



Improving innovation in the water industries: challenges and opportunities

John Hargreaves, Indepen

Stakeholders event of the WssTP

Strengthening European research and innovation for water

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UK water: economic regulation



UK water and waste water service provision

- England & Wales - 21 integrated private regional monopolies
- Scotland and Northern Ireland – each has a state owned service

All have price-cap regulation regimes under which an economic regulator periodically (every 3 to 5 years) sets

- Price cap on charges to customers
- Outputs companies have to deliver (working with environment and water quality regulators)

Provides incentives for

- Efficiency and service - outperformance accrues to shareholders
- Capex
- Innovation?

Why innovation is necessary



Continuing demands for capex to respond to

- Population growth
- Climate change adaptation
- Higher environmental and service standards

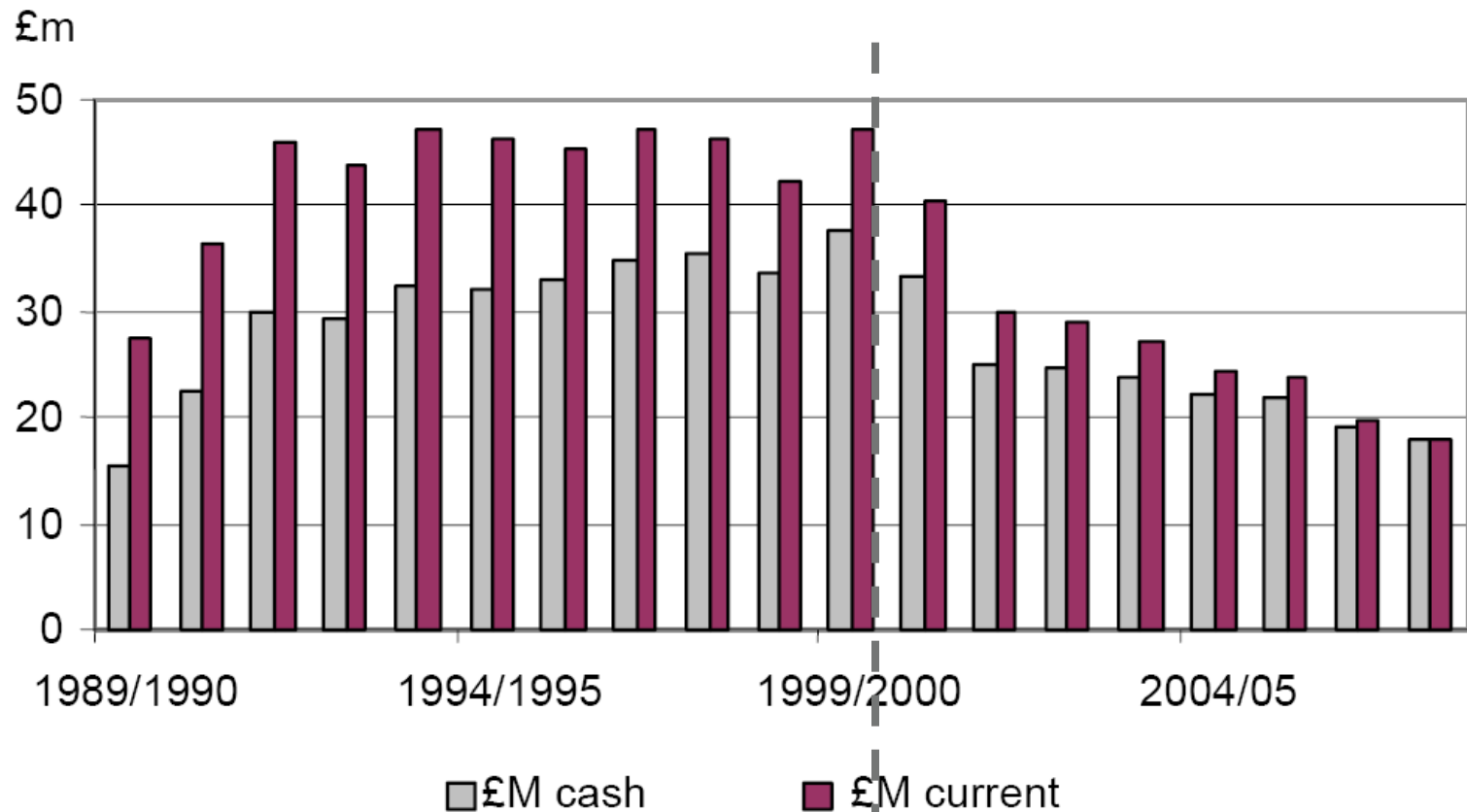
Evidence on sector innovation is sparse but reviewers conclude

- Productivity growth has been “limited” – Cave
- R&D spend has declined in last decade – chart
- The sector could do better

More innovation - not only in the water company sector but also more widely across the water cycle - is the only way of meeting the challenges without rapidly rising bills

In theory, price cap provides a strong incentive for innovation but observers have concluded that the industry does not innovate

