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# The Regulation of Water Services in the EU

**The European Commission's proposal for a Directive on the award of concession contracts has sparked vigorous public debate and intense opposition. This Directive is controversial because of the nature of the policy it proposes and because the sectors involved are highly sensitive. This Forum examines the weaknesses of the Commission's proposal and presents an overview of the current issues in water regulation and the provision of water services. The authors analyse the regulation of natural monopolies, water efficiency and upstream competition in the water industry.**

Ralf Boscheck

## Procurement, Privatisation, Principles and Presumptions

## The EU's Proposed Concessions Directive and the Governance of Water Supply

On 23 January 2013, the European Commission emphatically denied allegations that its proposal on the award of concession contracts was intended to boost the privatisation of public services, in particular those related to Europe's water supply.[1] Instead, it faulted its critics for deliberately distorting its true objectives: first, to close regulatory loopholes that allow concessions to be awarded with no competitive checks on inefficiencies, national favouritism or fraud; second, to offer business procedural fairness, market access and legal certainty; and third, to hold authorities accountable for spending public money.[2] Yet its opponents, mainly public utilities, trade unions, consumer groups and environmentalists, remained sceptical. For them, the Commission's concession initiative presented just another, possibly illegitimate, attempt to make EU water infrastructures face the market test and, in times of austerity, entice private investors to foot massive and necessary investment bills. Clearly, they argued, a concessions directive ushering in privatisation by stealth would dilute service and social standards, increase utility bills and "water poverty", and put an end to both local political control over a vital resource and to water access as a human right. No wonder, then, that at the time of writing, more than 1.3 million people had signed the first ever European Citizens' Initiative explicitly calling for "water supply and the management of water resources to be excluded from liberalisation and internal market rules".[3] For some, the Concessions Directive had become a major test case for democracy in Europe. But were the issues really clear to those who signed the initiative? This article will provide an overview of the Commission's Directive and then discuss the governance options and performance standards of EU water supply.

### The Commission's proposal for a Directive on the award of concession contracts

Based on its review of EU public procurement regimes, the Commission issued three legislative proposals on 20 December 2011: an amended regulation for public contracts, a set of modified rules guiding utility agreements (water, energy, transport and postal services) and a new Directive on concessions. The latter would bring, for the first time, the award of general service concessions, valued at more than €5 million, within the EU public procurement regime. Although this engendered strong opposition in the European Parliament, technically speaking, service contracts are already subject to general procurement rules, such as transparency and non-discrimination. Put differently, the proposed Directive largely codifies the case law of EU courts.

The proposal defines "concession" as a form of public-private partnership that transfers the risks of developing, operating or maintaining infrastructures, such as ports or water distribution, from the public authority to the private conces-

1 European Commission: Proposal for a Directive of the European Parliament and the Council on the award of concession contracts, COM(2011) 897 final, 2011/0437 (COD).

2 See http://ec.europa.eu/commission_2010-2014/barnier/docs/news/2013/130124_water-services_en.pdf.

3 See http://corporateeurope.org/blog/battle-keep-water-out-internal-market-test-case-democracyeurope.

sionaire (Article 2.2). Unlike the existing procurement Directive, it does not spell out procurement processes but details transparency and communication considerations as well as procedural guarantees, selection and award criteria (Articles 35, 36 and 39 respectively). It also offers limited guidance for specific case assessment. Article 16 restricts the duration of a concession contract to the time "necessary for the concessionaire to recoup the investments made in operating the works or services together with a reasonable return on invested capital". Article 42 defines the extent of contract modification that would require a retendering of the concession. Articles 45 and 46 apply the EU Remedies Directive[4] to concession contracts, allowing aggrieved bidders to challenge procurement decisions, claim damages and possibly require the bidding to be reopened.

As part of the proposal, but also in a number of more recent press releases, the Commission maintains that it

> fully recognises and supports the autonomy of local government regarding the provision and organisation of services of general economic interest. Imposing privatisations on public authorities and Member States would in any case be contrary to the principles of the Treaty and case law. […] Public authorities will at all times remain free to choose whether they provide the services directly or via private operators.[5]

Critics, referring to endorsements of "equal treatment" of public and private service providers or of the need to ensure that any public-public cooperation does not negatively affect private undertakings,[6] offer quite a different interpretation:

> Firstly, the legal text is drawn up in such a way that some municipalities could reach the conclusion that it would be better to invite tenders for services from private companies straight away rather than being sued later because they might not have complied with possible rules for the public provision of these services. […] Second, if the public sector wants to provide certain services such as water supply itself, it has to comply with a newly knitted tight corset of conditions. If a municipality is not able to or does not want to comply with these conditions, it must put these services out to tender. Hence, there is no direct obligation to privatise; however, there are many cases, where the result is an invitation to tender, which was actually not intended, but where the contract is inevitably awarded to private corporations.[7]

The Directive, in its current form, supports both interpretations and hence is apt to fuel sundry, trite speculations. At this stage it is more appropriate to focus on matters of principle.

For one, economic interaction exposes wider areas of a nation's institutional fabric to market review. Consequently, there is a growing need for consensus within and among societies about the extent of policy coordination and the limits to market control. International coordination advanced from negative integration, i.e. simple agreements not to do something, to aligning application principles of diverse national policies and harmonising entire regulatory regimes. Deep, or positive, integration trades the benefits of decentralised, competitive law making for the creation of a level playing field, wider regulatory competition, factor mobility and free trade. In an ideal world, common substantive and procedural principles would be applied decentrally in line

4 See Directives 89/665/EEC and 92/13/EC, as amended by Directive 2007/66/EC.

5 See http://ec.europa.eu/commission_2010-2014/barnier/docs/news/2013/130124_water-services_en.pdf.

6 European Commission 2011, op. cit., p. 13.

7 Austrian Federal Chamber of Labour, http://akeuropa.eu/en/water-supply-waste-disposal-and-co.-concession-directive-shall-now-be-waved-through-at-high-speed.html?cmp_id=7&news_id=1588.

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with circumstance. Ultimately, this requires local enforcement of agreed upon broader economic norms or rights.

Next, efficient regulation must minimise the sum of two interrelated costs: (1) the enforcement costs incurred in notifying, analysing and litigating a case; and (2) the costs of making a wrong decision. One can expect that the closer a rule approximates the specifics of a case at hand, the higher the enforcement costs and the lower the costs of a wrong decision. Conversely, simplifying rules by aggregating business relationships based on some shared characteristics is efficient to the extent that reductions in enforcement costs more than compensate for the likely increases in the costs of wrong decisions. The "dilemma of regulation" – devising standards that fit a variety of situations and yet can be easily applied – may be solved through a hierarchy of rules and levels of enforcement. Regulatory delegation relies on fewer and simpler meta-rules to guide lower-level decisions, adjust principles to circumstance and thus keep matters predictable.

Applied to the case at hand, this gives rise to two observations: for one, public concern about the EU Concessions Directive can hardly stem from the "sudden realisation" that its application could force a change in operational contracts that would effectively contradict national conventions, viz. political will regarding the governance of vital economic activities. The EU's internal market rules thumb national economic regulatory standards. Next, whether the proposed Directive turns out to offer an efficient rule depends on whether its scant considerations on contracting conditions provide sufficient direction for case assessment and whether the application of the EU's Remedy Directive is effective in outsourcing enforcement tasks to aggrieved contract parties. On both counts, what is rightfully concerning, however, is the absence of any reference to evaluating the outcome of the process.

## EU water supply: governance options and performance standards

Europe's national and regional water systems reflect specific climatic, demographic and topographic situations and are the products of the particular cultural, political and social fabric of the societies they serve. Focusing on differences in regulatory governance simplifies the discussion but is often of little help in predicting performance.

Due to various consumption, investment and production characteristics,[8] water services are typically seen to require public provision (as is the case in more than 60 per cent of the EU water infrastructure) or at least very close policy controls. Regulatory options range from the largely decentralised management of private undertakings (subject to antitrust and price regulation) to public asset ownership, ministerial guidance and budget control. Between these extremes, institutional formats differ in how they allocate ownership, funding obligations, and operational and commercial responsibilities among public and private parties, as well as in the type of regulatory, statutory or contractual rules used to hold management accountable. Most European countries utilise a combination of these frameworks to deal with issues of operational efficiency and asset management, water pricing and funding, as well as broader stakeholder and regulatory concerns.

Privatisation in England and Wales in 1989 resulted in ten integrated private corporations that guarantee most of the water supply and are subject to central economic, quality and environmental regulations. Local authorities generally have no role to play. At the other end of the regulatory spectrum, Denmark has the largest degree of regulatory decentralisation and industry fragmentation: around 2900 private, non-profit cooperatives submit to a mix of public and private regulation and supply as few as 185 consumers. In between these extremes, France and Germany treat water supply as a largely municipal affair, but they differ in terms of regulatory "precautions". While French municipalities are not permitted to install their own private law corporations and must identify the most competitive independent private contractors, mandatory tendering is far less common in the German system, which largely relies on semi-autonomous municipal enterprises and prices that are subject to cost-plus municipal standards or federal cartel monitoring.

The combination of physical and institutional differences amongst European water infrastructures makes it difficult to benchmark supply schemes, let alone suggest a model to be followed. For example, comparing operating performance would require conditional but broadly generalisable standards such as headcount per 1000 connections, piping material per application based on lifetime costs or optimal leakage targets based on cost-benefit analyses. Such data does not exist in Germany, for example – neither at the *Länder* nor the county level. Similarly, France's tightly oligopolistic market structure and largely non-transparent bidding processes require observers to impute efficiencies based on consolidated global earnings rather than on the operation of a given concession.[9]

Comparing *water charges* is even more cumbersome. In theory, water prices should reflect costs in line with usage.

8 For a discussion, see R. Boscheck: European Water Infrastructure: Regulatory Flux void of Reference?, in: Intereconomics, Vol. 37, No. 3, 2002, pp. 138-149.

9 See R. Boscheck, op. cit. for a review of the literature.

In practice, pricing policies are linked to concerns for financial sustainability, economic and regional development objectives, or the realisation of some level of social equity. Hence, comparing water prices requires identifying differences in costs, subsidies, profits, taxes and charges and tracing these differences to objective drivers and causes. Cost conditions alone vary based on a number of variables: first, the origin, quality and quantity of raw water and the responsibility for the protection of source water; second, the state of the infrastructure and the resulting leakage rates; third, the cost of labour and procured materials; and fourth, the quality of water and the level of service (interruptions and pressures) provided. Financial charges to be considered depend on sources of finance and policy objectives (for example, the level of cost recovery, renewal rates and depreciation methods). Finally, price quotes may reflect metered unit consumptions, some estimated average consumption per household, or various methods and reasons for tariff differentiation.

Still, a broad-based application of the EU Concessions Directive may allow for market-testing outsourced – or even all publicly owned and operated – water operations. It would efficiently delegate the tasks of fact-finding, evaluation and monitoring to bidders themselves. Yet, the problem is not how to constitute the market but how to judge its outcomes – the quality of bids, assertions and claims. Absent comparable performance data, assessing the effectiveness and efficiency of a given water supply system amounts to expressing an unfounded opinion, e.g. about the presumed merits of price-cap regulation, the benefits of self-administration by associations or the efficacy of decentralised private concessions based on continuous bidding.

