the influence of generally conservative shareholders.

Interviews conducted in the course of this research with innovation leaders in the water sector suggest that recent and emerging developments within the water sector are pushing companies to address this risk aversion and adopt more ambitious, long-term outlooks. Significant obstacles remain, however, before mature cultures of innovation can be said to be widespread.

## KEY FINDINGS

### Culture and governance

- 1 There is increasing financial investment in innovation – although this is acknowledged to be low when compared with other sectors
- 2 There is shared understanding of the key drivers for innovation across the sector – although there is an acknowledged need to communicate and interpret these drivers more effectively for stakeholders, including supply chain companies
- 3 There is a persistent need to find ways of supporting long-term thinking in the sector and expressing clear innovation strategies which align with this, notwithstanding the AMP cycle
- 4 There is a common belief that while incremental operational improvements are confidently managed and supported within the sector, outputs from more disruptive innovation projects are much more difficult to adopt
- 5 There are mixed feelings about the need for a regulated fund for water sector innovation
- 6 Most expect the introduction of competition to the non-domestic water market in 2017 to provide a spur for innovation
- 7 There is a common desire to engage more closely with entrepreneurial and innovative small and medium sized enterprises (SMEs) – although this is often tempered with a concern not to be seen as a source of “funding” for bringing SME products to market, or a temptation to indulge in innovation for innovation’s sake
- 8 There is optimism about the developing maturity of approaches to managing and embedding innovation in water companies – although this is seen to be very variable from company to company
- 9 There is a recognised need for more collaboration and sharing of innovation learning, both within the sector and beyond
- 10 There is agreement that boosting innovation in the water sector could open up value for the UK in terms of economic, commercial, job creation and environmental benefits – this opportunity needs to be quantified and targeted through alignment of government policy, regulation and investment.

## Investment and regulation

Water companies commonly invest around 0.5 per cent of their annual turnovers in innovation programmes. This level is not set by any regulatory mechanism, nor is it generally seen as a protected innovation budget within companies – in most water companies, individual innovation proposals are commonly assessed for investability on a case-by-case basis.

Nonetheless, 0.5 per cent of turnover does appear to be the rough natural level to which innovation drivers and incentives have led most companies to support innovation. It is also thought to represent around twice as much investment in innovation as existed during AMP5 and, incidentally, it is similar to the level invested by gas and power distribution businesses under the regulated Network Innovation Allowance. Opponents to the introduction of similar regulated funding structures in the water sector point to this as a proof that innovation investment can be achieved by other means.

Most contributors to this research anticipated that within the current AMP cycle, a combination of factors would lead to the level of water company investment in innovation increasing – although they felt it was unlikely in the foreseeable future that it would reach levels similar to those in unregulated engineering and technology sectors, where investment of upwards of 5 per cent of annual turnover is common.

The introduction of ODIs in the most recent price review is generally seen as a key factor behind increasing investment in innovation. Replacing the old “serviceability” measure as a metric for performance and efficiency, the new ODIs are seen to drive better innovation behaviours by encouraging a more “balanced” view of risk and reward. One contributor did note, however, that some water companies have been more mature in perceiving this risk benefit than others. There was also a feeling that some companies remain nervous of setting ambitious long-term ambitions that require innovation for fear that

they will be penalised by the regulator if they fail to achieve them.

The introduction of totex (replacing regulation of separate capital and operational expenditure strategies) was not readily identified as an influence of innovation – something which reflects previous research conducted by Utility Week in this arena (see Water sector innovation and perceptions of totex, available for download at [utilityweek.co.uk](http://utilityweek.co.uk)).

On the subject of government investment in water sector innovation, most contributors were reluctant to advocate the introduction of funding “pots” such as those that have been introduced in the energy networks. Most said that as private



companies, it was their responsibility to invest in activities and technologies which lead to improved efficiency and customer experience. It was acknowledged, however, that this approach probably adds to the sector’s natural bias toward incremental innovations that are closer to market and where the business return is clearer to see. There might therefore be a case for government/regulatory funds targeted at more disruptive innovation.

Existing cross-sector funding streams for potentially disruptive or early technology readiness level innovation, such as Innovate UK and research council funding, were acknowledged but were mostly seen to be bureaucratic and inaccessible.

## To fund, or not to fund?

**It is true to say that there were mixed feelings across contributors about how appropriate it would be to introduce an energy networks-style innovation funding mechanism in the water sector. On a number of occasions individuals said they feel that innovation funds – especially those like the Network Innovation Allowance – can create a sense that there is “free money” available for innovation, and therefore undermine the growth of strong innovation cultures and strategies.**

That said, sceptics who believe innovation is weak in UK water firms pointed out that companies have not yet managed to establish a strong culture of innovation anyway, and that the lack of innovation funding in the sector pushes a disproportionate amount of the risk involved onto supply chain organisations. This can be especially burdensome for SMEs.

## REALISING VALUE POTENTIAL

Most contributors were broadly happy with the extent to which government and their regulatory framework support and incentivise innovation today – or at least felt that the current situation represents a significant improvement on historical approaches.

There was however one area where all felt that there could be more support, and this was around quantifying and unlocking the value potential of becoming a global leader in the development of water products and services. Contributors recognised that past efforts to quantify the potential for economic value creation from water sector innovation had found a lack of common purpose or direction with regards to innovation challenges and, therefore, that it should not be a priority area for public-private innovation support. Contributors strongly urged that this conclusion be revisited. Some suggested this is an area where UK Water Industry Research should play a leading role.



## Culture and governance

Responses to questions about the way in which company cultures and processes nurture and manage innovation were varied and revealed a strong sense that these are areas of weakness for the sector as a whole.

