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The Danish Water Sector Reform – Economic Efficiency and Central-Local Relations

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Eva Moll Sørensen

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Preface

In 2009, a Danish water sector reform was passed after years of negotiations between the political parties and sector stakeholders. The reform is meant to improve the incentives for efficiency and consolidation in the sector. The main elements are corporatisation and a new regulatory authority which is to introduce price ceilings and performance benchmarking.

The reform is rather innovative despite being modelled on utility sector reforms in other countries and sectors. The new authority is to regulate the prices of over 200 utilities, and price-setting has to take account of environmental and other obligations imposed by 98 Danish municipalities. In other countries, centralised price regulation is either accompanied by centralised implementation of water policies, or benchmarking is used to encourage efficiency improvements, but not to regulate prices. The Danish combination of centralised price setting and decentralised implementation of water policies is rather unique.

Despite its long preparation, the reform is still only half implemented. It is thus too early to evaluate whether it will be a success. However, based on the liberalisation literature, the debates and expectations of Danish stakeholders and experience from other countries, it is possible to identify the main challenges of the Water Sector Reform.

One main challenge concerns how the relatively small regulatory authority is to assert itself as an independent regulator and provide real efficiency incentives for the many different water and sewerage utilities. Another main challenge concerns the future interactions between the three parties in price-setting; the companies, the municipalities and the regulatory authority. How those interactions will develop is not only significant to economic efficiency, but also to the balance between central control and local self-governance.

The data collection for the report was finished in December 2009. The conclusions are based on the data which were available at that time.

The main part of the study was conducted at AKF, the Danish Institute of Governmental Research, by Research Assistant Eva Moll Sørensen. She finished the report at the Department of Political Science, University of Copenhagen.

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Eva Moll Sørensen and Olaf Rieper
July 2010

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Summary

In May 2009, the Danish Parliament passed a reform act for the water sector. The reform fits into the international trend to liberalise and re-regulate the utility sectors in order to promote economic rationalisation. These reforms often entail considerable elements of new regulation as is also the case with the Water Sector Reform. The main reform elements are mandatory corporatisation of water and sewerage utilities and a new state office which is to regulate the utilities, using performance benchmarking and incentive-based price regulation.

The Danish Water Sector Reform is innovative in the sense that it introduces centralised price regulation in a context where local governments have broad competences in the implementation of water policies. The purpose of this paper is thus to describe the Danish Water Sector Reform to an international audience and to discuss, 1) whether the reform is likely to improve economic efficiency in the water sector, and 2) how centralised economic regulation is reconciled with local integrated regulation of water utilities, water resources and the aquatic environment.

To answer those questions, the paper draws on international experience. Since Britain and the Netherlands are often referred to as forerunners in the water sector reform, British and Dutch experience with privatisation, incentive regulation and performance benchmarking is analysed. However, it is concluded that the centralised character of the British state and the British water sector makes it difficult to transfer British experience and lessons to the Danish context. Denmark has a water and sewerage sector with many small, publicly owned or consumer-owned utilities. Furthermore, Denmark is characterised by decentralisation of public authority. Dutch experience is also of limited relevance to Denmark, because performance benchmarking is organised by the water sector itself. It is not used by the state to set prices. In sum, the Danish ambition to combine centralised price setting with local regulation of utilities and the aquatic environment seems to pose a unique challenge.

It is thus very relevant to analyse the design and challenges of the Danish Water Sector Reform. The analysis focuses on four main reform elements; i.e. 1) the new regulatory authority, 2) obligatory corporatisation 3) incentive-based price regulation and 4) state-driven performance benchmarking. For each reform element, two challenges are identified. One challenge concerns the realisation of the goal of economic efficiency, and the other challenge concerns how to reconcile centralised and local regulation of the water sector.

The analysis is based on a mix of qualitative data, including written policy documents and semi-structured interviews with decentralised stakeholders in the Danish water sector.

The regulatory authority

Independent regulatory authorities are a common feature of modern utility reforms. However, they face two major challenges; *capture,* i.e. over-identification with the regulated parties and *asymmetric information* vis-à-vis the regulated companies. Furthermore, they have to strike a balance between *specialising* in efficiency regulation and contributing to *policy integration* in relation to the goal of sustainable development.

The new regulation office, “the Utility Secretariat”, is part of the Danish Competition Authority. It is thus relatively well equipped to resist capture in the sense of over-identification with the sector and environmental policy area. However, the Utility Secretariat may be expected to suffer from asymmetric information. The Utility Secretariat can thus not be expected to play the role of a strong independent regulatory authority.

Although the Utility Secretariat may be able to foster efficiency improvements, it will hardly have the visible result of falling prices. Too many factors point in the opposite direction, such as the implementation of the European Framework Directive and new investments in sewerage necessitated by climate change. The Utility Secretariat will have to work closely together with authorities at central and local level to promote efficiency without unduly holding back projects and investments to improve recipient quality and/or the capacity of public sewers.

Corporatisation

Corporatisation is argued to improve transparency and accountability for performance whether the companies are privatised or remain in public ownership. It also encourages professional business management. However, successful corporatisation presupposes that relevant public interests can be safeguarded through arm’s-length mechanisms such as laws, licenses or contracts.

Experience from existing Danish water companies indicates that corporatisation does promote more professional business management and accountability for performance. However, the net benefits of corporatisation are uncertain in the many small companies in the Danish water sector. Originally, the reform was intended to promote structural rationalisation, but because of political compromises, disincentives for sales have been built into the reform.

Based on present experience, corporatisation does not pose a serious barrier to the implementation of local policies. The municipalities have many competences to impose policy-related obligations on the companies. However, the extent of these competences will be put into question in the coming years when the Utility Secretariat is to assess the economic consequences of such obligations.

Incentive-based price regulation

Incentive-based price regulation is hoped to give the companies incentives to hold costs down. When allowable incomes are decoupled from present costs, through periodic price ceilings, utility companies are given the incentive to lower costs and realise the surplus as profits.

However, the Danish water companies and their owners will not be able to dispose freely of the surpluses as profits. They must be reinvested in the sector. The regulation thus lacks strong incentives, although it can be expected to provide some incentives for operational efficiency. However, it will also encourage strategic speculations on how to maximise future price ceilings.

The price ceilings will include allowances for costs related to central and local policy obligations regarding service quality and environmental impact. It may be expected that the price-setting procedure will involve discussions between three parties: the company, the municipality and the Utility Secretariat.

Benchmarking

The Utility Secretariat is to use performance benchmarking to identify individual efficiency potentials in the utilities. It must find a way to take account of heterogeneity; i.e. the influence of different framework conditions on relative performance. Years of experience with voluntary benchmarking seem to provide good conditions for handling the challenge of heterogeneity. However, it remains to be seen how the regulatory authority will design its new model.

Efficiency benchmarking alone may create incentives for deteriorating quality, and it must be decided how to take account of quality while maintaining simplicity. It is yet uncertain to which extent measures of environmental impacts or other quality aspects will be integrated in the benchmarking model to be developed by the Utility Secretariat.

Further perspectives

It is too early to say to which extent the Danish Water Sector Reform will bring efficiency improvements to the water sector.

However, it seems safe to conclude that the new Utility Secretariat faces a considerable challenge. Not only must it analyse the finances of more than 200 water companies. It must also judge the efficiency and legality of policy-related expenses imposed by 98 municipalities. To the author's knowledge, this challenge is without parallel in other European countries.

1 Introduction

In May 2009, the Danish Parliament passed a reform act for the water sector after many years of negotiations. The main reform elements are mandatory corporatisation of water and sewerage utilities and a new state office which is to regulate the utilities, using performance benchmarking and incentive-based price regulation.

Although the reform does not entail private ownership or competition, it is strongly inspired by ideas of privatisation and liberalisation. One of the main arguments for the reform was that privatisation had improved economic performance in the British water sector. The recent liberalisation of the Danish electricity sector was also a main source of inspiration. The reform is thus an example of the international trend to liberalise and re-regulate the utility sectors in order to promote economic rationalisation. However, economic and regulatory centralisation pose special challenges in the water sector because water policies often emphasise local competences and responsibilities (Allouche, Luís-Manso & Finger 2007). This also applies to the Danish case.

The Danish Water Reform is characterised by many compromises, but it is also a rather radical and innovative reform in some ways. It should thus be of interest not only to Danish students of the utility sector reforms, but also to the international community of scholars and others who are interested in utility regulation, utility sector reform and the transition from the 'positive' to the 'regulatory' state in different countries (Majone 1997).

Not only is Denmark to join a rather small club of countries which use performance benchmarking to regulate prices in the water sector (Walter *et al.* 2009). Denmark is also going to combine centralised price regulation with a much decentralised organisation of water management and environmental regulation. The reform thus exemplifies the challenges and tensions which are often associated with utility sector reform, on two dimensions.

1 The economic dimension: do mandatory corporatisation and centralised economic regulation provide improved incentives for economic efficiency in the Danish context?

2 The organisation-of-the-state dimension: how are the independent regulatory authorities typical of the regulatory state reconciled with local integrated regulation of water utilities, water resources and the aquatic environment?

The purpose of this report is to describe the Danish Water Sector Reform to an international audience and to analyse how the reform addresses the challenges associated with liberalisation and re-regulation in the decentralised water sector. The reform act has been passed relatively recently, and most of the main elements have not been implemented yet. It is thus impossible to evaluate the reform based on extensive evidence regarding its effects. The paper thus explores dilemmas and open questions in late 2009 based on policy documents and some interviews, preparing the scene for studies of the implementation and outcomes of the Danish Water Sector Reform when it is fully implemented.

