

Agenda

Advancing economics in business

The development of upstream markets in water and sewerage services

Reform of upstream water and sewerage services in the UK can bring tangible benefits to customers and UK plc. Keith Harris, Oxera Associate, discusses the risks, opportunities and barriers to entry in different parts of the upstream value chain, and considers which reforms could be implemented sooner rather than later

Companies that are consistently at the forefront of profitability, service and efficiency are unlikely to have a patented operating, marketing or financial formula. They are characterised by their willingness to change and grow. Human nature being what it is, a good CEO knows that, whatever successful system or management structure is in place, it won't take long before others copy it or find a way around it. To stay ahead, new approaches to running a business constantly need to be embraced and new markets exploited.

This doesn't mean that, when looking for improvements, management should implement any old idea or take on any old challenge. Any change in a company, no matter how small, should build on embedded skills and be tested against its ability to reduce risk, improve profit (in terms of cash rather than some incomprehensible accounting measure), or improve service. The ability to deliver at least two of these objectives within a reasonable period should be a prerequisite.

To some, the above requirements are somewhat loose and judgemental. That was certainly the view adopted by Enron during its ownership of Wessex Water. Enron's approach to any investment decision was to subject it to the risk-adjusted return on capital (RAROC) model. This model was intended to be a rigorous project appraisal tool designed to make decision-making objective. It was developed by bright and academically well-qualified people, using the leading theories and evaluation tools available at the time. Projects that had the best difference between their return (by which Enron meant accounting earnings) and the risk-adjusted cost of capital went through. Those that failed to meet hurdle returns were shelved altogether; others were delayed or shelved.

In principle, Enron's approach, which was founded on the concept of optimising the balance between risk and reward, was right. In practice, however, it led to some spectacularly

bad decisions. RAROC became known as GIGO—garbage in, garbage out—as principles and the simplifications that are necessary to run any model dominated argument and practical understanding.

The important lesson is that no theory or assumption about how the world should operate can ever replace a well-articulated management judgement based on experience and knowledge about how the world actually **does** operate. Economics can guide, but it cannot decide.

Embrace change

Enron came to the world of water in 1998 believing the sector to be too risk-averse and in need of structural change and competition. Enron collapsed in 2001. Since then water companies have, if anything, become more conservative as financial, rather than operational, engineering allowed managers to deliver the returns required by their new investors. However, those opportunities may now be over, and the case to embrace change and new markets, and potentially some additional risk, may have returned.

A number of UK water companies already understand this. In their business plans for the 2014 price review (PR14), some companies argued for higher returns on non-traditional (by which they meant lower-capital) solutions to water and sewerage problems. It was argued that, although these projects were riskier, there would be a benefit to customers and wider society by reducing capital employed, which would lead to lower bills.

On the face of it, this is a win-win situation—but there are at least two problems.

First, it assumes that the existing class of investors want more risk in exchange for more return—indeed, it assumes that investors think like Enron about risk

and return. Only time will tell whether the response of shareholders to the PR14 settlement will be to stimulate risk-taking to boost earnings, or whether they will have an even more conservative approach to protect credit quality.

Second, it forces the regulator to become involved in each investment decision, asking whether the proposed solution really is 'non-traditional' and, if it is, what return it should be offered. This is an almost impossible task, and such a level of regulatory intrusion might not be great for the company either.

Recognise the practicalities

In promoting de-regulation 15 years ago, Enron may have offered a solution to the second problem. However, its promotion of competition and structural change was founded on concepts, theories and instincts rather than a deep practical understanding of the engineering, operational and economic structure of the water industry. Enron thought that the UK water sector had the same basic characteristics as energy. It failed to understand important differences, not least in the way assets were created and in the cost structure, which influence how market-based solutions could develop. Specifically, it did not recognise that:

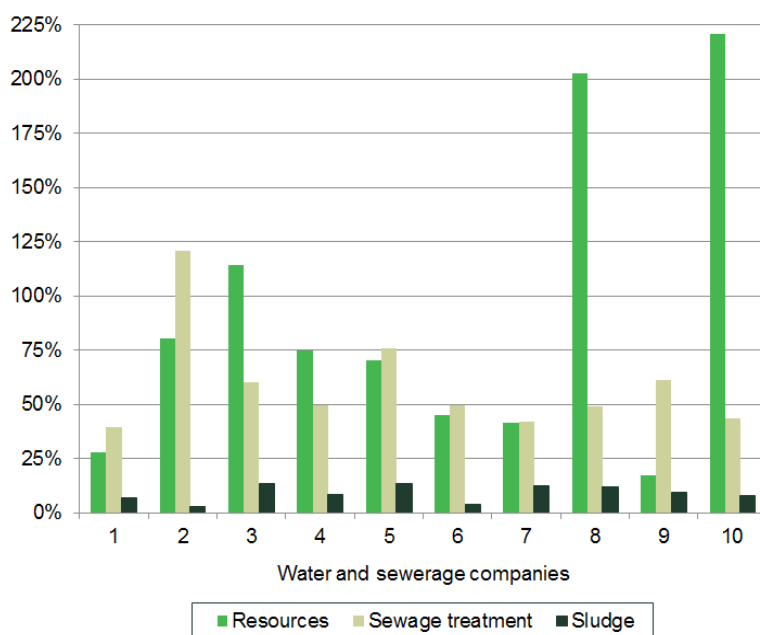
- assets were largely constructed to serve local communities where, even today, the degree of connectivity—inter- as well as intra-regional—is limited;
- the commodity is not as homogeneous as energy, and its short-run marginal costs are a much lower proportion of final prices;
- the regulatory capital value (RCV) in water has become such a large and important financial concept that its disruption is likely to meet with significant opposition from the investors that UK plc has come to rely on to fund infrastructure;
- the RCV, and its discount at privatisation, have not been allocated between one part of wholesale (for example, water resources) and another (such as the pipe network);
- the capital value discount created at the time of privatisation is so deep that any RCV reallocation which, for example, made the upstream market contestable could result in monopoly assets becoming unfinanceable or prices rising substantially.

Figure 1 illustrates the potential influence of the capital value discount.

Moreover, entrants to a competitive water market would also be hampered by:

- the prolonged planning and consenting process, and the lack of statutory powers that are often necessary to obtain access to land;

Figure 1 New asset costs as a percentage of service RCV



Source: Keith Harris analysis of Ofwat data.

- the lack of obvious and major counterparties to water companies in purchasing many products and services;
- the knowledge that incumbents have about capacity and system operation.

Some areas of the supply chain are easier to change than others

All this means that structural change and the introduction of competition in wholesale water services is tricky. For such change to have a positive impact on the efficiency and sustainability of services, and on investor returns, it has to be implemented with care and knowledge. It has to be broken down into manageable chunks, each of which is appraised on its merits with a clear definition of its impact on cost, service and risk.

Fortunately, a typical water and sewerage company is made up of six distinct businesses, each of which has different risks, opportunities and barriers to entry. Table 1 overleaf evaluates the scope to liberalise each of these based on seven potential criteria for success or failure. While the table is only an illustration, it does indicate that some areas of the business could be reformed more readily than others.

While there is a clear need to improve the balance between demand and supply of water resources, there appears to be little prospect for upstream markets in capacity to make an impact on services to customers until there is abstraction trading, intra- and inter-connection, a system operator, and market-based prices. On the assumption that retail prices cannot increase, the latter would appear to be difficult, given the capital sums involved and the impact that rebalancing

Table 1 Ease of change across the supply chain

Consequence of service failure for legitimacy	Resources & Water distribution Sewerage Sewage treatment Sludge & energy					
	Retail	Resources & treatment	Water distribution	Sewerage	Sewage treatment	Sludge & energy
RCV restructuring	Good for change	Bad for change	Bad for change	Good for change	Good for change	Good for change
Need for significant capital and long-term contracts	Good for change	Good for change	Good for change	Good for change	Good for change	Good for change
Obvious commercial counterparty	Good for change	Good for change	Good for change	Good for change	Good for change	Good for change
Potential for unregulated profits	Good for change	Good for change	Good for change	Good for change	Good for change	Good for change
Need for inter-connection with existing assets	Good for change	Good for change	Good for change	Good for change	Good for change	Good for change
Barriers to entry (planning, access, etc.)	Good for change	Good for change	Good for change	Good for change	Good for change	Good for change
Consequence of service failure for legitimacy	Good for change	Good for change	Good for change	Good for change	Good for change	Good for change

Key	Good for change	Good for change	Good for change	Good for change	Bad for change
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Source: Keith Harris.

prices may have on the financeability of the rest of the network. Given this, more is likely to be achieved in the near to medium term by developing abstraction rights trading and further encouraging (or maybe ultimately forcing) incumbents to create inter-connection and trade the spare resources that are already available to them.