Despite this, most contributors gave convincing evidence that their own organisations are taking good steps to address their cultural flaws and lack of innovation governance. The areas found to be especially difficult to address broadly align with those that are generic across surveyed utilities, that is, allocating time for innovation, measuring innovation benefits and embedding useful innovation outputs as business as usual in a strategic/optimal way.

Having said this, all contributors were able to point to activities within their business aimed at achieving one or more of the following:

- “Codifying” innovation
- Standardising innovation processes
- Better expressing innovation goals, both internally and externally.

Contributors were optimistic that these activities have and will continue to drive greater maturity in their organisations’ approaches to innovation and lead to the realisation of greater value from innovation projects.

One key area where most contributors felt that innovation in the water sector could be improved was

through greater sharing of best practice and collaboration on shared challenges.

There are numerous collaborative bodies in the water sector that are designed to support incremental as well as step change improvements to network and asset management, operations and customer service. However, there was a feeling that some companies engage in these forums more actively than others and that significant barriers often remain in terms of taking lessons learned in collaborative sessions back into

businesses to effect real change to critical processes and behaviours in, for example, procurement and investment planning.

UKWIR and WRc were identified as among the most helpful collaborative forums for innovation in the water sector, with the former being an essential body for setting out long-term thinking on innovation challenges and the latter for developing practical responses to these with supply chain partners.

In terms of collaboration with suppliers more generally, many contributors pointed to ways in which they have taken action to address traditional perceptions that water companies are inaccessible to entrepreneurial SMEs. These include the publication of “innovation needs” as well as the set-up of online portals for submitting suggested solutions to identified operational or business challenges.

Despite these actions, however, supply chain representatives said SMEs still tend to find it difficult to engage consistently with water companies and that internal conflicts between the priorities of innovation teams, operations teams and procurement teams often mean that promising innovations fail to make it to application.

## Illustrative quotes

The following comments made by contributors are broadly illustrative of the strengths and weaknesses of innovation in the water sector:

“Competition will change the scale and approach to innovation as new entrants who really understand customer service reveal the extent to which incumbents have not got customer-centric cultures”

“Water companies have embraced the idea of innovation, but they still pride themselves on pouring concrete”

“We need to be clear about our strategic vision and purpose. We can’t be distracted into acting as some kind of proxy for stimulating SME growth or the promotion of their technologies – investment in innovation must be benefits-led”



## Severn Trent

Severn Trent is widely regarded as a leading water company when it comes to support for innovation. In the past year, accelerating the growth of a robust culture and structure for transferring innovation into business as usual operations has been a key focus for the company, with direct engagement from chief executive Liv Garfield.

Bob Stear, head of innovation at Severn Trent, has been a driving force behind this agenda. Over the course of the past 12 months he identifies four key actions which have realised significant benefits for innovation culture and management:

**1 Conducting a peer insights strategic innovation study:** Working with an external partner, Severn Trent conducted a comprehensive study of its own processes for innovation compared to a range of companies across sectors. This identified capability and behavioural “gaps” between its approach and “best practice”.

**2 The publication of a “needs document”:** The above study identified a lack of clear strategy behind innovation activities and the need for better articulated innovation “needs” – both short and long term. In response, and Open Innovation Needs Document was created to make it easier for suppliers to approach the company with targeted, innovative solutions to specific strategic requirements and operational challenges and to facilitate internal decision making about which proposed innovation projects to prioritise.

**3 The introduction of a stage gate process for managing and progressing innovation:** This was achieved through the procurement of Bubble, an IT platform which “couples innovation project management with technical expertise” in a structured way. The platform is a key tool for ensuring proposed innovation schemes relate to the above needs document and that learnings from projects are captured, whether or not proposed solutions prove successful. Bubble requires projects to meet certain criteria to pass stage gates, with a view to final stage gates including the application of new standards for procurement and operations. The platform also helps Severn Trent to apply a “portfolio value” to its innovation programmes and to measure their success through a variety of “lenses” which can cut project data in a number of ways. Bubble has proved broadly popular internally and has been adopted as the preferred tool for all change management, not just R&D projects, according to Stear.

**4 Continued informal benchmarking:** Since the formal peer insights study, the R&D team has continued to regularly visit companies across sectors to observe different approaches to nurturing and managing innovation.

These key actions have built on other good structures for innovation at Severn Trent, such as its “community practices” for gathering technical expertise from across the business on thematic issues.

“ An employee survey showed that 85 per cent of employees understand that innovation is important. But the survey did not ask employees if they feel they are well supported in achieving innovation. I suspect the result for this question would have been a lot lower”

“ For smaller suppliers the bureaucracy of alliances is very difficult to engage with”

“ An unnecessarily aggressive approach to negotiations over intellectual property is an inhibitor for more collaboration with SMEs. I think this is true across this sector”

“ It’s taken a while for some to realise the upside of the new AMP”



**T**he energy system is changing rapidly in response to the need to decarbonise energy in a sustainable and economic way and also in response to rising social interest in taking ownership of energy resources and use on a local or individual basis. The rise of low-carbon technologies in parallel sectors, such as transport, is also driving change.

For energy networks, this raises a range of significant challenges – and not only in terms of the adoption of new technologies and new ways of operating from a technical point of view. More fundamental questions around the role of networks and the boundaries between traditional energy silos are also implicit in the challenge of system transformation. Both aspects will require proactive innovation within and between gas and power distribution and transmission networks.