As argued elsewhere,[10] deficiencies in central data collection and incompatible measurement practices shelter national systems from market testing, offering potential windfall gains across the broader regulatory community, and may therefore be self-sustaining. Hence, market-testing EU water systems requires the creation of a neutral third party empowered to set up common statistical methods, collect and evaluate data, and provide a broader and more comprehensive informational foundation to national political and regulatory decision-makers and interested parties. This needs to be complemented by statutory reporting requirements to ensure the availability and quality of data and by guaranteed institutional independence and stakeholder access. This will enable the European water system, irrespective of governance format, to tackle the three principle issues typically seen as contributing to poor performance: inadequate data on operation and maintenance, poor management of water supply facilities and unclear patterns of political interference.[11]

### Conclusion

Critics of the proposed Concessions Directive charge the Commission with clandestinely promoting the privatisation of European water infrastructures; the Commission argues that the Directive merely attempts to close regulatory loopholes to drive market access and efficiencies. The Directive in its current form supports both interpretations. If one accepts the attainment of an internal market as legitimate, one cannot object to market-testing outsourced or even entirely publicly owned and operated infrastructures. The problem is judging the outcome of that process – the quality of bids, assertions and claims. Regulatory controls could be effectively delegated, provided that all affected parties have access to an institutionally independent, reliable data reference. This point has been clear for some time; leaving it unaddressed could distort rather than promote any market review.

10 See R. Boscheck: The EU Water Framework Directive, in: Intereconomics, Vol. 41, No. 5, 2006, pp. 268-271.

11 D.J. Rodriguez, C. van den Berg, A. McMahon: Investing in Water Infrastructure: Capital, Operations and Maintenance, World Bank, Washington DC 2012.

Judith C. Clifton and Daniel Díaz-Fuentes

## The European Union's Concessions Directive: A Critical Reading

Three-way talks are in their final stages between the Commission, Parliament and Council before it is widely expected that the EU will approve the so-called Concessions Directive, possibly by June 2013. Controversy has followed the passage of this legislation because of the nature of the policy it proposes and because the sectors involved are highly sensitive. Whilst most attention has been paid to the fact that the Directive will apply to water and sanitation services, it has been largely overlooked that the Directive applies to a much broader array of sectors, not only utilities not subject to rigorous competition – such as energy – but also, in the future, social services such as education and health. But it is the water issue which has dominated the controversy to date.

Opposition to the Concessions Directive has been fierce and originates from diverse political positions, with particu-

larly strong grass-roots mobilisation in Germany, Austria and the Netherlands. The major concern of the opponents of the Directive is that it promotes the outright privatisation of the water sector. Indeed, this perception has likely helped to fuel EU-wide citizen concern about the future of the water sector, and already well over one million signatures have been collected at www.right2water.eu, a platform which petitions for an EU-wide referendum on water. Signatories specifically request that water be kept out of the Single Market rules. Many expect this will be the first citizens' initiative the Commission will have to deal with.[1]

To counter this mounting criticism, the Commission came out with a public statement in January 2013, which said it "stands accused in some media of wanting to privatise the distribution of water". This it denies, whilst it in turn accuses some of its critics as having performed a "deliberately erroneous reading of the legislative proposal".[2] Internal Market Commissioner Barnier was cited as saying to his critics, "Unfortunately, it is easier to misinform than to tell the truth."[3]

This is the background which provides the point of departure for our contribution to the ongoing debate about the future of water regulation in the EU. After describing the contents of the new legislation affecting water regulation, we critique certain aspects of the legislation. We focus in particular on the poor way in which the Commission used empirical evidence to support the basic assumption that concessions actually produce cost savings at all – which goes to the heart of the matter under debate. We conclude that – given the potential winners and losers in this sensitive field of policy – the Commission would do well to endeavour to support future policy initiatives with more rigorous examination of the empirical evidence with citizen welfare in mind.

## What is new in water regulation at a glance

Two new draft directives were published in 2011 by the Commission which signal important changes for the ways in which water – and other public services, such as energy – will be regulated. Of these two draft directives, the Concessions Directive,[4] which sets up a regulatory framework for public-private partnerships (PPPs) across the EU, is the most important, since there is scant legal detail on EU regulation of PPPs at present. In contrast, the draft Directive on Public Procurement in Utilities[5] signals slight modifications rather than significant changes to legislation approved earlier.[6] Taken together, the idea is that different forms of outsourcing public services (public procurement and PPPs) will be subject to a coherent set of EU rules. Due to the novel elements introduced by the Concessions Directive, our analysis will focus squarely on this document.

The Commission argues that a Directive on Concessions is now overdue. PPP projects have become an important mechanism for the financing and construction of large infrastructure projects or for the delivery of basic public services such as water or energy. Governments across the EU, however, have established different sets of rules on how PPP projects should be designed, advertised and awarded. It is these national differences which fundamentally concern the Commission. What is lacking at the EU level is a concrete set of legal guidelines on how PPPs should be enacted. Indeed, the main source for guidelines for PPPs is the classic "four freedoms" set out in the treaties. But these principles are too vague to operationalise into practical guidelines on "how to enact a PPP". There is no detailed secondary legislation on the rules to guide the concession of both *works*, such as the construction of infrastructure, and *services*, such as delivering public services to citizens. In contrast, public procurement has been subject to much more rigorous secondary European regulation.

The outcome is that concessions are too often designed, advertised and awarded in ad hoc ways, according to country traditions or practices, making the PPP playing field both fragmented and differentiated. Indeed, it may even be that the rules governing PPPs are agreed upon at the municipal level. Potential bidders may stay out due to uncertainty over the rules or practices in other member states. Entry barriers and a lack of competition could lead to inefficiencies, not to speak of outright corruption, which, in the end, would harm final users, the consumers of basic public services.

1 Water Justice: The Battle to Keep Water out of the Internal Market – a test case for democracy in Europe, 2013, http://corporateeurope.org/blog/battle-keep-water-out-internal-market-test-case-democracy-europe.
2 European Commission: Directive on Concessions will not lead to forced privatisation of water services, Press Release 2013, http://ec.europa.eu/commission_2010-2014/barnier/docs/news/2013/130124_water-services_en.pdf.
3 Ibid.
4 European Commission: Proposal for a Directive of the European Parliament and of the Council on the award of concession contracts, Brussels 2011.
5 European Commission: Proposal for a Directive of the European Parliament and of the Council on procurement by entities operating in the water, energy, transport and postal service sectors, Brussels 2011.
6 European Commission: Directive 2004/17/EC of the European Parliament and of the Council of 31 March 2004 coordinating the procurement procedures of entities operating in the water, energy, transport and postal services sectors, Brussels 2004.

To attend to this, the core motivation behind the draft Directive is to extend the Single Market logic to PPP activities so that economic agents across the EU enjoy a level playing field when it comes to bidding for, and winning, important concessions. Put this way, the principles of subsidiarity and proportionality can be claimed to be met: action in the form of a directive needs to be taken at the supranational level to ensure a common legal framework is set in place.

It is important to note that, though the current focus of the Commission is on the classic utilities (water and sanitation services and energy), social services – including health and education – are mentioned as potential candidates for these new rules should it be found that they offer interesting cross-border trade opportunities in the future. Hence, it is assumed that this policy can equally apply to a whole range of services, from building a bridge, a school, a hospital or a large technical system, to delivering services in water, health and education.

## A critical view

Utilities operating in water, energy, communications and transport are notoriously complex structures and are quite different from traditional industrial goods as well as social services such as education and health. Sociologists highlight their key role in shaping communities and societies and in promoting inclusion, whilst political scientists emphasise their role in guaranteeing territorial organisation and defence. In the particular case of water and sanitation services, sociologists have argued that, due to their essential characteristics, these services must be regulated as a social right of citizenship, not as a private good, commodity, public or social good.[7] Economists point out that utilities in general have huge capital requirements to build utility infrastructure, whilst they exhibit economies of scale, the existence of network externalities, switching costs, sunk costs and so on. More recently, eminent economists have made the case that water and sanitation services are quite different in structure to other utilities, with important consequences for how competition will work; they conclude it is likely that "the prospects for the development of competition in the water industry should be good, but the reality is that they are quite possibly not very good".[8]

For all these reasons, utilities became increasingly subject to national and sub-national government ownership and regulation from the end of the nineteenth century to around the 1970s.[9] However, since then, the tide has turned towards introducing privatisation, deregulation and competition into utility governance.[10] As a result, some utility monopolies, once thought of as the "ugly ducklings" of the economy, transformed themselves into "swans", i.e. some of the world's largest multinational corporations, particularly from the end of the 1990s.[11] This transformation was particularly striking in telecommunications, but also in electricity, gas, and the water and sanitation service sectors. As a consequence of privatisation and liberalisation policies, former monopolies based in the EU led the path to utility internationalisation around the world: today, Europe is home to the world's largest utility multinationals, as chronicled over the last decade by Hall and associates of the Public Services International Research Unit.[12]

It is in this scenario that the Concessions Directive should be situated. PPP activity involves a great number of stakeholders across the public-private, domestic-international spectrum. At the base level, citizens are the ultimate users of basic services, and water is clearly the most essential of these. Local and national governments are ultimately responsible for the delivery of basic services to citizens. Meanwhile, economic agents, most of which are private (but some of which have public ownership), seek new business opportunities in the construction, management or delivery of services. Put simply, this field is controversial because seemingly antagonistic interests – multinationals and local service delivery – meet head-on. This is important when analysing the Concessions Directive, as argued below.

Our discussion of the implications of the Concessions Directive for utilities regulation is drawn primarily from our critical reading of the draft Directive and the supplementary documentation, particularly the highly illuminating Impact Assessment Report which accompanies it. It is above all here, in the Impact Assessment, where schol-

7 E. Castro, L. Heller: Water and Sanitation Services: Public Policy and Management, London 2012, Routledge, p. 4.

8 G. Yarrow, T. Appleyard, C. Decker, T. Keyworth: Competition in the Provision of Water Services, Oxford 2008, Regulatory Policy Institute, p. 92.

9 J. Clifton, P. Lanthier, H. Schroeter: Regulating and Deregulating the Public Utilities 1830-2010, in: Business History, Vol. 53, No. 5, 2011, pp. 659-672.

10 J. Clifton, F. Comín, D. Díaz-Fuentes: Privatizing public enterprises in the European Union 1960-2002: ideological, pragmatic, inevitable?, in: Journal of European Public Policy, Vol. 13, No. 5, pp. 736-756.

11 J. Clifton, F. Comín, D. Díaz-Fuentes: Transforming Public Enterprise in Europe and North America, 2007, Palgrave.

12 D. Hall, E. Lobina: Water companies and trends in Europe 2012, PSIRU Report, August 2012, retrieved at: http://www.psiru.org/; and on the relationship between privatisation and internationalisation: J.M. Alonso, J. Clifton, D. Díaz-Fuentes, M. Fernández-Gutiérrez, J. Revuelta: The race for international markets: Were privatized telecommunications incumbents more successful than their public counterparts?, in: International Review of Applied Economics, Vol. 27, No. 2, 2013, pp. 215-236, http://dx.doi.org/10.1080/02692171.2012.734791.

ars can glean insights into the ways in which the Commission came to form a particular position on regulating utility PPPs and why the draft legislation takes the position it does.