In the first substantive chapter (chapter 2 of the report), I will provide a rather detailed account of the present organisation of the Danish water sector and the policy process leading to the reform. This chapter will show how the ideas of liberalisation and re-regulation found their way to the Danish water sector where they were translated into four main reform elements. It will also show how the policy process has brought up a number of issues or challenges which can be summarised in two dimensions; economic efficiency and central-local relations. The chapter is based on the text of the reform act, its explanatory notes and policy documents from the government and other agenda-setting actors. Furthermore, consultation replies from main stakeholders and newspaper coverage have been used to uncover the main controversies.

In the second substantive chapter (chapter 3 of the report), I will turn to the literature on utility sector liberalisation and re-regulation. I will introduce some important concepts and issues from this literature, focusing on the four main elements of the Danish Water Sector Reform. For each reform element, I will draw out a couple of challenges associated with this type of reform, reflecting on both the dimensions concerning economic efficiency and centralisation/decentralisation of state authority.

The third substantive chapter (chapter 4 of the report) draws on experience from other countries which have introduced similar reform elements in their water sectors; i.e. England and the Netherlands. Both countries are often referred to as forerunners regarding liberalisation and re-regulation of the water sector. It will be investigated which experience has been made in those countries, regarding economic efficiency and organisation of state authority in the water sector. It is considered how lessons can be drawn from those cases for the Danish case of the water-sector reform. It is, however, concluded that the Danish case offers a rather unique combination of decentralised environmental regulation and centralised price regulation which makes it worthy of detailed studies now and in the coming years.

In the fourth substantive chapter (chapter 5 of the report), it is analysed how the Water Sector Reform addresses each of the challenges which were identified in the literature review. Since most of the reform elements have not been implemented, there is not much evidence to evaluate the implementation and outcomes of the reform. Instead, the chapter considers the reform design, as it is described in formal policy documents, and it makes inferences from experience with liberalisation and regulation of the Danish electricity sector.

The chapter also draws on interviews carried out in two Danish municipalities which had already corporatised their water utilities at the time of interviewing in late 2009. One of the municipalities is relatively large and has corporatised its water and sewerage utility some years ago. In this municipality, I have carried out an interview with the company director and a group interview with three municipal officials who work with regulation of the water company. The other municipality is small and does not own a water supply utility; water supply is carried out by private user-owned water companies, as is the case in considerable parts of Denmark. However, its sewerage utility was corporatised in 2008 to meet the requirements of the reform. Since the operation of the sewage treatment plants has been outsourced, the municipal sewerage company has very little own staff. I have interviewed one of those staff

members who has followed the process from integrated municipal enterprise to corporatised utility.

Although it could be relevant to the topic, the analysis is not supported by interviews with policy-makers or representatives of government agencies or major interest organisations. The reform is under implementation, and many details in regulation are still being negotiated. Therefore, the government officials who are responsible for the reform process have denied participation in an interview at the present time. I have thus decided to base this phase of the investigation on document studies and interviews with decentralised stakeholders.

2 Reforming the Danish Water Sector

In the following, the main principles of organisation and regulation of the Danish water sector are described. Then, the process leading to the reform of the water sector is analysed. The main issues of contention have concerned the economic consequences of privatisation and liberalisation, the consequences of the reform to service and environmental quality and not least the division of regulatory competences between the new regulatory office and the municipalities.

2.1 The Danish water sector – organisation and regulation

The term 'water sector' is of rather new coinage in a Danish context. It applies to those activities and organisations which are traditionally understood as water supply and sewerage supply. Water and sewerage activities can be handled by the same or different organisations. For example, England and Wales has 10 water and sewerage companies and 11 water-only companies (OFWAT 2009). In the Netherlands, there are 10 publicly-owned drinking water companies, whereas sewerage is collected by 500 municipalities. Waste-water treatment is the responsibility of the 25 waste-water boards (Admiraal & van Helden 2003).

In Denmark, drinking water has traditionally been supplied by small user-owned enterprises or the municipalities. Sewerage has been collected by the municipalities, which have either treated the waste water individually or at plants owned by intermunicipal partnerships. Most of the responsibilities as water-resource managers and regulators of the use of the aquatic environment are integrated at the level of the municipalities.

2.1.1 Organisation of Danish water and sewerage supply

Water supply encompasses production and distribution of water of drinking quality. Production of drinking water entails extraction and treatment. In Denmark, drinking-water production is almost exclusively based on groundwater which requires very little treatment and thus allows for a decentralised structure. This factor in combination with Danish traditions of self-organisation and user ownership has given rise to over 2,000 utilities supplying 5.5 million consumers. However, two thirds of the water is supplied by around 80 municipal water utilities. The remaining utilities are consumer-owned, usually organised as co-operatives or partnerships.

Sewerage supply encompasses collection and treatment of waste water. Waste water is collected from households and enterprises and transported through sewer systems to treatment plants. At the treatment plants, harmful substances are removed. The remaining effluents are discharged to different bodies of water, also called recipients.

Danish sewerage supply is less decentralised than water supply. 99% of waste water is treated at municipal facilities. Most of the 98 municipalities own and operate their own sewage treatment plants. However, in some cases, sewage is treated at plants owned by intermu-

nicipal partnerships. A few municipalities have contracted out operations of their sewage treatment plants to private companies.

Municipalities thus own most of the water and sewage sector in Denmark. They are also responsible for local management and regulation of water resources and the aquatic environment.

2.1.2 Regulating water

Following the 2007 reform of the local government structure in Demark, the 98 municipalities have a broad set of competences to manage local water resources and the aquatic environment.

For instance, municipalities supervise the drinking water quality and give permissions to extract water and to discharge effluents to the aquatic environment (Baaner 2006). Extraction permissions contain conditions and assessments of the impact on the local aquatic environment. Discharge permissions contain conditions concerning e.g. treatment technologies and the quality of effluents. These conditions are based on quality standards set by the government. However, they also take account of regional and local plans containing quality goals for individual water.

The municipalities also regulate the rights and obligations of consumers and property owners in relation to water supply and sewerage. For instance, they define the areas to be connected to public supply networks and they regulate the extractions and emissions of properties outside public networks (Anker 2006).

Not least, the municipalities regulate the tariffs of water supply and sewerage utilities. The utilities are financed by user fees, separately from the tax-financed municipal budget. These fees may cover utility costs including short-term savings for new investments, but excluding profits. The municipality is not allowed to use user fees to finance expenses that are not necessary for the water supply and sewerage (Baaner 2006). This follows from the general municipal competence clause as well as from water-specific regulation.

Regional and local planning

Like local water authorities, the municipalities must implement environmental laws. However, plans also play an important role as guidelines for municipal decisions. For instance, regional resource plans (of the former counties) contain guidelines for the management of water resources. The municipalities also set guidelines in their plans for city development and nature management and in the ‘sector’ plans for water supply and waste water management (ibid.).

The waste water management plan determines how waste water is to be treated in different parts of the municipality, and how the public sewerage system is to be developed. It thus contains guidelines for administrative decisions directed at citizens as well as an investment plan for the municipal sewerage utility (ibid.).

The water supply plans similarly determine how different parts of the municipality are to be supplied with water. Furthermore, the municipality can make “action plans” to counter

pollution threats to water sources. Such plans can guide administrative decisions concerning permits etc., or they can require actions such as agreements with farmers to restrict their use of pesticides or nutrients (Anker 2006). Formerly, municipalities could finance their action plan expenses through a fee on extraction permits. However, from 2009 they are financed by a general tax, independent from the action plan costs of the individual municipality.

2.1.3 Integrated water management

The European Water Framework Directive (WFD) from 2000 requires an integrated approach to water management, which is to be organised along the lines of hydrological boundaries. The WFD sets concrete goals for the environmental condition of European water, with the overall goal that all water should have a 'good status' at the end of 2015. To achieve this, member states must follow a specified procedure of monitoring, planning and action (Anker 2006; Kaika & Page 2003).

In Denmark, the WFD has been implemented with a law from 2003, dividing Denmark into four water districts. The state and its regional environmental authorities make water plans for each district, including goals and action programmes for each body of water. These action programmes are to be implemented through municipal action plans (Anker 2006; Baaner 2006).

The water planning process takes many years, and many elements are still unclear regarding actions and their financing. Nonetheless it seems clear that the municipalities will have a large part of the responsibility for reaching the WFD goal of 'good status' in Danish water. Among the means at their disposal is to use their waste water and water supply plans to require better waste water treatment and investments in public water supply and sewerage systems. Until the price ceilings have been implemented, they can also approve the financial consequences of such decisions as regulators of utility tariffs.

2.1.4 Summary

The Danish water sector is decentralised, and the municipalities are important actors both as water resource managers and regulators and owners of water and sewerage utilities. They can take an integrated approach to water management through their planning competences, their ownership of utilities and their competence to approve tariffs. However, in the future, utility tariffs will be regulated by the state.

2.2 The Water Sector Reform

In Denmark, the water sector is one of several utility sectors where liberalisation has been on the agenda for the last 10-15 years. However, the idea to liberalise the water sector has met political and technical obstacles since the reform agenda was set shortly after the turn of the century.

In 2009, a reform act was finally passed with a number of reform elements known from other liberalisation reforms; i.e. a new economic regulatory authority, obligatory corporatisa-

tion, price ceilings and benchmarking. To date, most of the main elements have not yet been implemented.