While there are numerous differences between the challenges faced by gas and power networks when seeking to innovate, the similarity of the funding structures and regulatory regimes which influence culture and investment also mean that there are numerous similarities in the approaches being taken to innovation, and the barriers encountered. Therefore, this report will consider the two verticals together, highlighting specific instances where research identified approaches or barriers to innovation which are unique to one.

## KEY FINDINGS

### Investment and regulation

- 1 The introduction of regulatory funds to incentivise innovation investment are universally welcome among network operators – although some contributors observed some negative unintended consequences arising as a consequence of the current structure of these funds
- 2 There is an awareness that innovation funding was introduced on a time-limited basis and that independent investment in innovation should increase over the course of the current regulatory cycle – but there is very little/no confidence that any significant investment would continue if regulatory innovation funds were curtailed in the future
- 3 There is some disagreement among innovation leaders about when it is appropriate to use innovation funding and when internal funds should be allocated – some consider the use of taxpayer and customer money for the advancement of projects which will bring network operators efficiency benefits and cost savings to be inappropriate
- 4 There is shared understanding of fundamental innovation drivers – but there is varied interpretation and prioritisation of these drivers from company to company
- 5 Collaborative working on innovation projects is increasing but could be stronger, especially across “vectors” and with suppliers
- 6 Tracking innovation success is commonly seen as a challenge and an area to improve on – “soft” benefits of innovation as well as long-term benefits are felt to be particularly difficult to quantify
- 7 Quantifying and demonstrating the extent to which innovation learning has been transferred to business as usual is commonly felt to be a challenge and an area to improve on
- 8 There is generally very little visibility of innovation best practice or approaches beyond market verticals and only limited understanding of approaches and best practice within them.

## Investment and regulation

All contributors in these market segments welcomed the introduction of innovation funding and incentives by the regulator over the course of recent years.

Most recently, these have been manifested in the National Innovation Allowance (NIA) and the National Innovation Competition (NIC). The introduction of these mechanisms and their predecessors (the Low Carbon Network Innovation Fund and the Innovation Funding Incentive) are felt to have had a transformative effect on the scale, pace and scope of innovation in energy networks. They have also contributed greatly, said contributors, to a deepened understanding of national challenges associated with the so-called energy trilemma.

The majority of innovation activity across gas and power networks takes place within the scope of NIA funding, which Ofgem defines as being designed to:

- ❑ Fund smaller technical, commercial or operational projects directly related to the licensee's network that have the potential to deliver financial benefits to the licensee and its customers; and/or
- ❑ Fund the preparation of submissions to the Network Innovation Competition (NIC) which meet the criteria set out in the NIC Governance Document.

However, despite this clear statement from Ofgem of the NIA's purpose, interviews conducted during the course of this research showed that there is some disagreement among innovation leaders about the kinds of projects that should be funded under the NIA.

Firstly, a number of contributors questioned the morality of using the fund – which is created via a socialised cost on consumer energy bills – for funding near-to-market, low-risk projects that will have a clear and rapid return to the business. It was felt companies should invest in these of their own accord.

Others pointed out that the second intention of the NIA – that it should lead to the preparation of NIC submissions – was not being realised to a significant extent. They suggested that Ofgem could do more to emphasise this link and, in so doing, increase the ambition of NIA projects. An added benefit of doing this might be that NIA projects would be more likely to lead to whole energy system learnings and benefits, they said.

## Gas & power transmission and distribution innovation investment in 2014/15

### Gas distribution NIA investment

National Grid Gas Distribution: **£7.64m**

Wales and West Utilities: **£1.6m**

Northern Gas Networks: **£2.4m**

Scotia Gas Networks: **£3.31m**

### Gas transmission NIA investment

National Grid Gas: **£4m**

### Power transmission NIA investment

National Grid Electricity Transmission: **£10m**

**Power distribution** – the latest annual reports for power distribution innovation investment relate to the final reporting period for the Incentive for Innovation funding mechanism

Electricity Northwest: approx. **£3m**

Northern Powergrid: **£1.2m**

Scottish and Southern Energy Power Distribution: **£3.6m**

Scottish Power Energy Networks: **£3.9m**

UK Power Networks: **£4.5m**

Western Power Distribution: **£1.8m**

*All the figures given are for the amount of money actually spent on innovation projects in 2014/15. Allowances for each company may have been larger than these sums.*

## Illustrative quotes

The following comments made by contributors are broadly illustrative of the strengths and weaknesses of innovation in gas and power networks:



The NIA has been used less ambitiously [than the NIC] and more with a business head looking for quick returns”



The focus of innovation projects is determined by the innovation team's reporting structure. If the innovation team reports into operations then projects will have an operations bias. If it reports into asset management, that will be the focus. The focus will be different again if it reports into regulatory compliance”



I don't think the link which should exist between NIA outputs and NIC projects is clearly understood”

NIA funding varies in terms of actual quantity from company to company, proportional to their revenues (see box on p15 for 2014/15 investment). It is also regulated on a “use it or lose it” basis and is not transferable from one year to the next. While this situation was broadly accepted, one innovation leader in the gas sector observed that it can have unintended consequences, especially for networks with lower revenues, which therefore have smaller NIA funds.

The contributor pointed out that projects that start out at earlier technology readiness levels (TRLs) often face escalating costs over the years as they require ever greater demonstration. This, said the contributor, is sometimes difficult to fund under NIA because of the inability to accumulate funds against a project. While collaborating with other networks to fund such ambitious projects would resolve this issue, the contributor said that a tendency for networks to be inwardly focused meant that annual NIA budgets are often allocated to a network’s own projects before collaborative schemes are considered. This need to improve collaborative working under

NIA funding was also identified by other contributors as being a key challenge for the future.