Concessions are often a policy alternative to privatisation where competition in the market is not feasible or unlikely to flourish because of the presence of a natural monopoly or other structural conditions. The OECD argued that concessions could be used to forge competition *for* the market.[13] In an ideal world, public policy would be guided by reasonable knowledge of the scientific evidence supporting the objectives policy seeks to reach, rather than ideology, religion, prejudice, inertia or a sketchy and erroneous understanding of the evidence. Our central criticism of the Concessions Directive, then, is that empirical evidence has been used in a poor way. It is unsatisfactory that, as the Commission maps out a new regulatory framework for concessions, it focuses repeatedly on its objective of creating a level playing field for economic operators to benefit from concessions. It is all very well to be a "rule maker"; indeed, the principal task of the Commission is to propose rules to the Parliament and Council. However, the key questions lie deeper. Which set of rules do citizens need? For what ends? And what are the priorities?

At this deeper level, the Commission neglects to ask fundamental questions essential to this policy initiative. Are concessions in utilities, such as water, but also energy, transportation, postal services, health and education really a good idea? Do they actually save money? Do possible cost savings last over the medium term? Will concessions alter service quality, and if so, how?

The Commission has produced a lengthy, highly detailed draft Directive, backed up by an equally lengthy impact assessment probe. Throughout, the Commission unequivocally assumes that concessions are a good thing per se, meaning, that is, that they are associated with "best value for money".[14] It is astounding that in the impact assessment in which the Commission sets out the rationale for the policy initiative, it uses *one sole reference* to provide support to the idea that concessions are cost saving. The reference in question is to a working paper published by Lundsgaard of the OECD in 2002 – over ten years ago! The OECD is well known for its high-quality data and research, but also for its support of market-oriented policies, including privatisation and New Public Management.[15]

Citing this single report, the Commission claims that the estimated cost savings to be gained by competitive tendering of public service delivery range between 10 and 30 per cent.[16] To check this, we return to the original working paper to find that this is not an original empirical study of the potential cost savings of concessions. Rather, it is a synthesis of previously published research, most of which is based on studies of various forms of contracting out, including competitive tendering. Moreover, most of these studies cover experiences during the 1990s, a time when concessions, particularly PPPs, had been taken up by a limited number of EU members, particularly the UK, and experience was limited to a smaller number of sectors. Furthermore, the author states that estimated cost savings "vary strongly across countries" and clearly points out that the figure of 10 to 30 per cent estimated cost savings is one specifically linked to two sectors: waste collection and cleaning.[17] One should not forget that the new legislation aims to cover not only these sectors but also water, energy and possibly social services such as education and health in the future. The use of this estimated cost saving is, we argue, misleading.

It is not a foregone conclusion that concessions always generate cost savings of any kind. Economists have provided a number of explanations for why different forms of contracting out government services may not reduce costs. One such explanation is connected to the existence of transaction costs.[18] The transaction costs argument shows how the potential cost saving benefits of PPP projects may be neutralised if transaction costs are higher than savings, for example, where there is highly asymmetric information, contractual incompleteness, or even when certain services are "non-contractible".[19] Lundsgaard alludes to another economic reason why PPPs are not always associated with cost savings: something known in the literature as "hold up". Hold up occurs if the winner of a bid starts to negotiate a higher price than that originally agreed upon once they have embarked on the project. To cancel, renegotiate and continue with this project are all costly for the government. Thus, even if forms of contracting out a service appear to lead to cost savings in the short term, these may well be diluted or reversed in the longer term.

13 OECD: Competition Policy and Concessions, Policy Brief, Paris, May 2007.
14 European Commission: Proposal for a Directive ... op. cit., p. 2.
15 J. Clifton, D. Díaz-Fuentes: The OECD and Phases in the International Political Economy, 1961-2011, in: Review of International Political Economy, Vol. 18, No. 5, 2011, pp. 552-569.
16 European Commission: Impact Assessment of an Initiative on Concessions ... op. cit., p. 10.
17 J. Lundsgaard: Competition and Efficiency in Publicly Funded Services, OECD Economic Studies, No. 35, 2002/2, p. 84.
18 A concept originally developed by 1991 Nobel Prize winner in Economics Ronald Coase and then developed by Oliver Williamson.
19 D. Sappington, J. Stiglitz: Privatization, information and incentives, in: Journal of Policy Analysis and Management, Vol. 6, No. 4, 1987, pp. 567-585.

Another critical nuance in Lundsgaard is that it is important where cost savings come from. Clearly, it is not the same if cost savings are derived from "desirable" sources, such as the involvement of private ownership or the introduction of competition, than it is if they are due to "undesirable" situations, such as a deterioration of service quality or working conditions, as pointed out by dozens of publications during the 1990s. Finally, it should be stressed that Lundsgaard's working paper synthesises scholarly findings on competitive tendering and contracting out and is not focused solely on concessions – and PPPs in particular – which is the main subject of the Commission's draft legislation.

The problem is that the Commission's use of the estimated cost saving of 10 to 30 per cent – upon which lies its argument that concessions are desirable to Europe's citizens – does not mention these nuances. Instead, it glosses over them and seems ready to agree that concessions save money. This use of a single source is unsatisfactory. In addition, the information extracted from this single source has not been done accurately nor set in context. Despite the large volume of more recent research on the effects of concessions, specifically PPPs, on cost savings but also social welfare and service quality, the Commission did not choose to use them.

We argue that these omissions are deeply problematic. It is clearly preferable to use various sources of empirical data on an issue before drawing up public policy and, in particular, to ensure empirical data is as up-to-date as possible, to avoid bias and to identify contemporary trends. This matters in particular in the field of concessions because, whilst earlier studies tended to find evidence of cost savings, more recent literature published over the past decade has more mixed conclusions.

We follow Rodrik's argument that policies are usually not a panacea, having a similar effect in different contexts. Rather, a policy is more or less likely to have a desirable outcome when a particular and often complex set of conditions are in place.[20] To illustrate, a PPP may well generate cost savings when transaction costs are low, the service is "contractible", the rules of the contract are not abused through hold up, and so on. That said, it is worth briefly turning to some of the most recent evidence by leading international PPP scholars to examine the trends they detect. Hodge and Greve include a useful table listing major international research on PPPs and whether cost savings were detected or not: the evidence is mixed, at best.[21] In a recent paper, they also argue that because PPP projects were taken up earlier and more broadly in the UK than in many other countries, it could be illuminating to evaluate their performance there. However, they find that the HM Treasury Report published in 2012 stated that the country's experience was broadly associated with rising costs and reduced value for the taxpayer. This finding is in line with the authors' own extensive research on PPPs in Australia and Canada.[22] Bel, Fageda and Warner conducted a meta-regression analysis on whether contracting out reduces costs for the water sector and did not find clear evidence that this was the case.[23] These are just some examples of recent international studies on PPP and their consequences for cost savings which indicate that the evidence is mixed.

The Commission's use of a single, outdated OECD policy document could well be the result of a lack of attention to important detail. But critics could interpret this cynically as a sleight of hand, given that the 2002 working paper sums up the 1990s "optimistic" findings as presented in some of the earlier studies on the effects of PPPs on cost savings whilst not paying attention to the more "pessimistic" turn in the literature during the 2000s. By the 2000s, experiences with concessions and PPPs had been enriched, having been broadened geographically and sectorally. In addition, it became possible to evaluate the longer-term consequences of PPP projects for cost savings, including whether hold up had reversed them.

## Conclusions

It is indeed unfortunate that the Commission cited a sole, dated document to argue that concessions/PPPs produce cost savings, making them useful for citizens consuming services as well as for cash-strapped governments struggling to reduce public expenditure during the ongoing crisis. It is also unfortunate that this document was used quite poorly. Why does it matter? As leading PPP scholars have argued, "it is important to be aware of who is pushing for PPPs around the world. Greater clarity is required in

20 D. Rodrik: Understanding Economic Policy Reform, in: Journal of Economic Literature, Vol. 34, No. 1, 1996, pp. 9-41.

21 G. Hodge, C. Greve (eds.): Rethinking Public-Private Partnerships. Strategies for Turbulent Times, London and New York 2013, Routledge.

22 G. Hodge, C. Greve: Public-Private Partnership: A Contemporary Research Agenda, Paper presented at the International Research Society for Public Management (IRSPM) conference Prague, 10-12 April 2013.

23 G. Bel, X. Fageda, M.E. Warner: Is Private Production of Public Services Cheaper than Public Production? A meta-regression analysis of solid waste and water services, in: Journal of Policy Analysis and Management, Vol. 29, No. 3, 2010, pp. 553-577.

articulating the interest groups at play, the extent of their influence, and the payoffs."[24]

The Commission would do well to keep this warning in mind, in our view, particularly when dealing with highly sensitive services, including water and sanitation services, but also energy, education and health. These services are regulated as Services of General (Economic) Interest and are understood as playing a key role in social inclusion in the Single Market.[25] Florio argues that reform was a "top down policy experiment" mainly conceived in London during the Thatcher years and then diffused from Brussels.[26]

It is important that policy makers present strong backing to support policy initiatives, especially when it is perceived that there are clear winners and losers, as in the case of the Concessions Directive. If the empirical evidence presented is thin, this provides a slippery slope for policy makers seeking to push through this reform. Indeed, eyebrows may be raised by readers of the draft Concessions Directive and the Impact Assessment which accompanies it when they turn to the list of stakeholders the Commission consulted with whilst the legislation was being drafted and modified.[27] It is nonetheless welcome that the Commission publish a chronological list of the stakeholders they met during the drafting of the Directive, as this helps to provide more transparency in the policy process.

The first stakeholder the Commission met was Veolia, the French-based world leader multinational in water, waste, energy and transport, clearly one of the potential winners of this policy. The Veolia meeting took place early on in the life of the draft Directive, in January 2009. Two months later, in March 2009, the Commission met with E3PO, a non-profit association based in Brussels which lobbies for PPP private operating companies. Later on in the same year, it met Bouygues, a leading French construction multinational, ASECAP, an association promoting motorway tolls, the European Construction Industry Federation and two more French multinationals operating in the water sector, EDF and Suez. Indeed, the only meeting in 2009 outside those with huge interested business was with the charity Caritas. So, the first year consisted of nine meetings, eight of which were dedicated to hearing the view of the private sector as regards this Directive. During 2010, the Commission held twenty-two meetings with stakeholders, this time with a broader base, including utility multinationals and private sector associations but also public regional bodies, the Committee of the Regions and local associations involved in social housing and public enterprise. In 2011 the Commission met with EU utility multinationals again, including Suez Environnment (four times), GDF Suez (twice), Vattenfall and Veolia, whilst it also met with its social partners, the European Trade Union Confederation (twice) and the European Centre of Employers and Enterprises providing Public services (five times).

It is striking how Europe's utility multinationals seem to have played such a major role in the ongoing process of creating policy in fields which are of direct interest to them, especially in the early phase of policy making and the phase of finalising policy. In particular, this applies to how Veolia was involved from the outset, possibly helping to set the agenda, along with other multinationals during 2009, and how these were brought back into the process during 2011 as the draft Directive was being finalised. In contrast, meetings with the two social partners, CEEP and ETUC, only commenced once the general lines of policy had already been sketched out and had partially matured.

