



Water practice
FRONTIER ECONOMICS

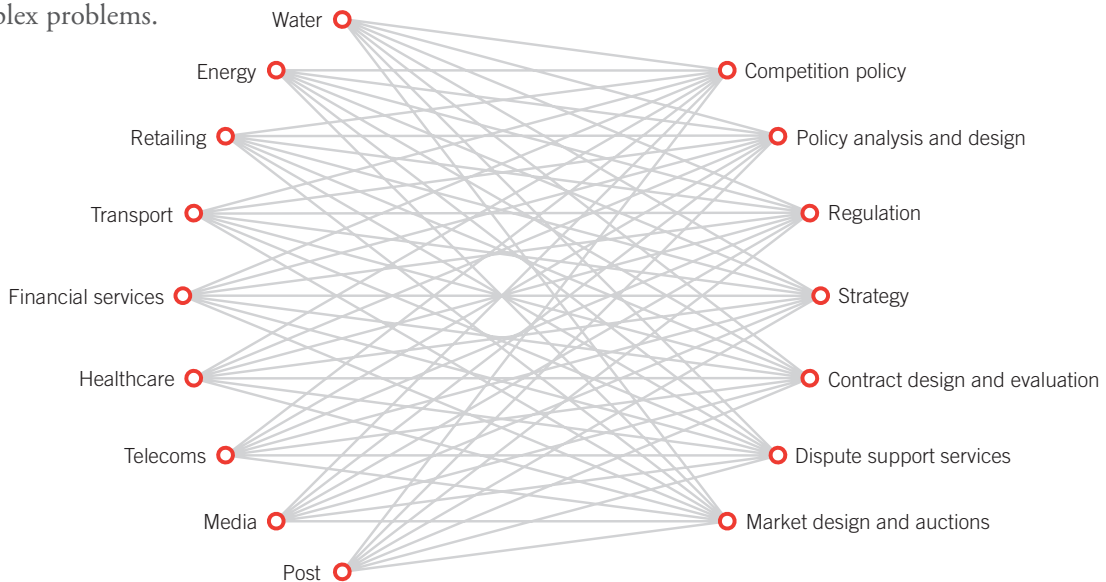


Frontier practice areas

Frontier Economics was founded in 1999 by a team of experienced consulting economists. Our objective is to provide the highest standards in strategic, regulatory and competition policy advice for business and public policy-makers. We use advanced techniques to provide practical solutions to complex problems.

The European and Australian companies in London and Cologne, and Melbourne and Sydney, are staffed by economists used to working together for many of the largest companies and most important policy-makers around the world.

With over 50 consulting staff and associates in London and Cologne, we are one of the largest economic consulting firms in Europe. The Frontier company in Australia employs a further 15 consulting staff.



Water practice



Frontier's water practice

The Frontier water practice combines in-depth knowledge of the UK water industry and developing countries with the ability to apply advanced economic techniques to provide analysis to companies, investors, regulators and donor agencies all over the world.

Frontier's staff members have been advising water companies from the beginning of privatisation in the UK, preparing companies for the new regulatory regime, advising them on tariff setting and regulatory strategy.

Frontier staff were instrumental in developing tariff and financial planning models used by the water supply companies in negotiating initial price caps. Our staff have also assisted water companies on a wide range of strategic and regulatory issues, including preparing submissions and formulating regulatory strategy at

price reviews, advising on mergers and acquisitions and analysing tariff design issues. Outside the UK we have advised on industry restructuring, the design of a regulatory frameworks for water, the assessment of the financial viability of reform programmes and the welfare impact of such reforms.

Frontier staff have recently been involved in the process of introducing competition into the water industry, which is to be brought about by allowing third party access to a company's water networks.

The expertise we have developed enables us to provide an unparalleled depth of insight into the economic issues relevant to water industries.

The services we offer, and how we approach them, are outlined in the following pages. We have wide experience in:

- regulatory, institutional and privatisation issues;
- efficiency analysis;
- finance and financial modelling;
- tariff design and pricing issues;
- network regulation, access and pricing under common carriage;
- long term investment strategies and resource planning modelling; and
- acquisition strategy and contract design.

Examples of our work and team profiles are outlined in the following pages.