2.2.1 Setting the agenda

The reform agenda was set shortly after the Conservative-Liberal government came to power in 2001. The sector was examined in 2002/2003 by the Danish Competition Authority which found a large potential for improving the economic performance of Danish water utilities (approx. 175 million Euros every year) (Danish Competition Authority 2003). To realise this potential, it recommended incentive regulation, private accounting principles and competition (ibid.). The issue was treated again in 2004 by the Danish Economic Council, which emphasised privatisation and yardstick competition (Danish Economic Council 2004).

The government expressed its intention to create better efficiency incentives and more competition in the water sector in 2003 (Danish Government 2003). A commission of ministerial officials was asked to come up with ideas for reform. The commission published its ideas catalogue in 2005, recommending incentive-based regulation in the form of price ceilings, obligatory benchmarking, private accounting principles, corporatisation, tax liability, environmental management and involvement of the private sector (Danish Environmental Protection Agency 2005).

2.2.2 The political agreement

The minority government had to negotiate with the parties in the Danish Parliament to be able to pass the reform act. The opposition to the left and right was against or sceptical regarding the prospect of privatisation and profit-making in the water sector, and the Centrist Social-Liberal party was particularly against centralisation and new regulation (Berlingske Tidende 20.3.2006; Fyens Stiftstidende 22.9.2006; Politiken 27.3.2006).

However, in February 2007, the government came to a compromise with all parties except the social-liberals. Among the main points of the parliamentary agreement were:

1 Incentive regulation in the form of price ceilings and benchmarking. This is to be administered by a small regulatory authority. However, the non-profit character of the sector is to be maintained. Possible efficiency gains are to stay within the sector.

2 Disincentives for privatisations. 40-60% of the proceeds will be subtracted from the block grants the municipality would otherwise receive from the state.

3 Obligatory corporatisation of water utilities and tax liability.

4 A new foundation to finance R & D in environmentally friendly technologies (Danish Ministry of the Environment 2007).

With the parliamentary agreement, the government was still far from being able to pass a workable law, let alone issue the necessary detailed regulation. The authorities have main-

tained a close dialogue with sector stakeholders, including several formal consultation rounds.

2.2.3 The stakeholder viewpoints

The most active stakeholders, Danish Water and Waste Water Association (henceforth DANVA) and the municipal interest organisation Local Government Denmark (henceforth KL) have warned repeatedly against privatisation, centralised regulation and profit-making in the water sector (Århus Stiftstidende 27.3.2006; Berlingske Tidende 20.3.2006; Jyllands-Posten 25.3.2006). After the political agreement in 2007, the critique became more directed at individual reform elements although still pronounced.

Local government representatives have argued that privatisation will lead to higher prices (Holm 2005a), and they have characterised the reform agreement as bureaucratic, centralistic and threatening to the principle of local democratic control (Ritzaus Bureau 28.2.2006). KL has also criticised the reform for making it harder to reach environmental policy goals by limiting the instruments at the disposal of municipalities to implement the WFD based on integrated water management and regulation (KL 2008; Holm 2005b). One specific concern is whether the regulatory office will allow user-financing over water prices of projects that aim at both improvement of sewerage systems and broader environmental improvements (KL 2008).

DANVA has also criticised the proposed reform act for being unnecessary, counterproductive and in conflict with the principle of local self-government (DANVA 2008). They have argued that the sector can be modernised without abolishing the non-profit principle and without centralised regulations of prices or organisational forms (ibid.; Århus Stiftstidende 27.3.2006). DANVA has specifically tried to convince decision-makers to use the organisation's model for voluntary benchmarking, which has existed since 1999 (DANVA 2005; 2008).

Other stakeholders have been much more supportive of the reform. These include representatives of large consumers, such as the Confederation of Danish Industry and the Danish Agriculture and Food Council. However, such stakeholders have offered much less detailed advice and been less involved in the working out of individual reform elements.

2.2.4 Summary

Around 2003, Danish policy-makers began to talk about a reform of the water sector, inspired by reforms in other utility sectors. The search for solutions focused on privatisation and incentive-based price regulation. Following political compromise, privatisation was taken off the agenda along with the profit motive. The main surviving reform elements were corporatisation, incentive-based price regulation, benchmarking and a new regulatory authority.

In the long implementation process, which has followed the political compromise, stakeholders have voiced their concerns and tried to influence the details of the regulation. The water utilities and their municipal owners have tried to persuade policy-makers to replace

centralised regulation with self-regulation. Furthermore, the municipalities have lobbied to preserve the right to use utility tariffs to finance projects which are broadly oriented towards improvement of the local aquatic environment as well as local sewerage.

The political and stakeholder debates have revolved around the following main issues:

- Will liberalisation and re-regulation yield the promised economic benefits in the Danish context characterised by decentralised water and sewerage supply? Will possible benefits be transferred to consumers in the form of lower prices?
- How will the new centralised regulation influence the capacity of local governments to act as integrated authorities for water utilities, service quality, water resource planning and the aquatic environment? I.e. how are the central and local authorities to be balanced?

3 Theories of Liberalisation and Re-regulation

In this chapter, I will introduce some important concepts from the literature on liberalisation and re-regulation of the utility sectors, especially the water sector. I will focus particularly on the reform elements that are characteristic of the Danish Water Sector Reform: regulatory authorities, corporatisation, incentive-based price regulation and performance benchmarking.

For each element, I will draw out a couple of challenges, based on the literature. These challenges will form the point of departure for my analysis of the reform in chapter 5.

Since the 1980s, European states have liberalised and privatised their network industries. This development has been spurred by technological innovations and by new economic and regulatory models, which have made it possible to introduce some competition. One major innovation is the practice of 'third-party access' meaning that alternative producers (e.g. providing extraction and treatment of water) are given access to the networks, usually at regulated terms (Danish Competition Authority 2003; Jamasb & Pollitt 2005).

The water sector is often depicted as the last network sector to be liberalised. Compared to other sectors, a number of obstacles stand in the way, including technical difficulties with third-party access and product market competition, absence of major technological innovations and public perceptions of water as being very special and not suitable for experimentation (Allouche, Luís-Manso & Finger 2007).

According to Allouche, Luís-Manso & Finger (2007), liberalisation in the water sector is more likely to take the forms of 'competition for the market' and 'comparative competition' than direct product market competition. They have developed six different scenarios for the future water sector. In the following, I will summarise these into two approaches for water sector liberalisation; competition for the market and comparative competition. The two are not mutually exclusive.

Competition for the market

This is a rather broad category. It includes so-called 'delegation contracts', which are especially widespread in France. Suppliers compete for contracts giving them the right to supply a geographically delimited area at specified terms for a certain period, collecting their own revenues. The contracts are administered by public authorities, usually municipalities. The suppliers may own the networks and other assets, but they may also just manage them while the ownership remains with the public authority.

A more delimited form of competition for the market occurs when public utilities *outsource* their activities, such as the operation of waste water treatment plants. The difference to delegated contracts is that revenues are collected by the public utility, which pays the external partner according to contract. Outsourcing is used routinely in the Danish water sector for smaller projects, but long-term contracts for major operations are seldom.

Comparative competition

The Danish Water Sector Reform has been inspired by the idea of comparative competition.

The main source of inspiration has been England, where private companies own and operate the water and sewerage business. These companies are subjected to price regulation that imitates the performance incentives of the market. This regulation is administered by an independent regulatory authority. The authority sets price ceilings based on each company's current and planned expenditures. The price ceilings are furthermore reduced by efficiency requirements depending partly on efficiency benchmarking with other companies (Bailey 2009). Relatively efficient companies are allowed to keep extra profits for a specified period, whereas relatively inefficient companies may suffer losses.

Another source of inspiration for the Danish reform has been the Netherlands, where public water supply companies are obliged to participate in regular benchmarking exercises. The results are not used to regulate prices, but the exercise is argued to create transparency and generate competitive pressures for efficiency improvements (Braadbaart 2007). Observers also describe this arrangement as comparative competition (Allouche, Luís-Manso & Finger 2007).

The Danish Water Reform

The Danish Water Reform contains a number of elements that are intended to create incentives for efficiency improvement. Obligatory corporatisation is meant to endow public water utilities with governance structures and incentives similar to those of private companies. The companies are furthermore to be given efficiency incentives through price ceilings and performance benchmarking. This is to be administered by a new regulatory authority. The regulatory authority was established in the second half of 2009, corporatisation is obligatory from January 2010, and the price ceilings are to enter into force in January 2011. The details of the performance benchmarking model are to be worked out by the regulatory authority, and in 2012 benchmarking is to be used to adjust the price ceilings.

In the following, I will present some of the main theoretical arguments for independent regulatory authorities, corporatisation, incentive regulation and benchmarking. For each element, I will draw out a few challenges which are often mentioned in the literature on liberalisation. One of the challenges will concern how to reach the goal of improved economic efficiency. The other will concern how to reconcile economic performance regulation with promotion of other public interests, especially at the level of local government. These challenges will be the point of departure of my analysis of the Danish Water Reform.

3.1 Independent regulatory authorities

Independent regulatory authorities are a common feature of liberalisation reforms in network industries. They administer regulations which are to control monopoly power and generate elements of competition, such as rules about third-party access to networks, price regulation of monopolistic companies, licensing of network companies and protection of consumers (Johannsen, Pedersen & Sørensen 2004). In some cases, they are also charged with other

objectives than economic efficiency and competition, such as social pricing, sustainable development, security of supply etc. (ibid.).