On a final note, this draft Directive does *not* require member states to privatise water, understanding privatisation as selling an entity from the public to private sector. Nor does it mandate that municipalities contract out services or works through concessions. This is *not* a liberalisation directive as introduced in the telecommunications and electricity sectors, for instance. What it will do is force municipalities or governments to open their bidding process, should they decide to launch one, to any other entity in the EU which seeks to apply. Quite simply, the Commission has chosen concessions in water, energy and other services as its latest target to extend the logic of the Single Market. The main critique offered here is that the Commission used dated and incomplete evidence on the expected cost saving benefits of concessions. Looking at recent evidence on PPPs, it is clear that the evidence is mixed. It is unfortunate that the Commission did not include a more detailed study of the potential consequences of PPPs in its background report. Clearly, there are entities which can potentially gain much from this policy development, particularly the utility multinationals and associations of private operators in PPPs. But citizens are still feeling the effects of the financial and economic collapse in Europe brought about by ambitious deregulation. It is time to renew our attention to empirical evidence underpinning policy change, as free from pressure groups as possible.

24 G. Hodge, C. Greve: Public-Private Partnerships: An International Performance Review, in: Public Administration Review, Vol. 67, No. 3, 2007, pp. 545-558, here p. 553.
25 J. Clifton, F. Comín, D. Díaz-Fuentes: Empowering Europe's Citizens? Towards a Charter for Services of General Interest, in: Public Management Review, Vol. 7, No. 3, 2005, pp. 417-443.
26 M. Florio: Network Industries and Social Welfare, Oxford 2013, Oxford University Press, p. 448.
27 European Commission: Impact Assessment of an Initiative on … op. cit., Annex III.

Mark Oelmann and Christoph Czichy

# Water Service Provision as a Natural Monopoly

Water is often referred to as the number one necessity of life, and therefore feelings run high when economists use economic methodologies to analyse the specifics of the water sector. The reason for this is that water is considered to be a human right that under no circumstances should fall into the hands of profit-maximising companies. However, precisely because of the fact that human civilisation depends on water in every regard, economists should have a say in this sensitive issue. This is due to the fact that the water supply sector analysed in this article has a specific structure – called a natural monopoly – that distinguishes it from other markets in modern economies.

A natural monopoly is given when one company is able to supply the entire demand in a market at a lower cost than two or more companies can. The reason for this is that the total average cost declines over the entire range of demand; in other words, the more a company produces, the lower the average cost of one unit produced will be. This reasoning is immediately obvious in a network industry such as the water sector. It is economically senseless to lay a second network of pipes in the ground next to the already existing one. Therefore, one company will inevitably be in the position to supply the entire demand at a lower cost than two or more firms with individual networks could.

As a result, a private water supply company has monopoly power in a specific region and will most likely exert this power in two particular regards. Firstly, it will keep prices high, generally speaking, in order to maximise its own profit, and secondly, it will not care much about consumers' needs since they have no possibility to substitute their water provider. This in turn leads the water supplier to neglect the infrastructure, leading to the danger of decreasing water quality. In light of the problematic nature of the water supply sector, it is obvious that economic policy measures must be taken in order to protect consumers from exerted monopoly power. It is worth noting that, according to economic theory, public water supply companies also do not supply optimal quality; they actually tend to provide quality levels which are too high.[1]

Of course the structure of a natural monopoly is not solely reserved to the supply of water. Every sector that resorts to any kind of network is potentially a threat to exert monopoly power. This explains the European Commission's moves to liberalise the postal, telecommunications, electricity, gas and railway sectors, which resulted in several directives that had to be implemented into national law. Taking the electricity market as an example, the approach was to split the sector into three areas (production, transportation and retail) and ensure transparent and non-discriminatory access to the electricity grid by regulating the network operators. In doing so, the Commission laid the foundation for the upstream market of electricity production as well as for the downstream market of electricity retail to develop a high degree of competition, which in turn led to a decline in wholesale market prices.

This approach worked quite well but is unfortunately not suitable as a blueprint for the water supply sector with its specific characteristics. The European Commission acknowledged these differences in the characteristics of the national water supply markets in 2004[2] and refrained from enacting an EU-wide directive regarding the water sector. The decision was also in line with the principle of subsidiarity, according to which an issue should be handled by the least centralised authority that is still able to address the matter effectively. In the case of the European Union, this is the national government for some member states and communes for others. Thus, the market structure in the various EU member states is still quite heterogeneous and national governments deal in very different ways with the aforementioned problems of a natural monopoly in the water sector. This article analyses the approach in different European countries and discusses the specific implications for Germany of the current draft of the concession directive.

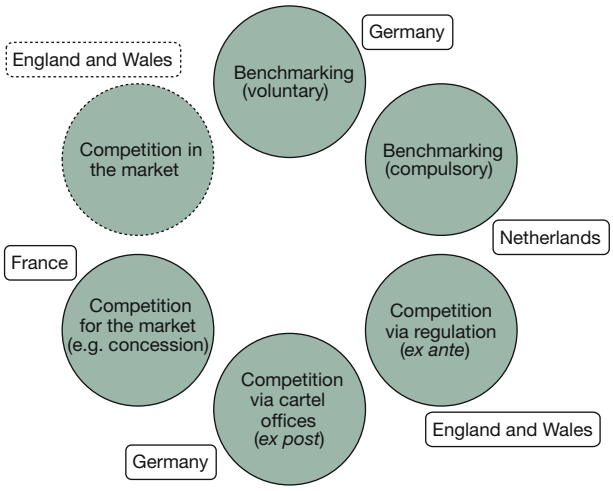
## Different approaches to dealing with natural monopolies in water

In general, five different ways of addressing the problem of natural monopoly power in the water supply sector can be identified in European countries. Figure 1 illustrates various alternatives that are currently being applied.

1 See D. Bös, W. Peters: Privatization, internal control, and internal regulation, in: Journal of Public Economics, Vol. 36, No. 2, 1988, pp. 231-258. In practice, we sometimes observe the opposite: Supervisory boards do not allow companies to increase prices due to e.g. upcoming elections. In such circumstances, there are water supply companies (in Germany, anyway) which are forced to abandon investments and thus supply a quality which is too low.

2 See Commission of the European Communities: White Paper on services of general interest, Brussels 2004, pp. 4-5.

Figure 1
**Different approaches to dealing with natural monopolies in the European water sector**




Source: Own illustration.

*Benchmarking* refers to an assessment of the utilities' performance through the measurement of specific indicators in different areas, e.g. customer service, quality or efficiency. It can be either voluntary (as in Germany) or compulsory (as in the Netherlands). Benchmarking also is the foundation of *competition via* regulation.[3] Such an approach is the attempt to simulate competition in a sector that has by nature a monopolistic structure. It is achieved through various instruments, especially the approval of tariffs that the utilities are allowed to charge for their services. This *ex ante* form of regulation is currently implemented in England and Wales. In contrast, *competition via cartel offices* is applied *ex post*. Prices are not pre-approved but rather are thoroughly analysed by authorities to determine if there are grounds to suspect abuse of monopolistic power. This is the case in Germany at present. Another form of introducing competition and thus diminishing the problems incurred by having national monopolies is used in France. This regulatory form of *competition for the market* creates a setting in which companies are asked to quote a price at which they are willing to operate services in a certain market for a specific period of time. As a result, the most efficient company places the winning quote, and a limitation on monopoly revenue is simultaneously ensured. Finally, there is the concept of *competition in the market*, the "blueprint" which is used in other network industries such as electricity, gas, telecommunications, railway and postal services. It is based on the idea of regulating the supply network, and it opens up production and retail for competition. This concept is currently not applied in any of the water sectors throughout the EU, but England and Wales are eagerly moving in that direction.

It is important to highlight that these forms can actually be combined in different ways. Hybrid models are not uncommon. For example, France is considering introducing additional benchmarking, and Germany and England and Wales also make use of public private partnerships. In the following, the various regulatory forms are discussed in more detail.

### *Ex-post* regulation and voluntary benchmarking in Germany

The water sector in Germany is quite fragmented, with a total of about 6,400 water supply utilities that operate under either private or public law. Responsibility for the provision of water services, however, lies strictly in the domain of municipalities, which have their own democratic legitimacy as well as autonomy in self-government. Privately run companies – even if they are totally owned by municipalities – offer their services at a certain *price*, whereas public utilities impose *charges* on their customers. Although there seems to be no difference between these two forms of remuneration at first glance, the consequences can differ quite substantially. Prices can be supervised *ex-post* by the cartel authorities of the 16 federal states (or by the German Federal Cartel Office in the case of cross-border activities), whereas charges can be subject to specific *ex-ante* legal provisions and controlled by the supervisory authority of the local government. Whereas the efficiency of service delivery is not analysed in the *ex-ante* control of charges, the opposite holds true for the *ex-post* control by cartel offices.[4] The consequence is that those companies which currently impose prices and face the threat of being reprimanded by cartel offices are changing their enterprise structures in order to be able to employ charges instead of prices. Cartel office cases might thus become nothing but a paper tiger. In order to respond to this "escape into charges", the supervisory authorities should investigate these institutional shifts to prevent fraudulent use. There is an increasing need for strengthening these control entities in Germany.

3 See M. Oelmann: Anreizwirkungen von Benchmarkingsystemen – Implikationen für die Überzeugungskraft des deutschen Weges in der Wasserwirtschaft, in: P. Haug, M.T.W. Rosenfeld (eds.): Die Rolle der Kommunen in der Wasserwirtschaft, Hallesches Kolloquium zur Kommunalen Wirtschaft 2005, Schriften des Instituts für Wirtschaftsforschung Halle, Vol. 25, Nomos-Verlag, Baden-Baden 2007, pp. 47-69.

4 See E. Gawel: Entgeltkontrolle in der Wasserwirtschaft zwischen Wettbewerbsrecht und Kommunalabgabenrecht – eine komparative Leistungsfähigkeitsanalyse, in: Zeitschrift für Wasserrecht, Vol. 52, No. 1, 2013, pp. 13-35.

The German Bundestag decided to pursue a so-called modernisation strategy for the water supply sector.[5] The main novelty of the final strategy paper – a number of parts of which have yet to be implemented – is the benchmarking concept developed by the sector itself. The goal is to leverage efficiency potentials by comparing companies and enabling them to learn from each other. Benchmarking indicators are measured in the areas of security of supply, water quality, sustainability, economic efficiency and customer service. Nearly every federal state has its own benchmarking survey.[6] It is important to mention, however, that the benchmarking results are only published at an aggregate level, and thus the information accessible to the public is rather rudimentary. Interested citizens may therefore find structural ratios but no information about the performance of individual utilities. The main idea is rather that the best companies share their experience with those underperforming in benchmarking so that they may learn and adapt certain approaches and that the sector as a whole may move forward and achieve a higher performance level. Whether the chosen method of benchmarking is appropriate to attain this goal is certainly debatable. It is therefore not surprising that the introduction of *ex-ante* regulation is brought up for discussion on a regular basis, especially by the monopoly commission, which is an independent advisory council of the federal government, and recently by national consumer organisations.