In sewage treatment, bypass or self-treatment has always been possible. The fact that it has happened in only a limited number of circumstances reflects the current low cost charged by the incumbent (which is exploiting economies of scale and the RCV discount), the need for significant amounts of capital and long pay-back periods, and the planning and consenting difficulties faced by entrants.

Moreover, in terms of UK plc, it is not obvious that competition via bypass is always in its best interests. Except where there are capacity constraints, the creation of on-site or alternative treatment will strand existing sewage treatment works. It is simply not possible to switch off part of a works. Once built, it has to be operated, maintained and financed at almost exactly the same cost with or without full utilisation. Additional third-party capacity passes on that cost either to other customers or to investors, who would ultimately demand a higher return on capital.

The case for liberalisation is stronger where there are capacity constraints. However, in these circumstances it is already normal practice to ask new customers or entrants

to make contributions to infrastructure either directly and/or through infrastructure charges. This is overwhelmingly the most economic option—although questions remain about the level of charges and contributions sought.

By contrast, sludge management, which is already contestable in parts of Europe, has the advantages of:

- not being part of, or requiring access to, a monopoly network;
- already being slightly separate from other activities because of its energy-generation capabilities;
- using relatively short-life, low-value assets, and thereby allowing any liberalisation to be significantly less disruptive to the RCV;
- by-products that can be used as a fuel or fertiliser;
- inter-relationships with other activities of water companies, such as catchment management;
- willing commercial counterparties in a market that is growing and goes beyond sewerage companies;
- new investors that are willing to provide capital.

The biggest threat to liberalisation in this area is that regulators might not be able to resist intervening if profits rise.

Link reforms to the broader catchment management agenda

None of the above should be taken as suggesting that reforms should not happen or that one area should be liberalised at the expense of another. Change is good and should embrace delivering new things, not just delivering the same things better.

One mistake of privatisation in the UK was that integrated river basin (or catchment) management was abandoned. Flood protection, which had been the duty of the Regional Water Authorities, was given to the National Rivers Authority (later the Environment Agency). This brought with it at least three issues:

- the funding of flood protection—which now looks to be a very significant and growing sum—continued to fall on the public purse, with all the issues that that brings;
- there was no effective system operator coordinating optimal interventions in the catchment;
- technical skills and knowledge were spread across an array of organisations.

The existing regulatory model could provide an excellent means of sustained low-cost access to the finance that is necessary to prevent flooding. It could also provide existing investors with the continued source of low-risk growth that they desire.

The water companies, which are still organised around river basins, also hold the technical and commercial skills to organise and undertake upstream interventions to meet policy objectives set by the quality and environmental regulators. Examples might include paying landowners to allow their land to flood upstream during prolonged periods of rainfall, rather than flooding more densely populated areas downstream; or working with farmers not to pollute the catchment or water sources.

There is an issue of who should be the commercial counterparty in such a move. To many, it would not seem reasonable for customers, in their role as consumers of water and sewerage services, to be faced with the bill, particularly as the taxation-based system of water charges at rateable values provided at privatisation has been significantly eroded. The alternative would be for regulators and councils to pay, or even central government. They would benefit primarily from paying ongoing annual charges, rather than facing upfront payments to deal with flooding or pollution. This is a political decision. There is then a further decision as to whether all these new activities need to be regulated.

Concluding thoughts

Change and growth are necessary to stimulate innovation and deliver more services at a higher standard and in a more efficient and sustainable fashion. There is merit in examining what new things can be done by water companies in the interests of UK plc, and in determining which areas should be tackled first.

While, in principle, the first area should be the one with the greatest potential benefits—which is probably water resources—the practical issues surrounding inter-connection, RCV allocation and commercial counterparties will take a long time to resolve. Sewage treatment is already contestable, at least in principle, although it could be given a helping hand. By contrast, sludge treatment is a relatively advanced model that can be implemented in a relatively short timescale, and catchment management is an obvious extension of existing activities.

Tackling the latter two areas first will allow incumbents to make best use of what is already a very powerful model, while simultaneously allowing stakeholders to examine, and potentially tackle, a number of common issues that are limiting reform across the supply chain. Perhaps most importantly of all, in doing so, we can persuade customers and investors alike that structural change can be an opportunity rather than a threat.

Keith Harris

The views in this article are those of the author and do not necessarily represent those of Oxera.