Agents of deregulation or re-regulation

Independent regulatory authorities can be seen as a transitory phenomenon on the way to deregulated and competitive markets. This perspective speaks for regulatory authorities which are part of general competition authorities rather than sector-specific independent regulatory authorities (Allouche, Luís-Manso & Finger 2007).

However, independent regulatory authorities may also be seen as expressions of a new 'regulatory state' which governs through regulation rather than ownership (Majone 1997). According to advocates of this perspective, independent regulatory authorities are legitimised through their high levels of expertise, institutionalised independence and mandate to protect consumers from both market and government failure (Majone 1999). Independent regulatory authorities are thus argued to be better guarantees of unbiased and stable regulation than e.g. ministerial offices, since they are more insulated from the pressures of organised interests and fluctuating public opinions (Johannsen, Pedersen & Sørensen 2004). However, the regulatory-state literature seldom discusses the challenges which regulatory authorities face in countries where they replace a 'positive state' characterised by decentralised public ownership and regulation rather than state ownership.

The dangers of capture and asymmetric information

Regulatory authorities face two major challenges; capture and asymmetric information.

Capture means that the regulator over-identifies with the regulated parties either out of self-interest (e.g. the prospect of a well-paid job in the industry later) or because of the sympathy that may come out of repeated interactions (Makkai & Braithwaite 1989; Mitnick 1980).

Asymmetric information means that the regulatory authority relies on information it can only obtain from the regulated companies, which usually have resources and incentives to present their data in ways which are advantageous to them. It is often a challenge for the regulatory authority to match their information-processing capacities and reach an independent analysis (Johannsen, Pedersen & Sørensen 2004).

Regulatory authorities that are part of general competition authorities may be less vulnerable to capture, i.e. over-identification with the sector and policy area in question. On the other hand, sector-specific regulatory authorities may be better equipped to match the technical knowledge and information resources of the regulated companies (OECD 1999).

Functional specialisation or policy integration

Recently, the model of independent and specialised economic regulators has been challenged. According to Ian Bartle and Peter Vass (Bartle & Vass 2007), today's sustainable development agenda makes it necessary to achieve policy integration, also at the level where the details of regulation are worked out and implemented. The regulatory authorities have knowledge about the social and environmental implications of detailed regulation schemes, and

this expertise should be used in policy-making and regulation for sustainable development integrating economic regulation with support of renewable and social regulation.

Bartle and Vass make three concrete suggestions; 1) regulatory authorities should be obliged to work for broader objectives than economic efficiency, 2) regulatory authorities should support integrated policy development and 3) regulators should engage more in dialogue with central government, other governmental and non-governmental organisations and the public.

My analysis of the Danish Water Reform will focus on the following challenges in relation to the new regulatory authority at state level:

- Can the new regulatory authority overcome the challenges of capture and asymmetric information in relation to the regulated companies?
- Can the regulatory authority pursue its mandate of economic efficiency while contributing to policy integration with central and local environmental authorities?

3.2 Corporatisation

Corporatisation means that public utilities are organised under the same or similar laws as private companies, usually as limited companies. Corporatisation can be seen as a first step towards privatisation or as a compromise when privatisation is not feasible (Danish Economic Council 2004). However, publicly owned companies are a long-term feature of many utility sectors in Europe (Johannsen, Pedersen & Sørensen 2004).

Since the late 1980s, many economic experts have recommended privatisation of public enterprises (Vickers & Yarrow 1988; World Bank 1995). Privatisation is argued to improve efficiency in several ways.

One line of argument focuses on how property rights affect managers' incentives for efficient operations and owners' incentives for effective control (Schneider 2003). It applies the main insights of the principal-agency theory, regarding information asymmetry and agency control, to the relationship between enterprise owners and managers. In most cases, managers have more information than owners about how an enterprise can be run efficiently and about their own abilities to run it. This poses a monitoring and control problem to the owners. Public owners usually do not have the incentives to invest resources in monitoring and control of public enterprises (Yarrow *et al.* 1986). Thus, the managers will also lack incentives for efficient operations.

Privatisation will provide better efficiency incentives, because the company will be subject to capital market competition. Potential buyers will watch the company's performance. If they think they can run it more efficiently they can offer to buy the company, and in the case of a takeover they can replace the existing management with their own team. This possibility gives management incentives for efficient operations (Schneider 2003). Based on this argumentation, corporatisation alone does not yield the benefits of privatisation because it does not entail capital market competition. However, private-sector accounting practices may make utilities more transparent and comparable (Danish Competition Authority 2003). It

may thus be easier and more attractive for public owners to hold managers accountable, and managers may face informal competitive pressures.

Another line of argument is based on the insights of public choice literature (Schneider 2003). This approach looks at the opportunities public ownership gives politicians and bureaucrats to further their own interests at the expense of efficient operations. For example, politicians may use their influence in public utilities to promote employment or support local suppliers. Furthermore, political needs and preferences may be relatively short-term, making it difficult to pursue a consistent business strategy. Based on this thinking, enterprises will become more efficient if they are placed at 'arm's length' from political owners. This way, managers can focus on efficient operations, subject to predictable public regulation (Christensen, Christiansen & Ibsen 2006).

Corporatisation institutionalises arm's-length relations, and it is also argued to enable business professionalism because managers are freed from hierarchical decision structures and bureaucratic regulations. Furthermore, it becomes possible to appoint directors and board members with business experience (Christensen & Pallesen 2001). According to the public choice approach, corporatisation alone may bring many of the benefits associated with privatisation, such as arm's-length relations to politicians and professional business management.

However, the effects of corporatisation depend on its context and implementation. It is e.g. important to which extent the public interests that originally motivated public ownership can be safeguarded through stable arm's-length mechanisms such as laws, licenses and contracts (Christensen, Christiansen & Ibsen 2006: 184). In the case of water companies, it is e.g. interesting to which extent local governments can oblige their water companies to pursue local goals concerning environmental impact and service quality. In the discussion of corporatisation as reform element, I will focus on the following questions:

- Does obligatory corporatisation strengthen the water companies' focus on economic performance?
  - Does it enable more professional business management?
  - Does it help owners to bring managers to account for performance?
- Can local governments use their water companies to pursue local environmental and service quality goals?

3.3 Incentive-based price regulation

The Danish Water Sector Reform introduces incentive-based price regulation as an important mechanism for improved efficiency. Incentive-based price regulation is often used to 're-regulate' liberalised network industries, such as electricity (Jamasb & Pollitt 2001) and to a lesser extent, water (Walter *et al.* 2009).

Formerly, price regulation of the network industries was usually based on costs. One common version is 'cost-plus' regulation, which means that prices cover total costs plus some level of allowable profits. In Denmark, municipal utilities have traditionally been subject to

cost-plus regulation with a zero profit rate. In the water sector, there is a list of 'necessary expenses' which can be covered by utility prices. This list is codified in law.

Cost-plus regulation is often criticised for containing poor incentives for cost-efficiency (Danish Competition Authority 2003; Vickers & Yarrow 1988), and incentive regulation was developed to alleviate this weakness. The main idea is to make the companies' incomes independent of their present costs by setting price (or income) ceilings that are fixed for some years. This should give the companies incentives for cost saving because they are allowed to keep the differential between the allowed prices and their actual costs as profits (Jamasb & Pollitt 2001; Sørensen 2005; Vogelsang 2002).

Price ceilings can be based on historical prices adjusted by inflation (RPI) and an efficiency requirement (X), hence the formula under which incentive-based regulation is known: RPI - X. Price ceilings can also be set based on historical costs rather than prices, and it is also possible to set income ceilings rather than price ceilings. In practice, price ceilings often take account of more factors than historical prices or costs, inflation and efficiency requirements. Usually, some costs can be recovered in full because they are deemed outside the influence of the companies. Furthermore, investment costs are often regulated separately (Sørensen 2005).

Incentive regulation has several challenges, not least when applied in the Danish water sector.

First, the method is developed for profit-maximising companies. The cost-saving incentive arises because the companies are allowed to keep the differential between allowed prices and actual costs as profits. However, in many countries, including Denmark, there is strong opposition to the idea of making profits on water supply. Without the profit motive, the efficiency effects of incentive regulation are more open to questioning.

Second, with incentive regulation the companies are encouraged to think strategically about how to maximise their future income opportunities. They may e.g. try to persuade the regulator that they face special expense-driving conditions, or they may adapt accounting practices or business decisions to considerations about their future price ceilings. This strategic element makes it challenging for the regulator to find acceptable methods and acquire reliable data for regulation (ibid.).

Third, policy-makers usually allow companies full coverage (i.e. without efficiency reductions) of costs which cannot be influenced by management. Furthermore, they often want to make sure that cost savings do not unduly hurt the achievement of policy goals, such as environmental improvements. The regulation formula thus contains so-called 1-1 items for which costs can be covered in full. As an unintended side effect, this provides incentives for speculations about how expenses can be categorised as those costs which can be covered in full.

It is thus a challenge to create incentive regulation which provides the wished-for incentives for efficiency without providing too many incentives for strategic and unintended behaviour. In the analysis of the Danish Water Sector Reform, attention will thus be paid to the following questions:

- Will the planned price ceilings give Danish water companies incentives for improved cost-efficiency?

- Will the planned price regulation allow for costs which are motivated by local environmental and service quality goals?

3.4 Benchmarking

Benchmarking can be defined as systematic comparisons of performance based on measurement. Benchmarking is increasingly used in the public sector to improve performance by comparing public organisations to each other and to norms or 'benchmarks' such as average or best performance (Danish Ministry of Finance 2000).