This debate to install an *ex-ante* regulator is also to be seen as in line with the price/charge discussion mentioned earlier. It is difficult to understand why a company that has received an order by a cartel office to decrease its prices due to the suspicion of being inefficient can easily avoid this order by simply collecting charges instead.

### Compulsory benchmarking in the Netherlands

The Netherlands have chosen a rather pragmatic way to incentivise natural water monopolies to improve. Companies and the government have agreed upon compulsory benchmarking, which takes place every three years via a public report which assesses the performance of the ten water supply utilities in the areas of water quality, service, environment, and finance and efficiency. In contrast to the benchmarking in Germany, the information gathered in the Netherlands, including individual utility performance, is published in the benchmarking report in order to intensify the pressure on the companies to strive for improvement.[7] This process of "naming, faming and shaming" leads to transparency in the sector and highlights best practices so that companies may learn from each other. The benchmarking is coordinated by VEWIN, the association of drinking water companies in the Netherlands, and therefore has to be strictly differentiated from a formal economic regulatory authority. By choosing this specific model, the administrative burden can be kept at a low level while still yielding impressive results – according to a study by the Erasmus University in Rotterdam, sector efficiency increased by 27.5% between 1997 and 2009. Since the companies agreed to participate in benchmarking, the Dutch government removed the companies' threat of becoming privatised by simply forbidding privatisations in water service delivery.

### Competition via regulation in England and Wales

The English water sector was liberalised in 1989 due to the disastrous state of the infrastructure, which at that time had 29 water supply companies as well as ten public integrated water supply and sewerage utilities. All of the companies were privatised, and their number was reduced in the following years to ten integrated companies providing water for about 75% of the population and 12 water supply utilities providing water for the remaining 25% of the population in England and Wales. In order to ensure that privatised companies would not misuse their monopoly power, the water utility regulator Ofwat (the Water Services Regulation Authority) was established. Since Ofwat is not subject to directions from the UK's Department for Environment, Food and Rural Affairs and is entirely financed by fees from the water supply and sewerage utilities, its independence is ensured. The agency pursues the safeguarding of consumers' interests by forcing competition as well as the long-term sustainability of water services and the simultaneous security of supply.

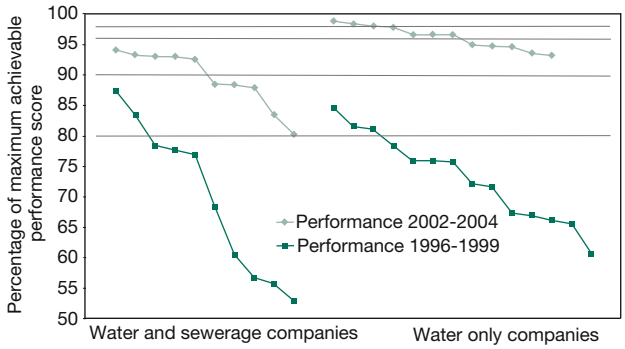
Ofwat aims at increasing the static efficiency (the output is produced at the lowest possible costs) as well as the qualitative efficiency (the quality level of supply takes into account customers' actual willingness to pay) of the regulated utilities. This is achieved by setting limits to the prices charged to the customers in a price review that is conducted every five years. Utilities that encounter costs below the price limit may keep the difference as a profit during that specific regulatory lag. This financial incentive encourages companies to gain efficiency potentials.

5 Deutscher Bundestag: Bericht der Bundesregierung zur Modernisierungsstrategie für die deutsche Wasserwirtschaft und für ein stärkeres internationales Engagement der deutschen Wasserwirtschaft, Berlin 2006, Drucksache 16/1094; Modernisierungsstrategie, adopted by the German Bundestag on 21 March 2002 (Plenary Protocol 14/227).

6 See BDEW (The German Association of Energy and Water Industries): Benchmarking: "Learning from the best" – Comparison of performance indicators in the German water industry, Berlin 2010, pp. 2-5.

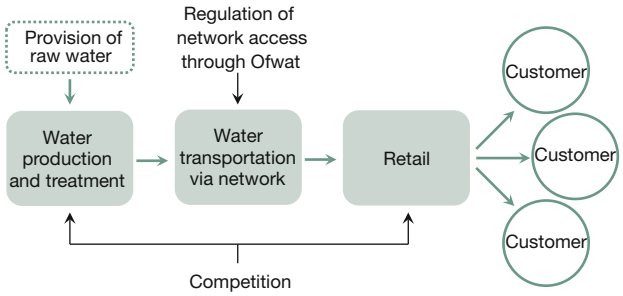
7 See VEWIN: Reflections on Performance 2009 – Benchmarking in the Dutch drinking water industry, 2010.

Figure 2
**Performance assessment in England and Wales**




Source: Ofwat: Future Water and Sewerage Charges 2005-10, Final Determinations, Periodic Review 2004, Birmingham 2004, p. 160.

Figure 3
**Complete unbundling in the water sector**




Source: Own illustration.

The process of setting price caps considers four different elements. *Ceteris paribus*, utilities are allowed to raise prices according to the overall inflation rate in England and Wales. In addition, both sector-wide expected productivity growth and expected productivity growth for the different individual companies are calculated. Finally, an overall performance assessment is part of the price-setting process in order to take into account quality aspects. Companies participate in compulsory benchmarking that assesses indicators in the areas of customer experience, reliability and availability, as well as environmental impact. The performance of an individual utility in comparison to the sector performance is directly linked to its approved price cap.

Figure 2 presents the performance scores as a percentage of the maximum possible overall performance assessment score for the periods 1996-1999 and 2002-2004. It shows that all 12 of the water-only companies achieved performance scores of more than 90% in the second period. Even more impressive is the fact that the relatively underperforming utilities significantly improved their performance between the two periods, substantially narrowing the relative gap. Such quality enhancement is of course the result of considerable investments. While average investments per utility amounted to approximately 2 billion GBP before liberalisation, this amount doubled in the 1990s and has remained at this level ever since.

As far as static and qualitative efficiency are concerned, remarkable progress was made between 1992/1993 and 2003/2004, as real prices decreased although investments increased significantly, which led to considerable quality enhancements. During the price period 2004-2009, real prices rose by 20%; however, 70% of this increase was due to customers' desire for a higher level of quality as well as certain European directives that had to be implemented.

## Competition in the market as the next step in England and Wales

The preceding discussion pointed out that the current regulatory system in England and Wales addresses the static and qualitative efficiency criteria quite successfully. However, it did not address the issues of dynamic efficiency (innovations are stimulated in the area with the highest impact) and technical efficiency (utilities exhaust the potential of economies of scale/scope, i.e. by achieving the optimal size of the company). Furthermore, a main area of concern is the fact that the system is rather rigid and might not be able to appropriately respond to future challenges such as the potential effects of climate change or the population growth in the arid southern and eastern parts of England.

The recent notable development in the regulatory system therefore concerns the unbundling of accounts, whereby utilities were forced to assign their income, expenditure, assets and liabilities to different sections, namely water resources, raw water distribution, water treatment, treated water distribution and retail. These were then further divided into resources, network and retail. As a result, approximately 94% of the fixed assets will be part of the division network.

The realisation of a complete unbundling – with water production and treatment in the upstream market and retail in the downstream market, and both markets characterised by a high level of competition – might finally bring about the desired dynamic and technical efficiency in the realm of the still regulated network utilities.[8] Time will tell whether this model, illustrated in Figure 3, will be successful.

8 See Ofwat: Setting price controls for 2015-20 – framework and approach, A consultation, January 2013.

### Competition for the market in France

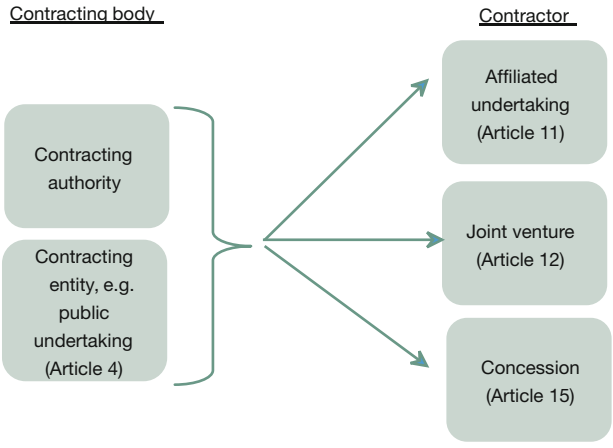
The water sector in France is quite different from that in other countries due to historical developments. At the end of the 18th century, municipalities started to progressively assume responsibility for water provision, but they soon experienced a lack of technical and financial resources for service operations. In order to overcome the problem of weak resources, private partners were involved. The Republic has about 36,600 municipalities, 60% of which have less than 500 inhabitants. As a consequence, inter-municipal structures formed to gain economies of scale.[9] Such communes or commune groups can either decide to provide water services on their own (*régie* model) or to auction off the services. Models differ according to the extent to which a private partner is involved. In a management contract, a private company is paid a fixed fee for conducting the service. In a management delegation, a delegate receives a return that is directly linked to the level of activity provided. In the past, concession models were interesting for municipalities because they allowed them to hand over complete responsibility for the construction, operation and maintenance of infrastructure to the partner.

The delegation of water service provision, however, led to a number of problems in the past due to a lack of competition. The enormous knowledge advantage of incumbents in comparison to new companies at the time of an invitation to tender proved to be an important barrier to competition. For this reason, the Sapin law was passed in 1993. It requires organising authorities to hold a public competitive bidding procedure and limits the duration of new contracts to a period of 20 years. Consequently, competition intensified, leading to an average reduction in the operators' margin of 10% or improved services at the same price.

### Approaches to dealing with natural monopolies and a Directive on the award of concession contracts

The prevailing discussion has revealed that various approaches exist to incentivise water service providers to increase their efficiencies. There are certainly many possible ways to structure these approaches. One option, however, is to differentiate between rather centralised approaches (England and Wales and the Netherlands) and rather decentralised ones (Germany and France). According to their own histories, each country defines the "subsidiarity principle" differently. This, however, is key to understanding how different European countries might be affected by a Directive on the award of concession contracts and why the current proposal for a Directive is so avidly discussed, particularly in Germany.

Figure 4
**Organisation of the Directive on the award of concession contracts**




Source: Own illustration.

The scope of the current proposal[10] is to establish rules on the procedures for procurement by contracting authorities and entities with respect to concessions (Article 1). Privatised water companies as in England and Wales would therefore not fall under this Directive. Dutch companies may be regarded as public undertakings, but they do not intend to auction off the full or a major range of water service delivery to private entities. This is due both to their size, as they already have the necessary know-how, and to the fact that Dutch law prescribes that water supply services must be rendered by public undertakings. The situation would be quite different in Germany.

As Figure 4 shows, contracting authorities or contracting entities have different options for choosing a partner. If they decide to cooperate with an affiliated undertaking or award a contract to a joint venture, they are quite free to do so. Thus, the Directive would not apply. It therefore has to be emphasised that public contractors would remain free to decide on the direct provision of services. Public-public cooperation is thus exempted from competitive tendering – as long as no private capital is involved.

However, if contracting authorities or entities decide to enter into a concession (Article 15), each economic operator shall be treated equally and without discrimination and shall act in a transparent and proportionate manner (Arti-

9 See B. Barraqué, C. Le Bris: Water Sector Regulation in France, in: Journal for Institutional Comparisons, Vol. 5, No. 2, 2007, pp. 4-12.