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Regulatory, institutional and privatisation issues

The successful development of the water and waste water industry in any country revolves around the following issues:

- how the private sector should be involved;
- the right industry structure; and
- the way in which it should be regulated.

The members of Frontier's water practice have played a central role in the evolution of the regulatory regime in the UK, shaping the debate on many issues and analysing and improving aspects of the regulatory framework. This range of experience has underpinned advice given in many countries where regulatory and institutional reform were undertaken, possibly as part of a privatisation programme or private sector participation.

Frontier staff have advised on a whole range of projects central to regulatory and institutional reform, including advice on the detailed aspects of privatisation programmes.

Examples of work carried out by Frontier staff

- The preparation of long-term policy for the urban water and sanitation sector in India. This involved assessment of the potential efficiency and financing gains from increased private sector participation, and the means to achieve this.
- Providing advice to the EBRD on the implementation of their recommended strategy for the rapid introduction of private sector participation into water services in Eastern Europe.
- Developing a strategy for restructuring the water services industry in Bulgaria. This included development of a corporatisation plan and corporate governance arrangements, tariff and environmental regulation, and investment appraisal.
- Assisting with the development of plans for the transfer of the operations and responsibilities of the current public utility to the private sector in Trinidad and Tobago (1998-99).

Efficiency analysis

Comparative efficiency analysis and benchmarking are crucial to effective utility regulation. The objectives of any regulatory regime typically include:

- providing companies with strong incentives to pursue efficiency gains; and
- ensuring that the benefit of efficiency gains are ultimately passed on to customers.

In pursuing these objectives, the regulator is aiming to replicate the workings of a competitive market. The most powerful tool available for this purpose is yardstick competition or benchmarking.

In advising companies or regulators on the use of efficiency analysis we take into account:

- the merits of simple yardstick comparisons relative to more sophisticated approaches, such as econometric analysis or data envelopment analysis;
- the impact of incentives on different approaches; and
- whether the regulatory approach would encourage companies to distort behaviour, for example, to substitute capex for opex.

Frontier's staff have conducted a range of benchmarking assessments of companies' costs relative to their competitors. They have often assisted companies in the preparation of studies that have provided detailed critiques of the comparative efficiency work carried out by the industry regulator, Ofwat, by the former Monopolies and Mergers Commission and by the Competition Commission. The tools that Frontier staff have developed have been successfully applied in projects outside the UK as well.

Examples of work carried out by Frontier staff

- An econometric analysis of the relative efficiency of the Scottish water authorities in the context of the review of charges conducted by the **Scottish Water Commissioner (2001)**.
- Comparative efficiency analysis for several UK water companies in the context of the periodic reviews of prices (1999-2003).
- Econometric analysis to model the regional variation in wage costs across England and Wales (1999). The methodology and results of this analysis were accepted by Ofwat.
- Comparison of alternative quantitative approaches to assessing efficiency including econometric methods (corrected OLS, stochastic frontier analysis) and DEA.

Finance and financial modelling

Utility regulation requires the application of several aspects of finance theory, as well as the ability to create detailed financial models. A regulatory financial model combines all of the building blocks of the regulatory price-setting process within a full accounting framework. Therefore it includes:

- the workings of the tariff basket, showing how changes in the price of one service feed through into the prices of others;
- the impact of investment funding strategies on depreciation and the regulatory asset base;
- the impact of regulated prices on P&L accounts, cash-flow and balance sheet statements; and
- the effect on key financial ratios, such as interest cover.

The financial model allows companies to monitor their performance during the price control period, and in the run-up to the next price review, to model the impact of different assumptions. The use of scenario analysis is an effective way for companies to prioritise their regulatory strategy.

Frontier's staff have been producing a series of regulatory financial models for the UK water industry for over a decade. These models have become the industry standard.

Other financial issues include estimating the cost of capital. This is required to determine the returns that an efficient company should be able to earn on its regulatory asset base. Frontier has advised numerous companies on the estimation of the cost of capital.