Benchmarking has many purposes and methods. One distinction is between performance and process benchmarking. In performance benchmarking, quantifiable measures of performance (often efficiency) are compared. It is often used to provide an outside impetus for improvement. Process benchmarking implies detailed comparisons of work processes and is used as a management tool to identify potentials for rationalisation (ibid.). The Danish Water Sector Reform introduces compulsory process benchmarking as well as performance benchmarking. In the following, we will focus on performance benchmarking and how it may generate 'comparative competition'.

Benchmarking: collaboration and/or competition?

Benchmarking has elements of both competition and collaboration, but different approaches emphasise either competition or collaborative learning as the main mechanism for improvement (Braadbaart 2007; Cox, Mann & Samson 1997; Northcott & Llewellyn 2005).

According to the collaborative approach, benchmarking works by creating transparency and disseminating knowledge about what public organisations do, and how well they do it (Braadbaart 2007). Such benchmarking initiatives may come from the participants themselves, possibly coaxed by external stakeholders (ibid.). In the collaborative approach, benchmarking fosters improvement by enabling the organisations to analyse performance and learn from each other (ibid.). The Dutch benchmarking of water companies can be seen as an example of collaborative benchmarking. The benchmarking model has been developed by the companies' own association, and originally participation was voluntary (ibid.). Even today, benchmarking results are not associated with compulsory measures from the authorities.

In the competitive approach, benchmarking works by subjecting organisations to competitive pressures. These pressures may arise, e.g. if benchmarking results are presented in league tables or used to rate the participants (McLean, Haubrich & Gutierrez-Romero 2007; Northcott & Llewellyn 2005). A low rating may for instance be used by an organisation's stakeholders to pressurise management to become more efficient or leave service provision up to others (Sørensen 2005). Competitive benchmarking is often applied top-down by superior authorities (Braadbaart 2007) which may also associate poor performance with sanctions (McLean, Haubrich & Gutierrez-Romero 2007).

Price regulation based on efficiency benchmarking is a strong example of the competitive approach. It is also described as 'managed competition' or 'yardstick competition' (Braad-

baart 2007). This application of benchmarking was pioneered in the USA and in the UK in connection with privatisation of network industries (ibid.). In the UK it is administered by regulatory authorities, such as OFWAT in the water sector. It imitates the market in that each company's revenues and profit opportunities depend on its performance compared with other companies (Vogelsang 2002). This is assumed to give strong incentives for efficiency gains, which can be passed on to consumers as lower prices (Sørensen 2005).

However, benchmarking as quasi competition also entails some challenges, including how to handle heterogeneity and how to take account of other performance aspects than efficiency.

Heterogeneity

When benchmarking is to measure relative performance in a way which has consequences to the companies' revenues, they can be expected to argue that benchmarking should take account of heterogeneity, i.e. differences in framework conditions which influence performance and yet are outside the influence of the companies (Sawkins 1995; Sørensen 2005). Such conditions include e.g. the quality of natural resources, the geography of the service areas and population densities[1]. However, companies can be expected to have different opinions on which factors are the most cost-driving, and it may be a challenge to find a model which is perceived as fair by all. Furthermore, accurate measurement of efficiency may be difficult to reconcile with transparency and learning potential (Sørensen 2005).

Efficiency and quality

When benchmarking is used to regulate prices, its purpose is to provide measures of relative efficiency. However, economic efficiency is only one relevant aspect of performance in the network industries. It is also relevant to focus on the quality of outputs or services, both in a narrow sense as their ability to satisfy consumer expectations and in a broader sense as their ability to realise public interests such as sustainable use of resources.

Efficiency benchmarking alone may create incentives for deteriorating quality. On the other hand, it may not be desirable to measure efficiency against different aspects of quality in one benchmarking model. It is thus interesting to see how quality issues are handled in the new centralised performance benchmarking in the Danish water sector.

Since this reform element has not yet been implemented, we cannot judge its effects or analyse how policy-makers have handled challenges such as heterogeneity or quality issues. However, we will discuss the conditions for handling the challenges in a Danish context, while aiming to answer the following questions:

- Will it be possible to take account of heterogeneity in the coming implementation of obligatory performance benchmarking?
- How will service and environmental quality be taken account of in the coming implementation of performance benchmarking?

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[1] In newly liberalised utility sectors, historic investment decisions may also be argued to be cost-driving while outside the influence of current management.

3.5 Summary

With the Danish Water Sector Reform, the water sector is re-regulated to improve economic performance. The reform introduces four main elements which all entail more centralised economic regulation. In the following, it will be analysed how these reform elements may contribute to improved efficiency, and how centralised economic regulation is to be reconciled with local integrated regulation of efficiency and (primarily environmental) quality.

The following analysis will focus on eight challenges; two for each reform element. One of these challenges will relate to the reform element as an instrument of improved economic efficiency and one will concern the prospects of integrated economic and environmental regulation and the local level. The organisation of the questions is illustrated in table 3.1.

Table 3.1 Challenges associated with each reform element

Challenges Reform elements	Challenges concerning economic regulation	Challenges concerning central-local relations
Regulatory authority	Can the new regulatory authority overcome the challenges of capture and asymmetric information in relation to the regulated companies?	Can the regulatory authority pursue its mandate of economic efficiency while contributing to policy integration with central and local environmental authorities?
Corporatisation	Does obligatory corporatisation strengthen the water companies' focus on economic performance?	Can local governments use their water companies to pursue local environmental and service quality goals?
Incentive-based price regulation	Will the planned price regulation give water companies incentives for improved cost-efficiency?	Will the planned price regulation allow for costs which are motivated by local environmental and service quality goals? That should also be cost-efficient
Benchmarking	Will it be possible to take account of heterogeneity in the coming implementation of obligatory performance benchmarking?	How will service and environmental quality be taken account of in the coming implementation of performance benchmarking?

4 Lessons from Abroad

In the following, I will analyse experience from other countries which have reformed their water sectors. I will focus on two countries whose experiences with liberalisation, regulation and efficiency benchmarking is often reported in the English-language literature. The first country is the UK, where the water sector was privatised in 1989 and exposed to incentive-based price regulation with efficiency benchmarking administered by an independent regulatory authority. The second country is the Netherlands where participation in benchmarking is compulsory to the 10 publicly owned drinking water companies. I will try to answer: 1) whether the reform elements have improved economic efficiency in the water sector, and 2) how centralised economic regulation is reconciled with local regulation of service and environmental quality.

4.1 The UK

In 1989, the water sector in England and Wales was privatised. Today, there remains 10 'Water and Sewerage Companies' and 11 'Water Only Companies' each with a regional monopoly.

The companies are subject to efficiency regulation by the independent regulatory authority for water, OFWAT. The quality of drinking water and of emitted sewerage is regulated by central government agencies; the Drinking Water Inspectorate and the Environment Agency. Local authorities are not among the main actors in water regulation and management.

4.1.1 Price regulation and benchmarking

OFWAT sets price limits for each water and sewage company with five years intervals. When calculating the limits, prices are allowed to increase with the general inflation and a 'K' factor. The K factor depends on the company's revenue requirement, which is based on a calculation of operating expenditure, expenditure to finance capital investments, return on capital and tax (Bailey 2002). Operating expenditure is derived from the company's current expenditure minus a general efficiency requirement and individual efficiency requirements which depend on each company's efficiency potential according to a benchmarking exercise (ibid.). Capital expenditures are also subject to benchmarking and efficiency requirements.

If companies are able to reduce costs more than assumed by OFWAT, they are allowed to keep the profits for a fixed period. This is intended to give companies incentives (a 'carrot') for improved cost efficiency. However, as described above the price limits also reflect requirements for each company to become more efficient (a 'stick').

4.1.2 Results in terms of economic efficiency

According to the National Audit Office (National Audit Office 2002), OFWAT's price regulation has achieved cost reductions, which have been passed on as lower prices for consumers.

Furthermore, the quality of service has risen, and environmental and drinking water standards and security of supply have improved. In the academic literature, the evidence on the performance effects of privatisation and re-regulation is sparse and with mixed results. Possibly, improvements in labour productivity have been accompanied by overinvestment (Saal & Parker 2001).

4.1.3 Integrated regulation of efficiency and quality

Drinking water quality and environmental impacts are regulated by central authorities. The Secretaries of State provide guidance on quality obligations, environmental standards etc. This is interpreted and implemented by the Drinking Water Directorate, Environment Agency and OFWAT and then incorporated in the companies' business plans, which are subject to regulation.

OFWAT also has its own mechanism to create incentives for quality improvements called the Overall Performance Assessment (OPA). The OPA compares companies on indicators regarding water quality, security of supply, customer service and environmental impacts. These comparisons are used to modify price limits for individual companies. Well-performing companies can be awarded with a 0,5% increase in price limits, and poorly performing companies can be punished with a reduction of up to 1% (Bailey 2002).

Although regulations of prices and quality are to some extent seen as separate processes, there are also important interactions. One of the main issues is the impact of standards of environmental and drinking water quality on investment requirements and prices. The stakeholders in regulation have often engaged in heated debates about the appropriateness of quality requirements. For example, the then director general of OFWAT, Ian Byatt, issued a paper called 'the Cost of Quality' in 1992 criticising the cost implications of the investment requirements following from the British implementation of the Urban Waste Water Directive. His political principals, the Secretaries of State responded that they thought the quality improvements could be financed at lower price increases than set out in 'the Cost of Quality'. Byatt took this as a signal to set relatively tough price limits in 1994 (Owen 2006).