10 European Commission: Proposal for a Directive of the European Parliament and of the Council on the award of concession contracts, 2011/0437 (COD), 20 December 2012.

cle 1b). At first glance, this sounds convincing and actually is in line with the approach used for electricity and gas (§ 46 EnWG). From an economic point of view, we would certainly also support this approach. Unfortunately, the world is not static. Contraction bodies and contractors react, but unfortunately not necessarily in the way the Directive would like them to. Just as a company in Germany which received an order by a cartel office to decrease its prices might avoid this order by simply collecting charges instead, we would predict a similar reaction to the current Directive.

For example, if a German *Stadtwerk* (municipal utility) makes more than 20% of its sales outside of its municipal area, e.g. due to its electricity or gas activities, the municipality will try to find solutions to establish a separate water service company. Economically, this would be a step backwards, because economies of scope, particularly between gas and water or in all the planning activities among the different divisions within a *Stadtwerk*, would be lost. As evidence to this scenario, the Wuppertaler Stadtwerke AG outsourced its water business to the City of Wuppertal in order to avoid the impact of the Directive and the expected scrutiny of the cartel office by automatically shifting from prices to charges.[11]

11 Rat der Stadt Wuppertal, Sitzungsvorlage, 18 February 2013, http://www.wuppertal.de/rathaus/onlinedienste/ris/vo0050.php?__kvonr=14426&voselect=8210; Westdeutsche Zeitung, 5 March 2013, http://www.wz-newsline.de/lokales/wuppertal/wasserversorgung-liegt-ab-mai-wieder-in-der-hand-der-stadt-1.1257488.

As a second example, if a concession to a *Stadtwerk* without any private capital is exempted from the Directive while even the slightest private capital engagement results in tremendous administrative challenges for the concessionaire, the likely reaction should also be obvious. A private partner will be crowded out. Economically, this would also not be beneficial. In a country with over 6,000 water service providers, private partners can provide the knowledge required to improve the companies and to keep track of constantly increasing legal requirements.

For Germany then, the Directive in its current form might therefore represent a change for the worse. It would be a disaster if the primary influence on the country's institutional structure was the avoidance of the Directive's impact. Overall, we therefore predict that either Article 11 or Article 15 of the current Directive will be amended, as this seems necessary. In the end, we may have only been witnessing a storm in a teacup.

Is this good news? Not really. Challenges such as future investments and their impact on tariffs, efficiency in both capital as well as operating expenditures, and the structure of the industry remain. At the same time, we can be proud of the fact that it is safe for every German citizen to drink tap water. Germany will thus need to continue in its quest to maintain the quality of its drinking water and at the same time find ways to increase efficiency. This should not be impossible!

Monica Alessi and Sébastien Treyer

# Economic Models and Water Pricing Towards Water Efficiency

Water is an essential resource, and as such the rules, regulations and economic policies concerning water are sensitive and highly political. Water access for basic consumption and sanitation needs to be ensured. However, highly subsidised schemes for access to water resources by economic activities have also led to distorted incentives. Water use in many EU regions is not managed efficiently, and the insufficient levels of investments in water efficiency and quality do not reflect the value of the resource. As a result, and in combination with the variability of the climate, water stress is increasingly an issue in the EU, even in a number of northern regions. Present consumption patterns and uses point to water as a low-value abundant resource, leading to ecological and water quality degradation. In order to ensure the sustainable use of water in Europe, authorities, citizens, industry and agriculture need to change their outlook on water management and consumption. There is a need to address water waste and promote water efficiency.

With the adoption of the Water Framework Directive (WFD) in 2000, the EU took a crucial step towards an integrated approach to water on the basis of river basin management. Since then, very significant progress has been made, but the EU is not on track to achieve the Directive's objectives.[1] By seeking completion of the current policy framework, the EU's "Blueprint to Safeguard Europe's Waters" was launched in 2012 as a process of

1 European Environment Agency: Towards Efficient Use of Water Resources in Europe, EEA Report No. 1/2012, Copenhagen.

review and policy reform aiming at reaching the full potential of the Directive.[2] The Blueprint opened the debate on defining the best economic models for the management of EU water resources, enforcing existing articles of the Directive and exploring innovative policy instruments.

In that perspective, this article is based on a CEPS Task Force report which focuses on possible economic models to encourage water efficiency and in particular on the usefulness of economic analysis for the policy debate and the balancing role of water pricing.[3]

## The economics of water sustainability

A number of WFD objectives are not on track to be achieved, and one of the main causes is the fact that economic signals given to economic agents are inadequate for the task at hand, including the objectives of ecological protection and avoiding overexploitation. Investments in infrastructure for water efficiency are often too low, and other investments for water-using activities are misguided due to an undervaluation of water resources.

To manage water resources efficiently, there is thus a need to develop an economic model that sends the right signals to water users. The first step is for the EU and its member states to perform a detailed economic analysis of the current uses of water, as requested by Article 9 of the WFD (although for the moment this is restricted to a narrow definition of water services that should be subject to such an analysis). This will feed the policy debate with salient economic analysis, enabling policy makers to develop the right instruments to ensure sustainability. The economic analysis should help to define the following pillars for the sustainable use of water:

a) the identification of the drivers of the unsustainable use of water

b) the investment needs in the sector

c) the benefits and costs to stakeholders under the present regime.

Such an analysis should enable the development of appropriate instruments for water management, i.e. regulation, levels of water-related taxes or water pricing, public investment requirements and other potential transfer mechanisms among different users.

Three economic notions are central to the development of water management models:

a) *Cost recovery* generally consists of the necessary funding to build and maintain efficient water infrastructures, but it may be expanded to include costs related to wider externalities and resource management.

b) *Water efficiency* refers to the ratio of the water produced by a network or a water-producing infrastructure to the initial water withdrawal from the resources. This measurement reflects the aim of reducing water losses in such infrastructures.

c) *Water productivity* is related to water efficiency, but it is more specific. It is the ratio of water output to the amount of water withdrawn to produce it. Water productivity is maximised when the water use generates a higher value per unit of input than other production alternatives.

In all of these aspects, the value of the resource is key. Giving a price to the use of water can have diverse objectives. For water infrastructures, e.g. for drinking water services, the price users pay aims at recovering the costs (investment, maintenance, operating, etc.) of the service. Putting a price on the use of water can also have the objective of influencing the behaviour of water users, for example, by transmitting signals of scarcity and guiding their choice to use less water or to invest in more efficient infrastructures or technologies.

## Economic models for the sustainable use of water: cost recovery analysis and mechanisms

Water management requires considerable investments in infrastructure construction and maintenance as well as in general resource management, such as river protection, floodplains, etc. The recovery of costs can be achieved through water levies or general taxation. The cost recovery models in a number of member states, however, have not been effective. Appropriate cost recovery mechanisms are essential to ensure the financial viability of water services (drinking water networks, for instance). Furthermore, analysing the costs incurred through the different uses of water and the way these costs are covered by the diversity of stakeholders would be a key piece of information for the water policy debate.

2 European Commission: A Blueprint to Safeguard Europe's Water Resources – Communication from the Commission, COM(2012) 673.

3 C. Egenhofer, M. Alessi, J. Teuch, J. Núñez Ferrer: Which economic model for a water-efficient Europe?, Report of a CEPS Task Force, Chaired by S. Treyer, CEPS, Brussels, November 2012.

The implementation of the WFD restricted the fundamental requirements for cost recovery to the financial costs of some water uses that had been defined as water services. It might have been helpful to make a clearer distinction between cost recovery mechanisms for the fundamental viability of water-using services and a more complex and a wider cost recovery assessment necessary to inform the policy discussion. The latter can be the object of a heated policy debate if it extends to the externalities that the different water resource uses produce for one another. It is important to stress that any cost recovery mechanism should include the use of social tariffs to avoid excluding vulnerable segments of the population from access to water and sanitation services. Other possible sources of funding, such as financial transfers from local, national or European general budgets – and not just from water users – must also be considered in order to acknowledge the public good character of some water-related services.

When considering the entire range of water resources, the policy debate needs to take into account cost recovery assessments, including environmental costs and resource scarcity costs, as well as the way these costs are covered by water users who generate them or other water users. Enabling the next cycle of the WFD's implementation to explore such cost recovery assessments would promote an informed discussion of the distribution of the costs and benefits of water investments and uses among water users. Such economic assessments of costs and their distribution would lead to more transparent discussions on the efficiency and equity of different instruments already in place or innovative instruments to be decided upon, be they prices for users, charges for polluters, compensations for externalities, taxes for withdrawals or payments for ecosystem services.

## Increasing the sustainability and productivity of water resources

Water scarcity and the variability of water availability could be exacerbated by the future impacts of climate change. It is therefore important to make the best use of existing water – in economic, social and environmental terms. This translates into increasing the efficiency of water use throughout water-using sectors. Efficiency is often defined as decreasing water losses, but although this may be a sufficient measure for many activities, it is not appropriate when water resources are so scarce that there is a need to allocate water to different activities in an optimal way, while primarily taking into account the needs of water ecosystems.

When considering the value of water as a social good, making the best use of scarce water resources implies measuring the level of water productivity, i.e. obtaining the highest possible net social value (the definition of which has to be agreed upon in the policy process) from a given amount of water. This means that even if an activity uses more water than others, this is not necessarily negative, as long as the net social value is higher. Furthermore, the highest social and economic value and quality of some products might not be achieved with the most efficient (i.e. lowest) water use per unit of output (this is frequently the case in agriculture).

## Influencing behaviour through water pricing

Pricing confers a value to water resources and has an effect on the allocation of water across users and/or sectors. Determining the right price and allocation to ensure sustainability is, however, a complex and politically highly sensitive task, prone to be influenced by the lobbying of interest groups. Historically, public water allocation to sectors was often based neither on objective criteria nor solid data.[4] Decisions on prices, and by extension on water allocation, require detailed knowledge of hydrological conditions, e.g. by water accounting, and of socio-economic variables concerning the demand for water and the costs and benefits of water uses. The transparent evaluation of costs and their distribution and of water productivity in different sectors contributes sound data to the water allocation and pricing policy debate, thus enabling the systematic exploration of a wide range of options as alternatives to maintaining the status quo. Transparency is considered a key requirement for an effective policy debate.[5] Even with complex economic studies, however, it is difficult to determine an efficient water price and allocation because of the impossibility of accounting for the innumerable individual decisions in an economy.

There is thus a need to consider, when possible, the use of market mechanisms to contribute to a more efficient price setting, leading to a more sustainable allocation of resources. If the value of the scarce resource is reflected in prices determined by an efficient market mechanism, the demand will reflect the actual availability. However, designing markets is fraught with difficulties. The market complexity should reflect the problem at hand and the objective sought, i.e. complex water markets in the absence of acute water scarcity will not be the most

4 European Environment Agency, op. cit.
5 European Economic and Social Committee: Opinion on the integration of water policy into other EU policies, NAT 425, Brussels 2011.

cost-effective solution. Markets vary in complexity, from simple water trading schemes that trade excess water from one river basin to another or from one group of users to another to fully fledged markets in which water is traded among all users. The design should reflect the need to develop sustainable water usage and to assist in the determination of price ranges, even if these are ultimately set by the authorities. The decision regarding which system to use will thus depend on the institutions involved and the needs of the particular water sector. Another weakness of markets is that they tend to exclude the economically weakest citizens and to neglect ecological concerns. A strict market model with prices solely determined by markets may be socially unsustainable. Public policies can address such market failures, though. For example, market operators can be required via public service obligations to set aside water to preserve the water lifecycle.