Sector R&D spend since privatisation



Adapted from the Cave Review of competition and innovation

PR99

Barriers to innovation



Possible reasons for insufficient innovation

- Divergence between private and social costs – general issue arising because innovators cannot appropriate the benefits
- Water regulation does not encourage innovation
 - Financial rewards limited to 5 years - upside capped, downside not
 - Standards have encouraged unsustainable solutions and are inimical to innovation
- Highly geared financial structures lead to risk aversion and unwillingness to innovate – innovation skills not valued
- Society's dependence on water services means a culture in the regulators and the companies that is at odds with innovation

Concern that decline in innovation may be self-perpetuating as parties lose their capacity, skills and collaborative links

Recent developments



Future Water, 2008

- Defra strategy paper identified need for more innovation for water cycle to become sustainable

This led to

- Martin Cave's Review of competition and innovation in water markets, reported April 2009

The Prime Minister commissioned a report from

- The Council of Science and Technology - Improving innovation in the water industry, reported March 2009

Current context - dawning realisation of

- sustainability challenge to water policy
- appalling economic prospects
- competing demands for infrastructure investment

Cave Review of Competition and Innovation (1)



Purpose

- to recommend changes to the frameworks of the industry to deliver benefits to customers and the environment

Main findings on innovation

- Regulatory regime has weak incentives for innovation – focused on productive rather than allocative and dynamic efficiency
- Lack of alignment between elements of innovation chain
 - UK and Welsh Assembly Governments, industry, regulators, suppliers, research councils, Technology Strategy Board and others

"There are significant weaknesses in the sector's current approach to research and development. There is a fundamental lack of alignment between the different elements of the innovation chain leading to misdirected research and development and low take up by water companies. There are only weak incentives to encourage companies to innovate. This is compounded by a lack of funding at key points of the innovation chain because of the risk profile of innovation in the water industry."

Cave Review of Competition and Innovation (2)



Cave recommended

- Co-ordination and certainty
 - Government and regulators to form a national water R&D body and agree a shared R&D vision for the industry
- National R&D fund paid for by customers and shareholders
 - Allocated on a competitive basis to organisations undertaking basic research, development and trialling
 - Areas mentioned
 - evidence base and technology for real time abstraction and discharge licensing, underground asset maintenance, leakage, energy use, smart meters, water and wastewater treatment technologies
- Changes to price setting approach
 - To increase incentives for outperformance, particularly on opex
- In the long term, upstream competition to stimulate innovation
- A new duty for the economic regulator, Ofwat
 - To promote innovation and report what it has done to deliver

CST - Improving innovation in the water industry (1)



CST's general remit

- advise the Prime Minister ... on science and technology policy issues that cut across the responsibilities of individual departments

Its report on water found

- *"We see an urgent need for step-changes in the application of technology to address both climate change effects and enable further improvements to the efficiency of operations within the water sector to be made. We do not believe that current levels of incremental technology improvement will be enough, in terms of addressing the most pressing challenges."*



Conclusions

- Regulatory regime militates against innovation and is risk averse
- There is a growing skills and capability shortage
- There is poor co-ordination of policy to address conflicts, such as those between
 - Short-term affordability and the need for longer term innovative solutions
 - Aquatic environmental standards v low carbon approaches
- There are poor connections and collaboration between the companies and their supply chain, academia and other parties
- There is a lack of public dialogue to communicate the industry's challenges



Recommendations

- Changes to the regime to increase rewards for R&D and innovation, particularly those with long term perspectives
- Ring fenced funding for R&D
- Creating a more co-ordinated approach to R&D
 - TSB Innovation Platform and Eureka Programme
 - Strengthening resources of UKWIR
 - Incentivising collaboration
- Encouraging low carbon technology technologies for water
- Addressing the skills shortage - through Sector Skills Council
- Government and Ofwat to improve public dialogue on
 - Water scarcity
 - The sector's carbon footprint
 - The level of investment and cost required
 - The role of customers in addressing the problems

Responses



Defra

- Broadly positive about the recommendations, but cautious about placing an innovation duty on Ofwat

Ofwat

- Supportive of the extension of competition
- Existing regime incentivises innovation, no need for R&D fund

Environment Agency

- Unconvinced by idea of R&D fund or new duty for Ofwat

Company responses

- Mixed, depending on regional circumstances and innovation capacity

The new coalition Government has stated

- *"We will examine the conclusions of the Cave and Walker (tariffs and affordability) Reviews, and reform the water industry to ensure more efficient use of water and the protection of poorer households"*

Future developments



New UK Government

- Statement in programme – suggests reform of the sector is on the agenda – widely acknowledged by the parties involved
- General objective of streamlining regulation and killing quangos, likely to effect the water sector
- Promoting legitimacy – localism
- But, all subject to capital market conditions and economic growth

UKWIR projects

- Research collaboration in the UK water industry
- Mechanisms to support innovation in the regulated water industry
- Project specs on UKWIR website
<http://www.ukwir.org/site/web/content/programme/current-programme>
- All suggestions welcome