Price regulation in the water sector thus involves complex calculations of revenue requirements and efficiency potentials, but it is also a political process involving conflicts and negotiations between stakeholders. The independent regulatory authority has a central role in reaching the balances between economic and other goals.

In recent years, a debate has thus unfolded in Britain regarding the role of economic regulators in integrating sustainability concerns in regulation (Owen 2006; Bartle & Vass 2007). It can be argued that policy integration and trade-offs between economic, environmental and social goals should be made by government departments. However, Bartle & Vass argue that this is ineffective, given the indivisibility of policy and implementation issues in technical sectors and the information asymmetries between regulators and government departments. They maintain that policy integration should take place at the level of regulators, who should ensure that their regulatory actions are designed to achieve sustainable outcomes. They should also support policy development with analysis and communicate with the

public (Bartle & Vass 2007: 266). They further argue that this model is not far from present-day reality.

4.2 The Netherlands

In the Netherlands, different actors are responsible for different links in the water chain. Drinking water is produced and distributed by 10 water companies with public shareholders, primarily municipalities. The sewer system is owned and operated by municipalities. Waste water treatment is done by 27 water boards, which are also responsible for surface water management and flood protection (Bots 2008; Hulsink 2001). The water boards are regional government bodies, which hold elections, levy taxes and function independently of other government bodies.

In the Netherlands, the regulation of water quality and environmental impact is dispersed among several regulatory actors.

At the central government level, drinking water quality is controlled by the Ministry of Environment (Hulsink 2001). Water resources and surface water quality are regulated by the Ministry of Transports, Public Works and Water Management and its Directorate-Generals of Water Affairs and of Public Works and Water Management.

At the local level, the provinces are responsible for regulating ground water, but they usually delegate this responsibility to the Water Boards. The Water Boards also regulate the quantity and quality of surface water at the level of the catchment area.

4.2.1 Liberalisation and benchmarking

The whole sector is characterised by regional or local monopolies without centralised price regulation. In 1996, liberalisation of the drinking water sector was on the political agenda in the Netherlands with elements such as a supervisory body, benchmarking and outsourcing. However, Parliament rejected privatisations and centralised price regulation (ibid.). Later it passed a law, which prevents private companies from owning drinking water utilities.

In the mid-1990s, when liberalisation was high on the political agenda, the Association of Water Companies (Vewin) decided to develop a voluntary benchmarking programme with publicised results. The objective of the programme was to increase efficiency, quality and the transparency of performance (Bots 2008; Dane & Schmitz 2008). Vewin published its first benchmarking in 1999. Since then, new benchmarks have been published every three years (Bots 2008). Participation in benchmarking was made mandatory for public drinking water companies in the latest Drinking Water Act (Bots 2008; Dane & Schmitz 2008: 70 /id).

The Association of Dutch Water Boards has also implemented its own benchmarking project with benchmarking studies in 1999 and in 2002, and the umbrella organisation for municipal sewer utilities also published an official benchmark in 2005 (Bots 2008). The government has promoted the use of performance benchmarking among sewerage and waste water treatment providers through agreements with the sector.

4.2.2 Results in terms of economic efficiency

According to a study by Okke Braadbaart at Wageningen University, benchmarking in the drinking water sector has improved transparency and economic performance, but only after 1997 when Vewin started publicising benchmarking results (Braadbaart 2007).

In waste water treatment, the available evidence also suggests a performance improvement in the period between the two benchmarking exercises in 1999 and 2002. The output effectiveness of waste water treatment improved by approximately 6% on average, while the average cost per unit remained the same, when adjusted for inflation (van Helden & Tillema 2005).

4.2.3 Integrated regulation of efficiency and quality

The Dutch water sector is comparable with Denmark's in the sense that local governments are important actors in the water sector, both as owners of utilities and price regulators and as environmental authorities, which put into practice central quality standards at the local level.

However, the relevance of Dutch experience is limited by the fact that benchmarking is not used to set prices. Each benchmarking model focuses on both economic efficiency and quality issues. However, it is not necessary to agree on how differences in efficiency and prices are explained by different framework conditions and quality standards. It is up to benchmarking participants themselves to interpret results and find out how they can learn from participants with comparable conditions.

4.3 Lessons for Denmark

In the UK, the available evidence suggests that privatisation and re-regulation have indeed improved economic efficiency in the water sector. At the same time, it has been possible to improve quality standards, especially with regard to environmental quality.

However, another important lesson from the UK is that the notion of independent regulatory authorities as agents of apolitical, expertise-based economic regulation is more ideal than reality. Price-setting involves discussions and negotiations with other authorities with other mandates, and it can be associated with considerable political controversy. Political concerns can easily overrule sophisticated economic calculations of the possible efficiency improvements, necessary returns on capital etc. Recently, it has been realised that independent regulatory authorities cannot just devote themselves to the goal of economic efficiency and low prices; they must integrate sustainability concerns into the way they work.

Regulatory authorities such as OFWAT thus face considerable challenges. Not only must they match the information-processing resources of the regulated companies and work out implementable regulation formulas with an effect on efficiency. They are also asked to consider the effects on regulation on sustainable development and to maintain close dialogue with other state authorities, consumer representatives and the public at large.

Compared to the coming Danish regulatory office, OFWAT is well equipped to meet those challenges. It is an organisation with an annual budget in the range £ 15-20 million (OFWAT 2009) (130-170 million DKK), and it regulates 21 large companies. In comparison, the new Danish regulation office is planned to have an annual budget of DKK 10.8 million, and it is to regulate around 200 small and middle-sized companies. Last but not least, OFWAT's task is simplified by the fact that it is asked to work together with a handful of centralised environmental organisations and consumer organisations. It does not face the challenge of assessing the appropriateness and price implications of consumer and environmental policies coming from 98 local authorities.

In sum, the UK is a centralised state, and it has a centralised water sector. British experience thus seems of limited relevance to the main challenges of the Danish Water Sector Reform; how to promote economic efficiency in 200 publicly owned (or consumer-owned), non-profit companies and how to balance centralised economic regulation with local integrated regulation of water utilities and the aquatic environment.

The Netherlands could have more relevant experience to Denmark, since it also has a decentralised political structure and many small utilities at least in the sewerage side of the sector. However, the relevance of the Dutch experience is limited by the fact that benchmarking is not used by the state to set prices. In fact, the Dutch benchmarking model does not seem so different from what has already been practiced in Denmark for years by the association of water utilities DANVA.

In sum, the challenge of combining centralised price regulation with a substantial amount of integrated regulation at the local level seems unique to Denmark.

5 Analysing the Challenges of the Danish Water Reform

In this section, the implementation of the four main reform elements will be analysed. I will focus on how – and to which extent – the challenges identified in the review of theoretical literature on liberalisation and re-regulation in chapter 3 are handled in the implementation of the reform elements in the Danish Water Sector. The analysis is based on several sources; policy documents, qualitative interviews with decentralised stakeholders and analogies with the experience made in the first phase of the Danish electricity distribution sector reform. For the few reform elements that have already been implemented, it is possible to base the analysis to a large extent on the experiences of the interviewed stakeholders. For the many reform elements that have not yet been implemented, the analysis refers more to experience from the electricity sector and the expectations of the interviewed stakeholders.

5.1 The regulatory office

In the following, it will be examined to which extent the new regulatory office, 'the Utility Secretariat', which was established in 2009, corresponds to the ideal-typical independent regulatory authority as it is described in the literature on liberalisation and re-regulation. Thereupon, I will address the questions raised in the literature review, i.e.:

- Can the new regulatory authority overcome the challenges of capture and asymmetric information in relation to the regulated companies?
- Can the regulatory authority pursue its mandate of economic efficiency while contributing to policy integration with central and local environmental authorities?

The analysis is based on policy documents and a comparison of the new regulatory office with the existing authority for the energy sector (DERA, Danish Energy Regulatory Authority), which defines itself as an independent regulatory authority belonging to a European population of such organisations (Danish Energy Regulatory Authority 2009). This authority has existed for approximately 10 years and has some experience with the issues facing the new Utility Secretariat. The interviews will be used to shed further light on the challenges facing the new authority.

The Utility Secretariat

The first reform proposals present the idea of a regulatory authority for water, paralleling DERA (Danish Environmental Protection Agency 2005). However, this image of centralistic re-regulation had many opponents, and the status and size of the authority was toned down in later policy documents. In the reform act, it is reduced to a 'secretariat' to be placed in the Competition Authority (Water Sector Reform Act (Vandsektorloven) 2009). The Utility Secretariat is planned to have 15 employees in early 2010 (Danish Competition Authority (Konkurrencestyrelsen) 2009).

The organisation of the Utility Secretariat is partly parallel to DERA, which also has a secretariat in the Competition Authority with 35 employees. However, DERA is headed by its own independent commission, appointed by the Minister for Energy and Climate. The Utility Secretariat does not have its own decision-making body. It does thus not really qualify as an ideal-type independent regulatory authority, although it has its own mandate in law.

However, the Utility Secretariat does have some independence from the political system, as the Competition Authority itself is exempt from ministerial instruction.

Capture and asymmetric information

The organisation of the Utility Secretariat may provide some protection against capture, i.e. over-identification with the regulated parties. Being part of the Competition Authority may strengthen the employees' identification with the values of competition and economic efficiency. They may thus be more sceptical towards arguments about how natural and technical framework conditions and policy-related obligations justify higher costs than they would have been had they been affiliated with the Ministry of the Environment which otherwise regulates the sector.