Examples of work carried out by Frontier staff

- Designing a new regulatory model (Target 2004) to enable companies to monitor outcomes against expectations in the period 2000-04, and assess the consequences for Interim Determinations and the 2004 Periodic Review.
- Advice to water supply and water and sewerage companies on issues concerning the cost of capital during the 2004 Periodic Review.
- Designing a series of financial planning models for previous price reviews. The 1999 financial model was adopted by virtually all the water supply companies and more than half the water and sewerage companies to assist them in the K-determination process.
- Assisting **Manila Water** in financial analysis of its bid for the Manila concession. (1998-00)
- Advice to UK water companies concerning the impact on the regulated cost of capital of a highly-g geared financial structure, the "thin equity" model (2000-01).

Long-term investment strategies

The water industry is capital intensive and the assets often have very long lives. As a result, it is vital that companies have the right tools to assess their long term investment needs. This is important part of the company's strategy, as well as its submissions to the regulator. For the strategy to work well the company needs to be able to:

- make long-term forecasts of demand and understand the key sensitivities behind the forecast;
- compare major capital schemes with operational alternatives (e.g. leakage control); and
- assess the condition of the underground assets and predict future spending needs.

Frontier staff have been instrumental in developing and applying an economic framework to assess long-term planning issues in the water industry. Our staff advised Ofwat on the relevance of Long-Run Marginal Cost (LRMC) to pricing and investment decisions in the water industry. Dan Elliott was author of a key paper that received widespread circulation setting out practical approaches to estimating LRMC. This paper represented a landmark in the development of the economic regulation of the water industry.

Frontier staff have also assisted companies to estimate the impact of the Government's free meter optancy programme and its impact on water demand and resources.

Examples of work carried out by Frontier staff

- Designing user-friendly models that enabled water companies to estimate the impact of the Government's free meter optancy policy on the demand for meters and the impact on water resources (1999-02).
- The development of a resource scheduling model according to economic cost criteria for a UK water supplier (2000).
- Advising the **Environment Agency** on issues concerning the determination of economic leakage targets (1998-02).

Network regulation, access and pricing under common carriage

One of the most fundamental changes experienced by the UK water industry is the introduction of competition into the sector by allowing third party access to a company's water supply network. This has raised questions of the appropriate regulatory framework, including an adequate access pricing regime.

Opening a network industry to third party access requires many questions to be addressed. First, which activities should be open to access? Second, is it possible to design an access pricing regime that is both non-discriminatory and cost-reflective? This can pose problems if regulated end-user prices are set at below full cost recovery or set uniformly over groups of customers.

Frontier staff have actively participated in the development of the relevant regulatory framework as well as in preparing individual companies for the new challenge of market type competition. We combine expertise in the economics of network access with detailed industry knowledge and an understanding of the legal frameworks governing network access (e.g. the Competition Act 1998).

Examples of work carried out by Frontier staff

- Assisting a number of companies in developing their access codes for use of the pipe network and their access charging regimes (2000-02).
- Preparing a report for UKWIR on the economic and regulatory implications of the introduction of common carriage into the water industry (2000).
- Advising a large water and sewerage company on the implications of common carriage for large users on costs, revenues, prices and investment levels (2000).
- Modelling the impact of access pricing on large user tariffs for a water-only company (2002).

Competition policy and litigation support

The provisions of the Competition Act are becoming more important in governing the relationship between water companies and their customers and suppliers. Frontier has a thriving competition and litigation practice with extensive experience in all major areas of competition policy and analysis, including:

- market definition and market power;
- merger analysis;
- abuse of market power;
- vertical agreements;
- horizontal agreements; and
- state aid.

Frontier can bring together expertise in water, in competition policy and in applying economics in litigation support in a wide range of industries.

Examples of work carried out by Frontier staff

- Supporting a UK water and sewerage company in a litigation case against an industrial wastewater customer (2001).
- Providing advice on which water company assets would be considered essential facilities (2000).
- Assessing whether a water company client's payments to third party suppliers are consistent with the provisions of the Competition Act (2001).
- Preparing an influential report for the **Department for International Development** on the introduction of market mechanisms into water supply (1999).

Tariff design

The structure of tariffs within an overall regulated price cap is crucial for companies in terms of:

- promoting the efficient use of water;
- achieving social objectives such as affordable tariffs; and
- optimising the revenue potential of the company.