With regards to NIC funding, while most were happy with its scope and the level of funding available, some contributors to this research suggested that it could be tweaked to increase the ambition and whole system value of projects. There is also a perceived need for large-scale demonstration centres for ambitious NIC projects.

There was widespread interest in seeing more projects submitted which support “cross-vector” collaboration – meaning projects involving both gas and power networks, and possibly heat or transport partners too.

More broadly, the idea of allowing non-regulated third parties to bid for NIC funding has been expressed in recent consultation sessions between industry and Ofgem and reported in Utility Week. Regulatory experts responding to this research said such a change would require changes to the legal structures behind the NIC. Today, since the funds are based on charges on consumer bills, the money can only be dispensed via the networks.



**“ Collaboration is often identified both as one of the most important elements of a successful innovation culture, and one of the hardest things to achieve consistently in relation to innovation projects ”**

KR Sanjiv, chief technology officer, Wipro

Interestingly, Western Power Distribution recently took the decision to allow third parties to bid for unallocated parts of its NIA in order to provoke more “out of the box” solutions to network challenges and be less prescriptive in defining the solutions it expects suppliers to bring to projects. It was felt this approach will be more conducive to step change innovation.

All networks in receipt of funding from both the NIA and NIC pots are required to submit annual reports on the amount of money they have spent on innovation projects and the areas in which money has been spent. These reports are made available via the Smarter Networks Portal, hosted by the Energy Networks Association (ENA). They are one of the key ways in which networks fulfil the dissemination requirements attached to innovation funding. Another is the ENA’s annual Low Carbon Networks & Innovation Conference.

The need to disseminate learnings from innovation funding was introduced, in part, to increase visibility for consumers around what the money from their bills is being used for. Another

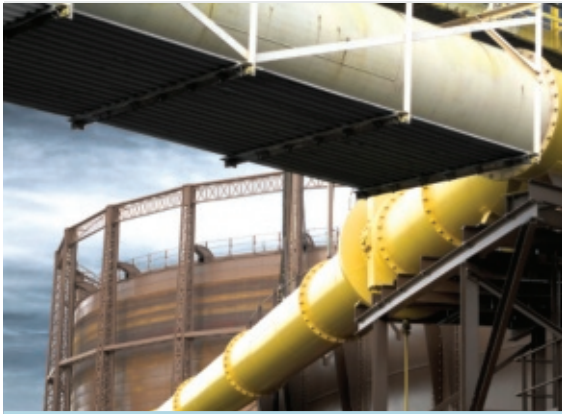
**“ Gas was late to the table in bringing engineering reality to conversations about the future of the energy system ”**

**“ You might say it is inappropriate use of customer money to fund ‘innovation’ projects which are very close to market and where the return to the business is clear ”**

**“ It’s easy to track input measures but there is an intrinsically high failure rate with innovation, so this doesn’t lead to outputs ”**

**“ There is a need to move the culture of investment away from reliance on NIA, otherwise there could be a real car crash for innovation in the next regulatory cycle ”**





purpose, however, was to improve visibility of innovation priorities for networks for the supply chain.

Along with the innovation strategy documents that Ofgem asked networks to produce in line with their business plans for the current regulatory cycle, it was hoped that networks' annual innovation reports would help suppliers understand where networks were allocating most of their funds for innovation, and why.

To some extent, this has been a success; however, supply chain representatives contributing to this report still complained that many suppliers, especially smaller suppliers, find networks inaccessible and unapproachable and that the visibility provided by the annual reports is retrospective. Regular updates to network innovation strategies was advocated as a way forward. Currently, not all networks update and publish their innovation strategies annually.

More broadly, there is also a strong feeling from innovation leaders that, as the volume of innovation projects being conducted across energy networks increases, more accessible and effective ways need to be established for collating learning and sharing them with relevant parties.

**“ Collaboration is hard because it takes considerable time and resource to bring disparate parties together. While technology is never a silver bullet, recent advances in digital applications for ideas-sharing can make collaboration quicker to achieve and easier to maintain ”**

KR Sanjiv, chief technology officer, Wipro



## The future of innovation funding

As this report was written, Ofgem had just concluded a period of consultation with network leaders as part of a planned review of innovation funding governance. As the current regulatory period draws to a close, further consultation and investigation of the level of innovation funding required in the next cycle will also take place.

In view of these processes, it is important to note several key observations and recommendations around network innovation funding that were raised in the course of research for this report:

### INNOVATION ACTIVITY IS STILL RELIANT ON FUNDING:

Ofgem originally introduced funding for innovation on a time-limited basis in the hope that networks would establish strong internal cultures that independently support innovation investment. The overwhelming opinion expressed in the course of this research is that this is not yet the case – and is not likely to be for some time. One contributor said the curtailing of innovation funding in the next regulatory cycle would result in “a car crash for innovation”. The reasons for this largely relate to risks aversion in energy networks due to shareholder concerns. It is also felt that networks' limited ability to realise commercial benefits from innovation is a factor.

### THE LOGIC BEHIND SOCIALISED INNOVATION COSTS SHOULD BE CHALLENGED:

While innovation funding was welcomed by all, several contributors across both gas and power networks raised questions about the extent to which companies are using funds drawn from consumer bills to invest in projects that have a clear return to the business. This practice relates closely to the above point around weak independent appetite for innovation.

### INNOVATION GOVERNANCE NEEDS TO DO MORE TO FACILITATE COLLABORATION:

There were a number of ways in which contributors said current structures, and organisational cultures, prevented collaboration: between network companies, between energy vectors, and with supply chain partners. There was a strong feeling that any changes Ofgem is to make to governance should target these barriers to collaboration.