The secretariat furthermore has its own source of financing, i.e. a charge on the utilities. In the literature on regulatory authorities, such financing is argued to strengthen the agency's independence and resistance to capture, as it does not have to fear to lose its appropriation if it makes unpopular decisions (Johannsen, Pedersen & Sørensen 2004)

However, the arm's-length distance to the water sector and environmental policy area, which protects the secretariat from capture, may also aggravate the problem of asymmetric information. It may be expected that the secretariat will be staffed primarily by economists with limited technical knowledge about water production or sewerage or its interactions with the aquatic environment. This may make the office more reliant on information from the companies and particularly from their association DANVA, with whom it works together to establish the opening conditions for the regulation of the companies (Danish Competition Authority 2009).

The interviews support the expectation that especially asymmetric information will be a challenge for the Utility Secretariat. Both company representatives perceive the secretariat as having little staff and little information compared to the companies it is to regulate (interview, large company director; interview small company employee). The companies (especially the larger ones, one may expect) can use accountants, lawyers and other consultants to present facts their way, whereas the Utility Secretariat will have to struggle to reach – and prove – an independent analysis.

It thus seems that the Utility Secretariat is relatively well equipped to deal with capture in the narrow sense of over-identification with the regulated parties. Nonetheless, due to its limited resources and asymmetric information, it may be difficult for the secretariat to assert itself as a strong independent regulator.

Specialisation and policy integration

The Utility Secretariat has been established to improve the efficiency of the water sector. The simplest criterion of its success would be falling prices – especially in utilities with high prices. However, other factors point in the direction of rising prices. One of these factors is the European Water Framework Directive. Another is pressure on public sewers from increasing amounts of rain due to global climate change.

The Utility Secretariat will have to work together with other authorities to find ways to promote efficiency without unduly holding back projects and investments to improve recipient quality and/or the capacity of public sewers. At the moment, the Utility Secretariat assists the Agency for Spatial and Environmental Planning in the Ministry of the Environment to work out the details of the coming price regulation. One of the challenges is to take account of local obligations regarding environmental and service quality without providing a loophole for rising costs and prices. The draft regulation issued in 2009 refers to a standard cost catalogue from the Danish Environmental Protection Agency (Miljøministeriet 2009).

The Utility Secretariat thus has to work under conditions of policy integration at central government level. Given the prevalence of other policy goals, it is far from given that the secretariat will be able to produce visible efficiency improvements in the form of falling prices.

A further complication arises from the fact that Denmark has 98 local environmental and consumer authorities; i.e. the municipalities. When the Utility Secretariat is to implement the new price ceilings, it must take account of how obligations imposed by the municipalities affect the economy of the utilities. It is not yet clear to which extent the secretariat will have to allow for price increases motivated by local environmental obligations.

The interviews reveal some confusion concerning the future relationship between central and local regulation and the role of the municipalities as regulatory authorities. The shared competence to regulate prices is expected to cause long and bureaucratic price-setting procedures and potential conflicts between the three parties involved (the company board, the municipality and the regulatory authority), and the informants express serious doubt about the decision scope and role of the municipalities as economic regulators when prices are also regulated centrally (interview, large company director; interview, small company representative; interview, administrative officials in large municipality).

However, the informants see the determination of prices as closely connected with the municipalities' other responsibilities such as waste water planning and regulation of the companies' rights and obligations vis-à-vis consumers. It is thus expected that the state will play a larger role in regulating the way municipalities carry out those tasks in the future (interview, small company employee; interview, administrative officials in large municipality).

In any case, the Utility Secretariat seems to face the challenge of communicating with 98 municipalities about price-setting and its relation to other aspects of water management.

5.2 Corporatisation

In the following, it will be examined why Danish policy-makers have decided to make corporatisation of municipal water and sewerage utilities obligatory from the beginning of 2010. Then the following questions will be addressed:

- Does obligatory corporatisation strengthen the water companies' focus on economic performance?
- Can local governments use their water companies to pursue local environmental and service quality goals?

Since both case municipalities have already corporatised their water utilities, the analysis can be based on their experience with corporatisation. In one case, the experience has been accumulated over many years. In the other case, the experience is of a more recent date.

The rationale for corporatisation

According to the reform act, the rationale for corporatisation is to clarify the municipalities' role as tax-financed authorities and the utilities' role as user-financed providers. In other words, regulation should be separated from operation of the utilities. This is expected to promote efficient operations.[2]

In the original reform proposal, corporatisation is also seen as a precondition for rationalisation through sales of municipal utilities (Danish Environmental Protection Agency 2005). However, following the parliamentary agreement, a bill was passed which stipulated that municipalities will have 40-60% of the proceeds from sales of water companies deducted from their block grants from the state. This rule, which was invented in the electricity sector, gives disincentives for privatisation and also controls the potential macroeconomic effects of letting the municipalities dispose of the sales proceeds.

Focus on economic performance

Ruling out the rationalisation mechanisms that would come from buying and selling companies, corporatisation could lead to improved efficiency in at least two other ways. It could promote more professional business management, and it could help owners to keep company managers accountable for economic performance.

More professional business management

Based on the interviews with company representatives, corporatisation promotes professional business management. Both company representatives think that corporatisation gives shorter decision-making processes and makes it easier to react to new situations. They also feel they have more influence and more responsibility for their work (interview, large company; interview, small company). The director of the large company further emphasises the

[2] Furthermore, the organisational separation hinders municipalities from using their utilities to circumvent loan limits imposed on them.

freedom to act on international markets and the opportunity to create a corporate identity, visions and strategies. However, he also feels that the municipality occasionally interferes with management decisions in ways which conflict with the principle of corporatisation (interview, large company).

According to Christensen & Pallesen (Christensen & Pallesen 2001), the corporate form may ensure business professionalism through representation of professional business people on the boards. This mechanism is, however, not present in the two municipalities. In the large company, the board consists of local politicians and employee representatives. In the small company, the board consists of city council members. According to the respondent in the small company, the fee the company can offer board members is not of a size that is interesting to business professionals (interview, small company).

In the large company, the director emphasises that board members are appointed so they do not overlap the members of those council committees that are responsible for regulation of the company. This is done to ensure that the board primarily takes care of the interests of the company in sound business operations (interview, large company). In the small company, there is also no overlap between the board and the committees responsible for regulation, but this is not a matter of principle (interview, small company).

In the large municipality, the administration tries to safeguard the professionalism of the board through tailored courses in utility board work (interview, large municipality). In the small municipality, the company organises such courses (interview, small company).

All in all, the interviews leave the impression that corporatisation institutionalises some degree of professional business management, but management is also influenced by the decision-making logic of the political system.

Accountability for performance

In theory, corporatisation makes it easier and more attractive for owners to hold the companies accountable for performance. In the following, we will look at what the two case municipalities do to keep their companies accountable for economic performance.

The large municipality owns several utility companies, and it has established a 'Company Team' which specialises in ownership control. The team is part of the Mayor's administration, but it works through regular meetings with representatives from other parts of the administration, including the office for environmental regulation and the concern for economic affairs (interview, large municipality).

The large municipality has a 'main contract' which specifies the rights and obligations of the municipality and the company. This contract is renewed when the need arises. It also has an ownership strategy, which is renewed every four years. Among the main points of the strategy are that the company should carry out the municipality's environmental policy and support its growth strategy. It should also strengthen its own ability to work in a free market, maintain and expand its asset values and develop an efficiency strategy (interview, large company; interview large municipality).

The efficiency strategy is an initiative from the Company Team, but it is largely formulated in the company where it is perceived as something of a formality since it mainly repeats

the company's own efficiency goals (interview, large company). However, the Company Team members see some potential for improved efficiency and accountability in making the company's goals part of a binding agreement with its owner (interview, large municipality).

The city council is only a little involved in holding the company accountable as owners. Once every year, a meeting is held where the company chairman and director inform the whole council of the status and future plans of the company. The respondents describe this as a good opportunity for the company leadership to promote the company to its political owners (interview, large company; interview, large municipality).

The small municipality has no special organisation of its ownership role. The company director is employed part-time (20%), and the rest of his working time he is a director in the municipality. The whole city council participates in the general assembly, representing the owner (interview, small company).

The waste water company does not have its own strategy or visions, so far. It is hoped that such documents can be developed later. The municipal waste water plan can be said to play the role of a company plan, although it is formally a regulation document. It thus contains visions, project plans and economic calculations for waste water treatment in the municipality (interview, small company).

In sum, the corporate form seems to be compatible with explicit mechanisms to keep the company accountable for economic performance to its owners. However, such mechanisms are resource demanding, especially if information asymmetries are to be overcome. The yields in terms of improved efficiency are uncertain to the stakeholders. Even in the large municipality, where the water company has existed for many years, the efficiency strategy is a relatively new phenomenon. In the small municipality, a separate institutionalisation of ownership control has not been at the top of the priority list in the corporatisation process.

Local goals and arm's-length control

One of the main preconditions for a successful utility reform is that relevant public interests can be safeguarded through arm's-length mechanisms such as contracts, ownership strategies and the general assembly. This issue has raised some concern in connection with the water sector reform since some stakeholders are worried whether the new companies can be relied on to implement local environmental and service quality policies. In the following, the experience of the two municipalities in this regard will be examined.

In the large municipality, the company director sees the issue as unproblematic because the company is tightly regulated by the municipality. It regulates the company's rights and obligations in relation to consumers, it approves budgets and tariffs, and it makes the sector plans (water supply, waste water) that are essential to the future development of the company. Furthermore, the company is a main actor in implementing the municipality's environmental policy. This follows from the ownership strategy and a board decision. Furthermore, the company's responsibility for implementation of environmental plans and policy is written into its 'main agreement' with the municipality (interview, large company).