To date, there are only a few water trading schemes or water markets in Europe (or even worldwide), and they are generally limited to trade between river basins and/or agricultural irrigation organisations, i.e. large public or private entities trading with each other to address specific needs. In theory, efficient water markets would lead to optimal price setting because of the considerable number of agents (water users) able to sell and buy water rights. If there are only a few agents, particularly if power asymmetries are present, and only a small number of transactions, it is uncertain whether a water trading scheme would be less prone to political pressure than a public decision process for setting water prices or quotas. In Europe, some schemes have been introduced on an ad hoc basis in times of drought. While some have led to negative results, a few have generated considerable improvements in water use and ecological protection. Some examples are given below.

### Water trading between sectors and river basins

Well-designed water markets would allow sectors to trade with other ones in which the user value or the value of output per unit of water is higher. The combination of the price of water and the possibility to trade creates incentives to increase efficiency. This means that in arid regions where water is scarce and is allocated to different sectors through quotas, water trading schemes can create "win-win" situations, provided that consumption (including trade) stays within sustainable limits, avoiding the over-exploitation of aquifers and respecting aquatic ecosystems.

The EPI Water project analyses a successful case of intersectoral water trading in the region of Llobregat near Barcelona.[6] Farmers agreed through a voluntary system to reduce the use of freshwater for irrigation in exchange for recycled "brown" water, thereby freeing up more freshwater for other uses. The system is self-financing. Domestic users, in accordance with the polluter-pays principle, pay the cost of recycling water, while the cost of distributing the recycled water is borne by farmers who profit from its use. The greater availability of freshwater reduced the need to curtail irrigation during the drought, thus increasing farm production and farm incomes. The implementation of the system included water-saving awareness programmes for households. The net effect has been positive for all the stakeholders involved, as well as for the Llobregat aquifer itself, whose condition has improved. The total net profit from the operation has been estimated at €16 million a year.

If not well designed, however, such trading mechanisms may backfire. This is the case, for example, of water trading between the city of Madrid and farmers in the Henares river basin, who sold water they were in fact not intending to use, thus increasing the abstraction of water from the aquifer and leading to its further depletion.[7]

Trading in Europe has remained limited, particularly due to a lack of infrastructure, which is a key limitation differentiating water trading schemes from other markets such as the energy market. The long-distance transport of water might not be a profitable alternative to e.g. reducing water consumption, and the value of water and the affordability of water-using sectors like irrigation is low. There have also been other limitations: water rights allocation systems that are not yet compatible and a loss of interest on the part of the authorities once a particular water emergency passes. The present financial crisis is also slowing the necessary investments in infrastructure and the setting up of supporting institutions. The variability of hydrological conditions adds to the complexity of creating water markets, as water prices fluctuate and create an uncertain environment for water rights holders.

### Fully fledged water markets: examples and experiences

Permanent and well-established water markets among various users and regions are rare. One of the most prominent cases can be found in Australia – the Mur-

6 EPI Water: WP3 EX-POST Case studies: Voluntary intersectoral water transfer at Llobregat River Basin, EU FP7 project, Deliverable No. D3.1 – Review reports, 15 December 2011.

7 EPI Water: Review Reports, EU FP7 project, Deliverable No. D 3.1 and D 6.1, 20 December 2011.

ray-Darling Basin water trading market. It is based on an initial allocation of entitlements to water, linked to a trading mechanism and a solid legal framework on water rights allocation and dispute settlement. The market price of water is determined by demand and supply, underpinned by very precise hydrological data. It also includes the stringent allocation of water based upon ecological needs. Water rights are bought and sold in an exchange, involving for example brokers, water accounts and online trading tools. The system has been developed to such an extent that it includes water entitlement mortgages.

While a leading example of water market efficiency, introducing such trading mechanisms is well beyond the capacity of many countries and requires highly specialised, accountable and independent agencies to manage them. These markets are also unnecessary unless the water scarcity problem is acute. Setting up complex trading mechanisms can be fraught with transaction costs linked to policy implications, legal and information requirements, complex monitoring, the setting up of new entities, etc. Even cultural barriers can lead to considerable difficulties.[8] This can explain why water markets tend to appear only after all other options have been exhausted.

## Recommendations

In light of the importance of cost recovery assessments for water pricing and investment, the EU should set a deadline for agreement on the main methodological questions, for example, on which cost categories to include in the cost recovery analysis and how this should be done, including not only financial costs but also environmental and resource costs whenever feasible. This would then constitute a strong basis for the design of cost-recovery mechanisms, such as pricing policies and other financial transfers (for water services as well as for access to the resources). A well-designed policy package may encourage water users to invest in water efficiency in all sectors while ensuring access to fulfil the basic needs of the weakest members of society and safeguarding ecosystems.

The EU and the member states should support further analysis on present water allocation and pricing mechanisms. Information on "who pays for what" would be highly valuable in the process of policy formation, as it would allow policy makers to make more informed political choices concerning (financial) transfers between different water users and the various sectors. Transparency on the use of public money and cross-subsidies among users is essential to the formation of basic rules and to assessing who benefits and who loses under the status quo. Volumetric metering and, more generally, data collection and processing are important means to properly identify water users.

Rigorous evaluations of the water productivity of different allocation options are important ingredients for water resources management. They could in the long run trigger more innovative options for the management of water demand. It is important to systematically explore the variety of options at hand to ensure the adoption of a balanced solution.

In light of some key positive experiences of water markets/trading schemes, the EU could further explore this option in specific regions where a strong signal needs to be given to users of the value of water resources. Careful *ex-ante* evaluations will have to be undertaken to ensure that potentially negative social and environmental impacts are mitigated and that possible transaction costs are weighed against the benefits of such schemes.

### Public water supply network

Leakage from public distribution networks[9] ranges from a few per cent to over 50 per cent in some member states.[10] The use of cost-benefit analysis, including the long-term sustainability and viability of water supply systems, can identify the "efficient" level of leakage, i.e. design-efficient policies. This depends, among other things, on the abundance of water resources and the specific costs to reduce leakages in different parts of the network. There are a number of analytical tools available to assess the best level of leakage, one of the most reputed being the SELL (Sustainable Efficient Level of Leakage) used in the UK.[11] An immediate priority for the EU is to reduce leakage to economically efficient levels, with the dual aim of reducing water loss and avoiding excessive costs. Models such as SELL should be developed further at both member state and EU lev-

8 The many transaction costs encountered in Australia are documented by P. Martin, J. Williams, C. Stone: Transaction costs and water reform: The devils hiding in the details, CRC for Irrigation Futures, University of New England, Armindale, NSW, September 2008, who give a comprehensive picture of the challenges involved.

9 Public networks typically supply households, services, public buildings, small businesses and sometimes industry. In many cases, however, industry has different water abstraction rights.

10 European Commission: Third Follow-up Report to the Communication on water scarcity and droughts in the European Union, COM(2007) 414 final, COM(2011) 133 final, Brussels, 21 March 2011.

11 Ofwat: Water Supply and Demand Policy, November 2008; Department for Environment, Food and Rural Affairs: Water for Life, HM Government, London 2011.

els – for example, under the auspices of the European Environment Agency.

### End-use efficiency in households

The main demand for water from the public supply network comes from households, which account for 60-80 per cent of the demand across Europe. Using water more efficiently requires changes in users' behaviour. Such changes can be facilitated inter alia by:[12]

- education campaigns to raise users' awareness of the environmental impacts of water stress
- water labelling schemes for appliances
- water efficiency standards for fittings, fixtures and appliances to accelerate market penetration of efficient products
- training for plumbers and fitters.

Although not a panacea, the pricing of water services is essential to change users' behaviour.[13] Although elasticity of demand is low, evidence suggests that users alter their water consumption patterns in response to water charges, especially if based on variable pricing. Vulnerable households can benefit from public aid to decrease their water bill.

### Agriculture

Agriculture in the EU is responsible for some 24 per cent of water abstracted, although this figure can reach as high as 80 per cent in southern Europe, mainly as a result of irrigation.[14] In many member states, water use in agriculture still lacks effective metering and pricing, making it difficult to implement improvements in water productivity and water efficiency. Due to the complex relationship between water and agricultural production, reducing water use does not necessarily follow the same logic as in other sectors. Reducing water per unit of output may affect the characteristics of the products (e.g. smaller fruits) and may also lead to a rebound effect with higher water consumption if not well controlled. Evidence suggests that how the resource is used may turn out to increase (rather than decrease) the rate of water consumption.[15]

The Common Agricultural Policy should require the inclusion of water efficiency targets and metering obligations in regions under water stress. Effective strategies to improve water efficiency in agriculture should be introduced with the objective of boosting water productivity and enabling the sector to effectively compete with other uses when water is scarce and to anticipate risks of radical changes for the business model of supply chains and production systems. Technically, this implies widespread training programmes and special support for low-income farms. EU assistance should focus on advanced farming techniques and explore the possibilities for EU farmers to gradually enter into markets better aligned with EU water productivity objectives.

### Energy

The energy sector accounts for the largest amount of water withdrawal in the EU (approximately 45 per cent of total water abstracted), where it is primarily used for cooling purposes and not consumed.[16] This nevertheless has environmental impacts, and there is a need for more modern cooling tower or recirculation systems to reduce abstraction from rivers or groundwater reserves. In the case of hydropower, abstraction of water for the purpose of power generation does not change the quality of the water, but the environmental impacts can still be considerable (e.g. the effects of dams). On the other hand, hydropower can offer environmental and economic benefits such as flood protection, groundwater regulation and riverbed stabilisation. It can even function as an enabler for variable renewable power supply. Regulation of the energy sector, however, is seldom based on socio-economic cost-benefit analysis, which needs to be addressed.

### Manufacturing industry

Water is an important industrial input, especially for manufacturing. Within the EU, industry abstracts some 11 per cent[17] of water directly from the resources without being

12 European Environment Agency: Water resources across Europe – confronting water scarcity and drought, EEA Report No. 2/2009, Copenhagen; EEA: Towards Efficient ..., op. cit.; A. Walker: The Independent Review of Charging for Household Water and Sewerage Services, final report for the UK Department for Environment, Food and Rural Affairs, December 2009.

13 R.Q. Grafton, M.B. Ward, H. To, T. Kompas: Determinants of residential water consumption: evidence and analysis from a 10-country household survey, Water Resources Research, Vol. 47, No. W08537, 2011.

14 European Environment Agency: Water resources …, op. cit.

15 Arcadis, Intersus, Fresh Thoughts Consulting, Ecologic and TYPSA: The role of water pricing and water allocation in agriculture in delivering sustainable water use in Europe, Final Report, European Commission, Project number 11589, February 2012.

16 European Environment Agency: Water resources …, op. cit.

17 Ibid.

supplied by a public sector water supply network.[18] Water use in industry is relatively price inelastic, but water prices (and charges for abstracted water) remain important nevertheless, as they will determine the level of investment in more efficient water technologies. Spurred by EU environmental liability legislation, industry has developed a voluntary environmental management system (EMS - ISO 14000); the importance of water management in this system should be accentuated.