**“ The personal preferences of innovation leaders have a strong influence over the approach different networks take ”**

**“ We have not solved collaboration issues. There is still deep mistrust within the sector ”**

**“ We are looking at management metrics and how they could be changed to get more value from innovation ”**

**“ There may be lessons we can learn here from the medical sector, where professional communities keep up to date on the latest thinking and best practice on the treatment of specific conditions using wiki-style online knowledge centres ”**

## Culture and governance

While most networks appear to be taking similar actions to promote cultures and governance structures that support innovation and its transfer into business as usual, it is clear that some networks are achieving better results than others.

For example, all networks appear to express very similar messages about: leadership buy-in to innovation; the importance of showing that innovation is something all employees can engage



**“ Collaboration is fundamental to innovation because it helps break down conventional thinking about problems by bringing in lots of different perspectives. In the modern world, it can also mean access to lots of new sources of data and observations on evolving machine-to-machine learning patterns – largely driven by advances in the Internet of Things”**

KR Sanjiv, chief technology officer, Wipro

in; and the centrality of customer experience to the focus of innovation. However, commentators were clear that, while all organisations may believe in these mantras, only some have achieved real shifts in organisational values and performance measurements that will sustainably nurture innovation. Several contributors said their organisations were beginning to look at ways in which



## Collaboration

While some contributors to this research dismissed concerns about lack of collaboration across networks on innovation challenges, the majority said it was a key area for attention in the immediate future.

Some participants pointed to elements of the regulatory regime and innovation funding structures as barriers to more collaborative innovation projects, but others attributed failures in this area more to cultures of mistrust, competition and “not invented here” mentalities in individual organisations.

A number of contributors also pointed out that innovation advocates who are keen to make measurable progress with projects within given timeframes are often reluctant to engage in collaborative initiatives since they take longer to set up and are more difficult to manage. Where a typical innovation project might take three months to set up, a collaborative project can take as much as eight months, according to one contributor.

Where organisations had managed to establish collaborative working on shared challenges, participants reported considerable benefits in terms of whole system optimisation and access to different perspectives on shared challenges, as well as access to wider sources of data. An

example of one such collaborative group is Northern Utilities Innovation Forum comprising Northern Gas Networks, Northern Powergrid and Yorkshire Water, which was established with support from Infrastructure North, a regional development initiative.

In terms of collaborative working with supply chain organisations, the Energy Innovation Centre was almost universally identified as the primary partner through which to engage with new, innovative suppliers – especially in SMEs.

When it came to collaboration with academia, while all contributors said their organisation partnered with universities, approaches were varied. Some organisations preferred to sponsor PhDs, others to treat universities as consultants on specific challenges and to commission shorter term research. A slight trend towards the latter approach seems to be emerging as companies try to become more flexible in the way they allocate support for innovation and attempt to nurture “fail fast” innovation cultures.

employee and management performance, beyond innovation teams, could be linked more closely with innovation, but this was generally a nascent trend.

As innovation projects conducted under LCNF IFI, NIA and NIC funding have come to maturity, the ability of networks to transfer useful outputs into business as usual operations has become a key focus for those working on culture and governance structures.

Most contributors to this research advocated the use of small central innovation teams as a means of supporting the transfer of innovation outputs to business as usual. These small teams are usually responsible for project managing innovation schemes, while teams within the business actually implement and "own" the projects. This engagement in innovation encourages uptake of outputs, and the adoption of new technical standards that might arise from innovation projects.

Tracking uptake in a quantifiable way remains a challenge, however, and this is something both Ofgem and network companies have identified as an area that



needs attention. Finding better ways of tracking the application of innovation learning will improve confidence in the returns being made on innovation investments – boosting both consumer confidence in the use of funds and, ideally, organisational willingness to continue investing in innovation should funds be curtailed in the future.

A number of possible ways of tracking and quantifying innovation uptake were suggested by participants in this research, including tracking the number of new standards written for product and process specifications as a consequence of innovation projects.

Another approach emphasised the need to ensure that where innovation projects showed cost and operational efficiency savings were possible, that these savings were reflected in cuts to departmental budgets.

This approach was thought to have a number of benefits. It discourages exaggeration of innovation success by individuals who

may be personally enthusiastic about a new technology or approach. It incentivises departmental leaders and their teams to apply the innovation learnings in order to keep within their revised budgets, and it makes it easy for the business to identify where innovations are making the biggest impacts in terms of cost efficiencies.

Possibly even harder to measure than innovation uptake are innovation benefits, especially in relation to customer experience. Participants recognised a number of metrics currently applied by Ofgem to measure consumer benefits from innovation investments. In the case of power networks, these largely related to capacity added and customer minutes lost and in gas networks the most commonly recognised metrics for customer experience related to time off supply and completing new connections.

However, it was often felt that these metrics give an incomplete picture of customer experience and that they may not be relevant to more ambitious innovation in business and service models in energy networks.



**“ As innovation projects conducted under LCNF IFI, NIA and NIC funding have come to maturity, the ability of networks to transfer useful outputs into business as usual operations has become a key focus for those working on culture and governance structures”**

### KEY FINDINGS

#### Investment and regulation

- 1 Investment in innovation is seen as a priority across all energy suppliers, although budgets vary widely in accordance with the range of company types now active in the market – from start-ups to multi-billion pound international enterprises
- 2 There are mixed feelings about the potential for more government support for innovation in energy supply
- 3 There is agreement that more could be done to remove regulatory barriers and reduce regulatory complexity in order to support more innovation in energy supply
- 4 There are mixed feelings about the contribution that smart meters will make to energy supply
- 5 There is agreement that expectations around energy supply innovation have, in recent years, placed stronger emphasis on reducing bills than on other aspects of customer experience
- 6 Smaller suppliers are conscious of avoiding any “institutionalisation” as they grow, which would have a negative impact on their ability to innovate
- 7 Partnership and collaboration are seen as key tools for bringing innovative business models and services to market by large and smaller energy suppliers alike
- 8 Innovation in large energy suppliers can be especially difficult to transfer to business as usual, even where there is strong support at board level.