Well-designed tariffs can ensure that the prices customers face for additional demand reflects the additional costs incurred. This can form part of a strategy of controlling and funding future capital expenditure. The costs (based on long-run marginal cost) can differ from average prices, but this can be addressed through, for example, rising block tariffs. Tariff design can also reflect other cost drivers, such as seasonal demand or interruptible supplies.

In the UK and other markets Frontier staff have developed sophisticated financial models for use in setting tariffs and assessing financial viability and social affordability of such tariffs.

Examples of work carried out by Frontier staff

- Developing a sophisticated socio-economic model of a client's customer base to help a water and sewerage company plan its tariff strategy (1998-99).
- Assessing the affordability of water bills for various social groups for two UK water companies (1998-99).
- Providing advice on the appropriate charges for large industrial customers (1999-02).
- Helping companies to establish cost-reflective tariffs for trade effluent treatment (2000).

Mergers, acquisitions and contract design

The application of economics and, in particular, regulatory economics can be key to a successful acquisition strategy. It can answer the following questions:

- Does the proposed merger raise any regulatory obstacles? Are there appropriate remedies?
- If successful what are the implications for future regulation of the merged company?
- What is the value of the target company? How will this be affected by changes to the regulatory regime or the introduction of competition?

Members of Frontier's staff have assisted a range of companies to shape the conditions under which mergers, acquisitions and other commercial arrangements take place on the basis of economic analysis. Our staff advised South West Water in fighting take-over bids which were being reviewed by the Monopolies and Mergers Commission (MMC). This involved preparation of analyses for the MMC showing the damage that would be done to the system of comparative competition if South West were to be lost as an industry comparator. The MMC blocked both bids.

Examples of work carried out by Frontier staff

- Advising companies during merger investigations by the competition commission: such investigations are required by the Water Industry Act in the case of mergers between two large UK water companies (1996).
- Providing due diligence support to a UK company in its bid for a UK water and sewerage company. This included advice on the outcome of the 2004 price control as well as general regulatory advice.



Senior members of the Frontier Economics water practice

Dan Elliott

DIRECTOR

Dan is a leading expert in the field of utility regulation, in particular focusing on the water sector, with significant experience in tariff issues and in micro-economic modelling and investment appraisal. Over the last 14 years he has acted as adviser on regulation to virtually every water company in the UK, as well as to Ofwat, and the Environment Agency. He has also covered a wide range of other economic and modelling issues, in particular relating to transport.

Rob Francis

MANAGER

Rob is an experienced project manager who has specialised in the economic regulation of the water industry for the last six years. Rob is a specialist on the financial aspects of regulation and has advised many water and other utility companies on the cost of capital. He has considerable experience of financial modelling across a range of projects covering network regulation, investment appraisal and mergers and acquisitions.

Phil Maggs

MANAGER

Phil is an experienced consultant who has worked on utility regulation across a number of sectors and countries. He has particular expertise in the water sector and has worked with many of the water and sewerage companies in the UK and the industry trade association. During a period of 18 months seconded to a UK water and sewerage company, Phil advised on demand forecasting and resource planning issues in preparation for the 1999 Periodic Review. He has also worked on sector reform and resource planning issues in Australia, Eastern Europe, Latin America and the USA.



Sir Ian Byatt

SENIOR ASSOCIATE

Ian was formerly the first Director General of Ofwat, the England and Wales water sector regulator. In this position he has overseen the establishment of a successful regulatory regime for the only completely privatised water and wastewater industry in the world. As Director General, Ian built up and managed the regulatory office. He also worked closely with government ministers and quality regulators to meet water quality and environmental objectives, and had overall responsibility for the regulator's procurement policies. During his period as Director General, Ian also designed the system of regulatory reporting and accounting, including developing policies on the cost of capital, depreciation and capital maintenance.

Michael Ridge

DIRECTOR

Michael has substantial UK and international experience as an economist working on public policy issues. He has worked for the government, in particular in the central strategy group of the DETR and has directed and managed a wide range of high profile consultancy projects for institutions including the European Commission, DETR and HM Treasury, as well as international funding bodies. His experience in the water industry covers modelling the social and economic impact of different tariff options and the demand impact of meter optancy programmes.