

How can the Regulator actively stimulate innovation in the Water Industry?

Innovation has delivered tremendous benefits to the water industry since the early days of corporatisation in the United Kingdom and Australia. The introduction of field-based and asset management systems, trenchless technology and inflatable valve insertion technology are all examples of network-level innovation that have brought real benefits for the industry and consumers, either in financial (i.e. cost efficiency) or non-financial (i.e. safety, environmental, reliability) performance.

Innovation is, however, afflicted by an endemic constraint – the risk adverse nature of most water businesses, and the conservatism of Regulators worldwide, does not typically promote innovative behaviour. Investment in innovation has, in recent times, declined as innovation has become the responsibility of the businesses themselves – and Regulators grapple with developing an incentive that stimulates innovative behaviour within constrictive regulatory frameworks.

Why is innovation so important?

Innovation plays a key role in negating the current and future challenges of any industry. The water industry is no different, facing pressure globally from a variety of factors:

- *An ever-tightening supply / demand scenario:* Increasing global demand (population and per capita consumption both upwards), coupled with crippling drought.
- *Ageing infrastructure:* Much of the world's water infrastructure was designed and built in the 19th and early 20th centuries.
- *Capital constraints:* World economic conditions are placing more pressure on the efficient allocation of capital, and fuelling the conservatism of asset-heavy industries.

Innovative behaviours can deliver the step-change improvements needed by the water industry to meet these challenges.

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Why has the current situation failed?

The recent experiences of water businesses in the United Kingdom (UK) attest to the failings of the current regulatory arrangements. A 2007 report titled "*The Future of the UK Water Sector*" (All Party Parliamentary Water Group) found that R&D investment in the UK water sector declined by 60% between the years 2000 and 2007 – and attributed much of this to the lack of an appropriate regulatory incentive for businesses to innovate.

This position was supported by a 2009 report from the UK Council for Science and Technology titled "*Improving Innovation in the water industry: 21st century challenges and opportunities*", which went even further by finding that the current "regulatory regime militates against research and development and provides insufficient rewards for innovative solutions". The report further concluded that "[W]e do not believe that current levels of incremental technology improvement will be enough, particularly in terms of addressing the most pressing challenges (facing the water industry)".

Similar challenges are also being faced in Australia. There, a previous regulatory regime – which adopted a largely qualitative approach – struggled to stimulate the level of innovation it targeted. The previous incentives were based predominantly on qualitative benefit assessments. Reporting requirements were, as a result, necessarily fluid and comparatively subjective. Unsurprisingly, the failings of such mechanisms were soon highlighted, and the approach was abandoned.

Left to their own devices, innovation is far from a pressing imperative for Australian water businesses, owing to a number of factors:

- *The maturity of Australian water businesses (generally) is high:* Since corporatisation, water businesses have become cost-efficient, performance-driven organisations. There is little 'fat' left to cut – investment in innovation is considered high-risk, and has, largely, been abandoned.
- *Currently, there is no regulatory incentive to improve, nor is there a meaningful deterrent for under-performance:* The current Australian regulatory framework focuses predominantly on maintaining a consistent level of performance – with no reward / punishment scheme in effect.
- *Innovation spend is subject to an uncertain regulatory response:* While there are some examples of investment in innovation being recoverable through the regulated asset base, there are just as many examples of this being refuted by the Regulator – even following a protracted submission process.
- *Limited period for benefit realisation:* The treatment of benefits is not clearly established, and furthermore, due to the five-year regulatory determination cycle, businesses are unsure how much of any benefit created they will be able to capture beyond a five-year period.

What's being done about it?

In the UK, momentum is gaining around the introduction of regulatory measures that are linked to innovative behaviour. In June 2010, Water UK (in its paper titled "*Meeting Future Challenges: a blueprint for policy action*") advocates strongly for the development of "flexible regulation that encourages sustainable and innovative behaviour". Unfortunately, the response to-date in the UK has been substantially limited to the policy domain – and the Regulator (OFWAT) is yet to respond.

An alternative approach is emerging in the UK electricity industry. There, the Regulator (OFGEM), in 2005/06 introduced the Innovation Funding Incentive (IFI) – allowing them to recover 70-90% of R&D spend on IFI projects. The scheme was introduced in response to declining innovation spend during the 1990s and early 2000s, and has recently been extended to the end of the next regulatory cycle (2015). Thus far, the scheme has had modest but promising results – there remains more work to be done.

Businesses in the Australian water industry have responded to stimulus of innovation challenges in an alternate way. There, industry participants are co-operating in parallel to the regulatory domain to deliver innovative solutions to the industry's emergent challenges. The Victorian Smart Water Fund (VSWF) (<http://www.smartwater.com.au/Pages/Default.aspx>) was established in 2002 to do just that – and is jointly funded by four Melbourne water businesses, and the Victorian Government. The fund's key aims are to:

- invest in innovative research and on-the-ground projects to provide new insights to urban water use and management, and
- share the knowledge gained for the benefit of the wider community.

The latter of these is inextricably linked to the interests of the Regulator – given its role at the vanguard of customer and community interests. It is this driver that most clearly articulates why the Regulator should seek opportunities to stimulate innovation through the industry. In this instance, it is understood that the Regulator may permit the recovery of some costs associated with VSWF through the regulated asset base, however the approval process for doing so remains cumbersome and opaque – and deters businesses from making a substantive commitment.

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Cost recovery must be contingent upon the outcomes achieved – improving the objectivity with which innovation is valued in comparison with input-based measures that deliver uncertain outputs. Such an incentive may also, for example, allow businesses to capture some or all of the benefits of innovation for themselves – and potentially for a time period significantly longer than the remainder of the current regulatory cycle.

Further, in order to stimulate innovation in the water industry, Regulators should focus on three key elements when designing this incentive: providing transparency, enabling competition, and creating a holistic valuation framework.

Transparency facilitates the immediate alignment of regulatory reporting mechanisms and the strategic objectives of industry supported funds like the IFI and VSWF – by giving businesses surety and allowing the objective measurement of value. It also enables streamlining of regulatory, corporation and fund management and reporting.

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Competitive market forces act as a catalyst for innovation – which is a frontline tool as market players strive to gain competitive advantage. Unfortunately, most of the world's water markets remain uncompetitive, and businesses are not driven by the same pressures. Market forces can, though, be simulated by the Regulator through the assignment of a greater share of the benefits captured to ‘market leaders’ (i.e. those who create or invest in unproven innovation), with a smaller share going to ‘market followers’ (i.e. those who subsequently adopt innovations developed by market leaders) – in recognition of the higher level of risk borne by those businesses that create or lead innovation.

Finally, the valuation framework applied to innovative solutions must be holistically reflective of its desired benefits – integrating financial and non-financial benefits hand-in-hand. Prototype schemes are already in place in the Australian electricity industry, and could be adapted to suit water businesses. These schemes either reward or punish performance against non-financial targets such as system availability to ensure the true value of investment is accounted for. This would give businesses greater impetus to explore innovation previously ignored on a purely financial basis.

The benefits of innovation are clearly established – it enables cost-efficiency, drives improvements in safety, environmental, and reliability performance – for both the industry and its consumers. The Regulator's role as consumer advocate implores it to establish a regulatory framework that stimulates innovation.

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