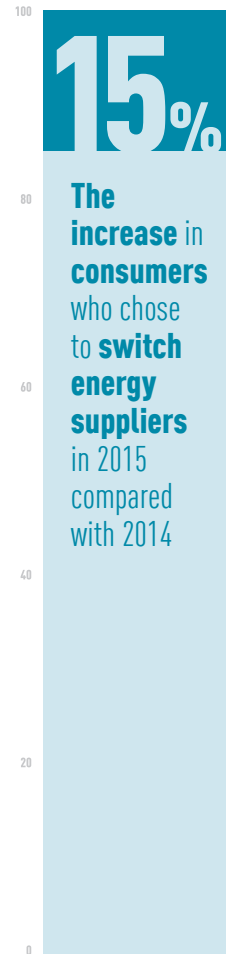
**T**he energy supply market has been the subject of intense scrutiny over the past year as the Competition and Markets Authority (CMA) completes its investigation of competitive practices and the delivery of fair services by the sector.

This investigation and related market forces are giving rise to speculation about the ways in which the supply market may evolve in the near future. It is expected that more large, vertically integrated players will take steps to transform their business structures, following the lead of Eon and Centrica, and that newer entrants into the market will grow in prominence. Competition in this newly diverse marketplace is increasingly expected to be based on customer “experience-based services”. This is set in the context of rapid advances in connected home technologies as well as rising interest in consumer demand response, community energy solutions and energy efficiency.



All of these factors have a strong influence over the focus of innovation in energy supply, although in recent years and in 2016 in particular, they have been overshadowed to some extent by the impending national smart meter rollout. This programme, which aims to see smart electricity and gas meters installed in every home and business in the UK by 2020, is controversial, complex and expensive.

There is continuing debate in the market over the rate of technology redundancy being written in to the rollout and the extent to which it will lead to innovations in energy supply models. Some contributors to this research described the rollout as a distraction from more ambitious innovation. Others saw it as an enabler for innovation, but not an innovative step in itself.



## Investment and regulation

It is difficult to make useful comparisons between investment in innovation across energy suppliers due to the wide variety of company types in the market and the level of resource available to these. Nevertheless, it is clear that investment in innovation is considered a priority by all and that there is strong board-level awareness that energy supply services are likely to change significantly in the future.

While larger organisations tend to have allocated innovation and R&D budgets, start-up and small suppliers tend to place less definition around money allocated to innovation. There is a feeling that in the early stages of a business's life, all budgets have the potential to be innovation budgets and that all business processes are established with an openness to "doing things differently".

There was some speculative interest in the potential for more government investment in energy supply. Some contributors firmly ruled this out as a possibility in a competitive market, but others felt there could be scope for a fund that supported the demonstration of new service models or aimed to raise the bar for performance on "pre-competitive" issues. This latter approach is used to good effect for increasing sector efficiency elsewhere, for example in the pharmaceuticals industry.

Most contributors to this report were indifferent about the extent to which the regulatory environment supports innovation. They saw regulation as incidental

to market forces and competitive demand for innovation. Their one clear request was that innovation should "get out of the way" of innovation.

There was generally a feeling that Ofgem has made positive steps in recent years in terms of reducing regulatory inhibitors to innovation in the market and there was common recognition that Ofgem intends to do more in this area by establishing a more "principles-based" approach to regulation. A principles-based regime should be agnostic about the nature of innovation as long as it creates customer benefit, said regulatory experts.

In terms of identifying remaining elements of the regulatory regime that represent barriers to innovation, contributors were reluctant to identify specific rules. Instead, the quantity and complexity of supply codes was highlighted as a persistent obstacle for smaller suppliers with limited compliance resource.

There was some interest expressed in the actions Ofgem will take with regards to enabling more innovation via non-traditional business models following a consultation in 2015. There was limited expectation about the step changes any such actions might achieve in the near term, but it is worth noting that at time of writing Ofgem was preparing to publish a new innovation plan, setting out more clearly its intentions in this arena. This plan was due to be published before the Chancellor's Budget announcement in March (see box on p22).

Perhaps surprisingly, there was little reference to the CMA enquiry into the energy supply market and the impact that its findings might have on innovation.

## Illustrative quotes

The following comments made by contributors are broadly illustrative of the strengths and weaknesses of innovation in energy supply:

“Historical regulatory barriers to innovation in energy supply reflect a strained relationship between Decc, Ofgem and the market”

“We need to find a way of supporting the demonstration of new types of service”

“In themselves, smart meters are not innovative. But they should be an enabler of innovation in energy supply – like having wifi”

“Because of the rabid competitive environment there's often failure in seeing through attempts to do things differently”

## Ofgem's innovation plan

Ofgem has been asked by the government to develop an innovation plan to provide assurance on its regulatory framework for the energy sector. This will address three key issues and will be published prior to the March Budget announcement.

- 1 How new technology is likely to shape the sectors being regulated
- 2 How legislation and enforcement frameworks could adapt to new technologies and disruptive business models to encourage growth
- 3 How regulators could better utilise new technologies to generate efficiency savings and reduce burdens on business.



## Culture and governance

Again, due to the very different nature of the companies surveyed in the course of research for this report, it is difficult to draw general conclusions about the approaches taken to nurturing innovation cultures and to managing innovation across the energy supply market.