18 Industry commonly pays for water self-abstraction either by means of volumetric pricing or based on a flat or variable rate, e.g. calculated according to the area of industrial real estate; see S. Boegart: Water use in agriculture and industry: What experience with water efficiency and pricing?, presentation at CEPS Task Force meeting, 5 March 2012, http://www.ceps.eu/files/SBogaert_ARCADIS5032012.pdf. OECD experience shows that the prices rarely reflect water scarcity and are generally rather low.

Janet Wright and Martin Cave*

# The Development of Upstream Competition in the England and Wales Water Industry

The water and sewerage industry in England and Wales is something of an outlier within Europe. It has been privatised for over two decades;[1] it includes some very large companies providing services to up to 14 million customers,[2] and it has been subject since privatisation to price controls based on incentive regulation in the shape of a series of five-year price caps.[3]

Since 2008, consideration has been given to adding to this mix the application of competition in the sector. It began in Scotland with the introduction in 2010 of a regime which allowed Scottish businesses of any size to gain a water supply from a competing retailer, which bought its water at a wholesale price from the network operator Scottish Water, which had its own affiliated retailer (Business Stream).[4]

In England and Wales consideration has been given to both upstream and downstream competition. The Water Act 2003 contained provisions for some form of upstream competition, but they were not implemented. In 2009 the then government published an independent review of competition and innovation in the sector.[5] In 2011 the incoming coalition Government published a Water White Paper,[6] which was followed by a draft bill in 2012.[7] This was subject to pre-legislative scrutiny by a parliamentary committee which published its report in 2013.[8] In May of the same year the Government announced its intention to bring forward legislation shortly. Unofficial sources suggest that retail competition for businesses on the Scottish model might begin in England and Wales in 2017, while some forms of upstream competition might begin from 2019.

The goal of this paper is to discuss ways in which upstream competition might operate in the water industry.

## Upstream competition – an outline

Competition can be inserted into the upstream in many ways and must be supported by accompanying measures to ensure that competitors have access to distribution and other assets which they require. Figure 1 illustrates the various links in the water value chain and the points – upstream and downstream – at which competition can, in principle, be introduced.

The water sector in England and Wales currently approximates to a vertically integrated monopoly. Rivalry in the

* This paper draws on J. Wright, M. Cave: Benefiting business without harming households: the impact on consumers of upstream market reforms in the water sector, in: Utilities Law Review, Vol. 19, No. 2, 2012, pp. 43-50. The views expressed belong to the authors alone.

1 The water companies in Scotland and Northern Ireland are in public ownership.

2 There are ten large water and sewerage companies in England and Wales and ten smaller water-only companies, whose customers get their sewerage services form the larger companies.

3 T. Ballance, A. Taylor: Competition and Economic Regulation in Water: The Future of the European Water Industry, London 2004, IWA Publishing.

4 Retail activities in the water sector normally include marketing (if any), billing and meter reading. They account for up to ten per cent of value added. Upstream activities (abstraction, treatment and distribution) account for the remainder.

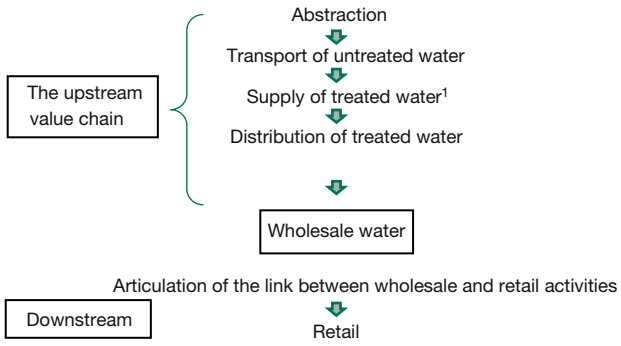
5 M. Cave: Independent Review of Competition and Innovation in Water Markets, 2009, available at http://www.defra.gov.uk/publications/files/cave-review-final-report.pdf.

6 Department for Environment, Food and Rural Affairs: Water for Life, CM 8230, available at http://www.official-documents.gov.uk/document/cm82/8230/8230.pdf.

7 Department for Environment, Food and Rural Affairs: Draft Water Bill, Cm 8375, July 2012.

8 House of Commons Environment, Food and Rural Affairs Committee: Draft Water Bill, January 2013, available at http://www.publications.parliament.uk/pa/cm201213/cmselect/cmenvfru/674/674.pdf.

Figure 1
**The water value chain**




[1] In this account, treated water is "supplied" at the exit of the treatment plant. It is then distributed via a network of pipes to customers' premises.

Source: Own illustration.

sale or purchase of rights or services can be introduced in the following ways:

- Abstraction rights can be held by competing firms and traded among them. This process can allow competitors to contest with the incumbent water company the supply of wholesale or retail water.
- Untreated water can be sold into a market either from outside it or by a new entrant.
- Competition can occur in a locality in the supply and demand for treated water. This already occurs to some degree through bulk supply tariffs.

Wholesale water is finally "converted" into a retail product and sold to a customer. The retailing activity can be either monopolistic or competitive, and the set of retailers can either acquire wholesale water from a single source (representing a "single buyer" of raw or treated water) or they may contract separately with a number of upstream suppliers, in bilateral trades. In this case, retailers would also need to pay distribution charges to the incumbent to use its pipes.

Under existing arrangements in England and Wales, competition in treated water is in principle possible, but arrangements for access pricing have made it commercially infeasible. If competition is to work, the margins left for a competitor – buying wholesale water to retail it, or paying to deliver water through the incumbent's pipes – must be adequate to cover its costs and deliver the savings that customers want. At present, such margins are set very low; if competition is to succeed, they must rise. But if they are too high, they might encourage inefficient entrants into retailing, which is not desirable.

The benefits from competition have generally been assessed at an aggregate level. But, as in other sectors, the benefits of competition could be shared amongst a number of stakeholders in various ways. An important split occurs between producers and consumers. Producers will be due a share to incentivise and reward their efficiency effort, but there is a risk of disproportionate gains to investors, reflecting residual monopoly power. Different groups of end users will experience different costs and benefits, and for some customers, competition may have adverse consequences.

Competition for water resources may also reveal for the first time the implicit scarcity value of those resources. A price will be created for water resources and potential windfall gains accrue to existing licence holders. This extra cost may then be passed on to customers, whose bills will rise.

## Forms of competition

We now examine the effects of upstream competition under discussion in the debate as they affect abstraction rights and treated and untreated water.[9]

### Abstraction

In relation to *abstraction rights*, the status quo is one in which public water suppliers (i.e. vertically integrated monopoly incumbents) account for exactly half of the licensed abstraction volume, with much of the remainder being taken up by industrial uses, notably electricity production. At present, the annual charge made for abstraction rights, recoverable under the retail price control regime, is low and based on administrative costs of the Environment Agency.

A competitive market for abstraction rights would generate prices which reflected the value of rights in particular locations, which in some cases will be high due to scarcity. If a market operated in which one firm (the local water monopoly) were dominant, abstraction prices would also reflect monopoly rents and so prices would be even higher. In this case, it might be preferable to set an administered abstraction charge which would provide a price signal for where water should be abstracted and avoid monopoly rents.

The impact on end-user prices of the emergence of the scarcity value of water in either an abstraction charge or in traded abstraction prices would depend on the regulatory approach.

9 For reasons of space, we omit discussion of how the construction of new delivery networks might be made contestable.

In a trading scenario, an integrated water company would have an incentive to appropriate the revealed scarcity rents by passing them through into higher downstream end-user charges – if it were allowed to by Ofwat (the Water Services Regulation Authority) within the price control system. This could increase producers' profits at the expense of customers.

In the alternative scenario, where a charging system (with variations to reflect relative scarcity) is imposed on all abstractions, the effect would be to raise average end-user bills, compared with the present system of low administrative charges for abstraction. The revenues could be recycled (passed back to customers) to keep down average bills, or just those bills faced by particular groups (e.g. the vulnerable).

In both cases, the impact on the structure of end-user tariffs – whether they were adjusted to reflect the relative value of water use in different areas/seasons (as revealed either by trading or a charge) – would depend on the form of the link between retail and wholesale activities.

### Treated and untreated water

Sales of untreated water across regions date back to the 19th century. They are accomplished through bulk supply agreements. Similar agreements can be made in relation to treated water, which can be bought either from a neighbouring licensee (the incumbent water company in an adjoining area) or from a company within the operator's own service area. The regulatory regime can require an incumbent water company to meet its obligation to supply its customers' needs by purchasing water from the cheapest sources, thereby forcing it to choose between buying water from competitors or self-supplying its own input. Bulk supplies of these kind account for about five per cent of total public water supply production. That figure is capable of rising considerably as climate change alters the pattern of scarcity.

Where bilateral contracts with upstream producers are possible, retailers competing for business customers could, in principle, bid for existing supplies of water or develop new cheaper sources. This would benefit business customers, whilst non-competitive domestic customers could be adversely affected by being left with a higher average cost of supply. Incumbents would have an incentive to raise their prices. Equitable treatment for different groups of domestic customers in the same locality may then be an issue. Customers in areas where the cost of supply is low may seek equivalent pricing to that obtained by business customers rather than continuing to pay a regionally averaged charge. The current system of averaged regional charges and the cross-subsidies it involves could then start to come apart.

Trading would be expected to increase supply flexibility and network resilience, as it would increase supply options and therefore the ability to manage risk. But security of supply may be diminished in some competitive scenarios which use trading more fully and in the long run reduce excess capacity. In the case of cross-border trading between incumbents, there may be an incentive for a company to sell water resources to a neighbour and risk supply security to its own customers if the rewards from trade were seen to outweigh any penalty for non-delivery of a secure supply.

There could also be an effect of trading on water quality. Water companies are used to mixing water within their existing networks, and the relevant water quality regulator, the Drinking Water Inspectorate, oversees an effective and rigorous system of quality regulation. Its role might be more challenging with competition, but this would not be insurmountable. Nonetheless, increased risk could lead to increased cost of risk management, which could be passed on to customers – raising the question as to whether customers in the non-competitive segment should contribute to such costs. It would be important to ensure that the incumbent did not use quality concerns as a means of restricting entry. The Competition Act would apply to such actions, but *ex ante* codes of access could also be designed to avoid this possibility.

## Summary

There are thus a number of alternative options for upstream competition which can be pursued. Many of them follow "unbundling" strategies which have been followed in other network industries, such as telecommunications and energy. Generally, rivalry between firms is likely to increase efficiency, by creating pressure to lower costs, through a better relation between price and cost (so that prices can incentivise more conserving behaviour where water is scarce or expensive to treat/carry) and through increased innovation (by ensuring providers face an ongoing threat from rivals).

These efficiency gains should be passed on to consumers. In addition, customers should benefit from increased supply security and improved resilience of networks that may come with the increased range of supply options introduced by new upstream entrants and improved upstream trading possibilities within and between regions. Where there are risks to end users, these can be addressed through attention to appropriate rules and design of markets. It remains to be seen exactly what reforms in the water sector the UK Parliament will choose to pass, but it is quite likely that upstream variants will be among them.