That said, all contributors were clear that their organisations see innovation as a priority and all were able to articulate clear ways in which innovation is supported. Creating environments and structures for encouraging ideas generation and engagement in innovation across the workforce was consistently seen as important to this, although conventional "ideas box" schemes were generally seen to be ineffective.

When looking for ways in which to improve innovation governance and culture, all contributors acknowledged that learning from other organisations is essential. Contributors said they are potentially interested in learning from organisations in any sector, although online retail and digital sectors were seen as holding the most transferable lessons. The only sector that most contributors thought held little or no scope for useful knowledge

**“ The only sector which most contributors thought held little or no scope for useful knowledge sharing was energy supply itself”**

sharing was energy supply itself. This lack of interest was, in part, due to reluctance to engage with competitors, but also a common perception that approaches to innovation within the sector are stale.

Approaches to absorbing lessons from other sectors, as in energy networks and the water sector, tended to be ad hoc and informal. One contributor did, however, say they had begun using tools developed by Gartner in order to better understand the relative pace of innovation in IT and related services compared to a cross-sector peer group of similarly sized organisations. The same organisation was one of the very



Central government did not fund the development of the Tesco Clubcard. Suppliers need to find their own way to transform consumer experience of energy”



We're running a business with a clear purpose and that purpose is not fundamentally about financial return. We believe there is a fairer way to sell energy and that makes a big difference in the way you make decisions and the way you view innovation”



Partnership will be fundamental to the way in which we grow and bring innovations to market”



Accepting failure is key. You won't get innovation if people feel they are defined by the success or failure of a project”

few contributing to this report that had introduced dedicated time for employees to work on innovation projects. Employees are encouraged to work on an innovation project of their own choosing for one day a month. Their success in generating useful outputs from this time feeds into annual performance reviews, helping to link organisational interest in innovation to behaviours in the workplace.

While smaller suppliers seemed aware of the need to provide good governance for innovation, there was also a clearly expressed concern not to allow growth to lead to institutionalisation. There was a concern to retain a spirit of entrepreneurialism in the way innovation is approached and not to allow bureaucracy to slow down innovation or block its implementation.



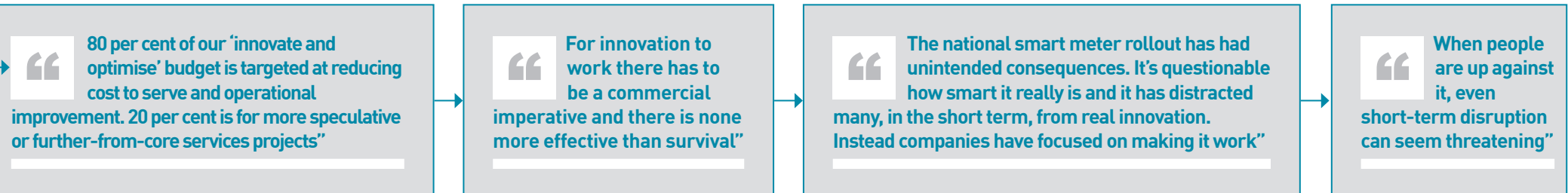
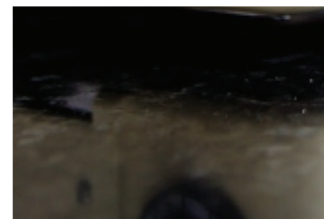
**“ While smaller suppliers seemed aware of the need to provide good governance for innovation, there was also a clearly expressed concern not to allow growth to lead to institutionalisation ”**

The transfer of useful innovations into business as usual was a concern for all energy supply contributors, as it was for energy network and water contributors. There was a sense that this is much harder for larger organisations where there are strong departmental performance drivers that can discourage regional or business unit leaders from trialling new approaches to operations or service delivery. In an environment where performance is under scrutiny, both internally and externally, and where profits are thin at best for incumbent suppliers, these individuals can often feel threatened by innovation projects, it was suggested.

To overcome such barriers, innovation leaders in larger organisations advocate a range of strategies to get innovation deployed. These include setting up spin-out business units and partnering with external organisations. This latter approach was seen as

a key route to business model and service innovation by all energy supply contributors, regardless of size. It was seen as especially important in developing community energy propositions or innovations that require deployment of technology hardware – such as smart thermostats. In the latter instance this is because hardware development is not commonly seen as being core to energy supply businesses. Other forms of technology development, however, such as online engagement platforms, were considered to have more proprietary value.

Measuring innovation success seems to be less of a challenge in the energy supply market compared to energy networks and water. Net promoter scores, used in many sectors as a means of tracking customer satisfaction, are felt to be a useful measure of the extent to which innovations are making a tangible difference to customer experience and perceptions of firms. Similarly, consumer switching numbers are considered to be an indicator of competitive innovation in the sector – and these are on the rise. Just over six million consumer switches occurred in 2015, an increase of 15% on the previous year.





**T**he need for innovation is acknowledged and accepted across all utility sectors. Financial investment in innovation is increasing across the board and is not generally seen as a barrier to innovation. Nor is government investment in innovation seen to be an inhibitor, although some funding streams are seen to be bureaucratic to access.

Satisfaction with the regulatory environment for innovation is generally high, with energy supply participants expressing the most concern in this area. Energy suppliers welcome the intention of Ofgem to adopt a more principles-based approach to regulation, saying this should enable more innovation in the sector. They also urge a parallel focus on decluttering a regulatory landscape that is complex and resource-intensive for new suppliers to negotiate.

In energy networks, while satisfaction with the regulatory environment for innovation is high, some concerns were

raised about **unintended consequences arising from the structure of innovation funds. Most prominently these related to collaboration** and cross-vector innovation. It seems likely that these concerns will come to the fore over the coming year. There are a number of reasons for this, including the completion of the Future Power System Architecture project, commissioned by the Department of Energy and Climate Change, and the establishment of the Energy System Catapult as a centre for thought leadership on whole energy system challenges.

It is worth noting that while contributors to this report from energy networks were generally happy with the regulatory environment for innovation and many said they were slowly developing plans for greater independent investment in innovation, **most were also deeply sceptical that significant investment would continue if regulatory funds for innovation were withdrawn.** Given that the regulator has been clear in the past

that innovation funds are time-limited and that it expects networks to develop self-sustaining innovation cultures, this appears to be an issue that is likely to come to a head in future regulatory cycles.

In the water sector, there is no regulatory fund for innovation, but here too companies seem broadly happy with the innovation incentives they receive from the regulator. There is also an anticipation that **innovation will increase with the start of non-domestic water retail competition in 2017** – and the potential subsequent introduction of competition in the domestic water retail market as well.

It is notable, however, that supply chain representatives felt that the lack of regulated funds for innovation in the water sector has contributed to **a lack of entrepreneurialism and innovation in the supply chain. This in turn has led to the UK missing out on opportunities** to trailblaze the development of solutions to increasingly urgent, global water management challenges and the potential economic value these opportunities entail.

## The Utility Week-Wipro Technology and Innovation Council

In 2015, Utility Week and Wipro launched a Technology and Innovation Council, comprising innovation and technology/information technology leaders working in the utilities sector. This select group meets regularly to discuss shared innovation and technology adoption challenges and to gain insight into the parallel challenges experienced in other sectors.

Key discussion points at these meetings and input from council members also guide a research agenda for Utility Week and Wipro. This research can take the form of in-depth qualitative studies, such as this report, or shorter investigations published in the pages of Utility Week and available for download from [utilityweek.co.uk](http://utilityweek.co.uk), such as the recent insight report on digitisation and the Internet of Things for utilities. Annually, the council hosts an open doors event with the wider utilities leadership and innovation community to summarise these research exercises and lessons arising.

Through supporting the Technology and Innovation Council, Utility Week and Wipro hope to provide a consistent platform for collaborative working and, through its research agenda, improve visibility of key innovation objectives, challenges and best practice in the sector.

**“ Wipro is committed to working with UK utilities for the long term and the Technology and Innovation Council is a result of that commitment”**

Arun Krishnamurthi, global head of utilities, Wipro



# Conclusions

- 1
- 2
- 3
- 4
- 5
- 6

Failure to capitalise on the full potential of a growing global market for water management solutions was a concern across the board, with supply chain and water company representatives alike urging the government to revisit its position on funding for innovation in this arena.

In relation to innovation culture and governance within utilities, **executive buy-in to supporting innovation is commonly perceived to be strong** among innovation leaders. **The articulation of innovation strategies is not, however, as strong as it could be** – both for internal purposes and in terms of making innovation priorities clear to supply chain organisations and potential solution partners.

In energy networks, the requirement for annual reporting of innovation activity and the requirement for innovation strategies to be submitted with business plans for the regulator has helped to address this to some extent, but supply chain representatives say visibility of innovation needs could still be improved. There were also calls for utilities' internally articulated innovation strategies to do more to align innovation intent with procurement and investment planning processes as well as policies on intellectual property agreements.

All contributors reported **that actions are in progress to improve organisational**

**approaches to supporting and managing innovation**, with the most common focus being placed on developing processes for embedding innovation into business as usual. This commonly included taking steps to standardise or codify the innovation process from concept creation to deployment.

All contributors agreed that one of the best ways of developing best practice in the building of innovation cultures and governance was to gain insight into the approaches of other organisations. Nearly all contributors said they took an ad hoc approach to sourcing and absorbing such lessons. However, **the small number of contributors who said they had engaged in more formal benchmarking and ideas exchange initiatives said they found the structure and focus of these exercises extremely useful.**

**Another essential element for robust innovation – collaboration – was commonly identified as patchy and hard to sustain** by contributors in all market segments. In part, this is not helped by the aforementioned lack of clarity in innovation strategy, however the time and resource required for successful collaborative innovation was also identified as a blocker. So too, to a lesser extent, were organisational policies and requirements in terms of intellectual property arising from collaborative innovation schemes.

“ **Articulation of innovation strategies is not as strong as it could be** ”

# INNOVATION IN UK UTILITIES



## About Wipro

Wipro is a global information technology, consulting and outsourcing company with a 170,000+ workforce serving clients in 175+ cities across six continents. Wipro helps customers do business better by leveraging its industry-wide experience, deep technology expertise, comprehensive portfolio of services and vertically aligned business model. Its 55+ dedicated emerging technologies 'Centers of Excellence' enable it to harness the latest technology for delivering business capability to its clients.

## UtilityWeek™

## About Utility Week

Utility Week was launched in 1994 in response to the growing regulatory and market complexity following utility privatisation. For more than 20 years, Utility Week has been the UK utility sector's unrivalled thought leader and source of news and comment on the business of Britain's electricity, gas and water sectors. Utility Week provides authoritative analysis, impartial industry intelligence and insight. It has the trust and respect of utility chiefs, regulators and government.



# INNOVATION IN UK UTILITIES:

A STATE OF THE NATION REPORT

**UtilityWeek**<sup>™</sup>

[www.utilityweek.co.uk](http://www.utilityweek.co.uk)

© Faversham House Ltd 2016