The Company Team members see more potential difficulties regarding the company's responsibility for 'public interest' aspects of water supply such as service quality and environ-

mental impacts. However, these worries mainly concern the effects of the future centralised price regulation on the company's ability to pursue public service goals. Furthermore, they are concerned about how the municipality would be able to obligate potential private companies to look after public service goals (interview, large municipality).

In the small municipality, it is expected that the company can be relied on to implement municipal waste water plan and environmental policy, provided that the regulatory authority will let it raise the necessary finances through its tariffs (interview, small municipality).

Summing up, the corporate form in itself does not seem to pose a barrier to the implementation of local policies because the municipalities dispose of a number of means to control their water companies, including sector plans, ownership strategies, main contracts, board control and control of budgets and tariffs. However, the extent of these regulatory competences is put into question with the introduction of centralised economic regulation.

5.3 Price ceilings

Price ceilings are one of the main innovations of the Danish Water Sector Reform. However, their implementation has been postponed until 2011. In this section, I will examine how Danish policy-makers expect price ceilings to provide incentives for improved efficiency and I will look at the main components of the regulation as it has been proposed so far. Then I will seek to answer the questions raised by the review of liberalisation theories, i.e.:

- Will the planned price regulation give water companies incentives for improved cost-efficiency?
- Will the planned price regulation allow for costs which are motivated by local environmental and service quality goals?

The first question is addressed based on analysis of the draft regulations, experience from the electricity distribution sector where a similar regulation has been applied and the expectations of the case study respondents. The second question is addressed based on analysis of the draft regulation and the expectations of the interview informants.

Price ceilings – rationale and implementation

According to the reform act, the present decentralised cost-plus regulation gives poor incentives for cost minimisation because all necessary costs can be passed on to consumers, and the municipalities usually approve the tariffs without remarks (Water Sector Reform Act (Vandsektorloven) 2009, explanatory notes). The price ceilings are to give the companies new incentives for cost efficiency and an opportunity for consolidation. The companies can use the differential between the price ceilings and their actual costs for their activities related to water and sewerage supply (ibid.).

When the reform act was passed, the price ceilings were to enter into force in 2010. However, realising the technical difficulties and the heavy critique from the sector of the first draft regulation, the parties behind the reform decided to leave more time for implementation of the price ceilings and postpone their entering into force until 1st of January 2011. The

second draft regulation was issued in October 2009. It is of a very technical character, and there is still considerable uncertainty regarding its interpretation, its future administration and the consequences to the utilities and their owners.

The price ceilings for 2011 will be based on the utility's average incomes in 2003-2005. This baseline will be raised in line with retail prices and corrected with relation to a) 'over-coverage' or 'under-coverage', i.e. differences between incomes and costs in the period 2003-2005, b) so-called 1-1 costs which are outside influence of the company, c) costs related to the achievement of service and environmental goals, d) allowances for planned and historic investments and expected interest costs and e) a general efficiency requirement. From 2012, the price ceilings will also be subject to individual efficiency requirements based on the results of performance benchmarking.

Incentives

In theory, price ceilings provide incentives for efficiency because the companies can realise a profit, if they can lower costs more than required by the regulatory authority. However, price ceilings also encourage some strategic speculations about how to maximise future income opportunities, and those speculations are not always conducive to efficiency.

The Danish Water Sector Reform is based on a compromise which entails that the water company and its owners cannot dispose freely of surpluses from water utilities; these must be reinvested in the sector. The incentive for efficiency is thus thought to consist in the opportunity for consolidation, e.g. through (limited) investments in activities related to water and sewerage supply, preferable in cooperation with private partners (Vandsektorloven 2009).

The efficiency incentive is moderated by the outlawing of profits, but the opportunity for consolidation may indeed provide some incentives for efficiency. Furthermore, the regulation may introduce new business-related terms and ways of thinking about water supply and sewerage in the regulated companies, thus strengthening the organisational value of efficiency.

Earlier research identified similar mechanisms in Danish electricity distribution companies when they were exposed to income regulation with limited profit opportunities. The managers came to see efficiency and business development as more important values. Furthermore, their limited profit opportunities made them focus strongly on consolidation in anticipation of further liberalisation later (Sørensen 2005). However, this also provided an incentive for investments which were not very economic.

The price ceilings can also be expected to provide incentives to spend time and talent in the companies on speculations about how to maximise future price ceilings.

It seems without doubt that the companies will spend energy on thinking about how to present their economic data to the regulator in a way which gives them high future price ceilings. Such speculations were widespread in the early phases of income regulation in the electricity distribution sector – or at least company managers suspected that other companies used the leeway they had for strategic representation of data (ibid.).

Similarly, our informants in the water sector expect that it will be necessary to think more strategically about how to categorise different costs (interview, large company; interview, small company). For example, the large company's director argues that it will be possi-

ble to categorise a large proportion of the company's investments as environmentally motivated, if regulation allows especially for such investments.

It is harder to predict whether the regulation will also motivate decision-making based on strategic positioning in relation to regulation rather than efficiency and business development. In the electricity distribution utilities, such behaviour was identified in that respondents reported that they set prices higher than necessary to preserve an advantageous point of departure for the next period of income caps. The resulting surplus was used for investments (Sørensen 2005).

All in all, it seems probable that the price ceilings will provide some incentives for operational efficiency and consolidation. However, it must also be expected that time and effort will be spent on speculations about how to maximise future price ceilings.

Price ceilings and policy-related costs

According to the reform act, price ceilings will take account of state environmental policy and of environmental and service policy coming from local governments (explanatory notes).

In the draft price ceiling regulation, it appears that the utilities will have extra allowances for investments, including investments for environmental and service purposes. These allowances will not be subject to efficiency requirements, according to the reform act (ibid.). Furthermore, there will be allowances for operational costs associated with environmental policy and service quality goals. These allowances will be based on a standard catalogue to be developed by the Utility Secretariat, using an existing catalogue from the Environmental Protection Agency for actions to improve the aquatic environment (Miljøministeriet 2009).

This approach seems tailored to help the Utility Secretariat deal with the potential dialogue with 98 different municipalities about the justification and price of different local projects to improve the aquatic environment through projects related to the sewerage system. However, it is yet uncertain to which extent the Utility Secretariat will be able to take account of local conditions and to which extent it will allow financing over utility prices of projects related to sewerage with a broader aim, such as improvement of the aquatic environment or creation of recreational value (e.g. new bathing water, new natural resorts).

This uncertainty is illustrated by the interview in the small municipality. In this case, local politicians have recently decided on a new waste water plan. This plan contains a number of new environmental initiatives motivated by the Water Framework Directive and climatic change. The waste water plan contains calculations of the costs of these initiatives and the – substantial – rises of the waste water utility tariffs which will be necessary to finance them. The local politicians have approved the waste water plan, including its consequences for waste water tariffs. However, according to the interview informant, the draft price ceiling regulation does not allow for the planned tariff increases. At the time of interviewing, it was unclear to the municipality and its waste water company to which extent its waste water plan can be implemented (interview, small company).

This case seems to mirror the general confusion about the division of price regulation competences between the new Utility Secretariat and the municipalities who have retained their competences as regulators of utility tariffs.

In any case, it seems unavoidable that price setting will be subject to discussions between three parties; the company, the relevant municipality (or municipalities in case of border-crossing companies) and the Utility Secretariat. The justification and division of costs of local environmental projects will be a recurrent theme of those discussions.

5.4 Benchmarking

Obligatory benchmarking is also an important element in the Danish Water Sector Reform. Performance benchmarking is to be used in price regulation. In the following, we will look at why Danish policy-makers want to introduce benchmarking and how far the implementation process has proceeded. Then we will address the following questions, raised by the literature review:

- Will it be possible to take account of heterogeneity in the coming implementation of obligatory performance benchmarking?
- How will service and environmental quality be taken account of in the coming implementation of performance benchmarking?

The questions will be answered primarily based on policy documents.

Obligatory performance benchmarking

Obligatory performance benchmarking has two purposes, according to the reform act. It is to contribute to price regulation by identifying the efficiency potential of each individual company and it is to add transparency to the development of the efficiency and quality of the water sector.

The reform also entails obligatory process benchmarking. This is to be carried out by the utilities themselves, and general figures are to be published on their websites.

As it is described in the reform act, performance benchmarking is to institutionalise a kind of managed competition in the Danish water sector. This is a novelty compared to the existing collaborative approach to benchmarking, which has been institutionalised by the sector organisation DANVA. So far, very little has been publicised about the new benchmarking model, except that it will be developed by the Utility Secretariat, which will also publicise the results.

In the following, I will discuss how the transition from collaborative to competitive benchmarking may present new challenges and how they may be handled. However, only very tentative answers can be given as the model has not been developed and implemented yet.

Heterogeneity

With the new use of performance benchmarking to institutionalise 'managed competition', the regulated companies will have strong interests in influencing the parameters of the model, and it may become difficult for the Utility Secretariat to find a model which is perceived as fair and useful by all – or a majority – of the companies.

On the one hand, the Utility Secretariat seems to have a good point of departure since the utilities have already achieved some degree of consensus as to how different conditions drive costs in the water sector (interview, large company). The Utility Secretariat could thus avoid some conflicts by using DANVA's experience with benchmarking.

One the other hand, the consensus may dissolve when the benchmarking results are to be used to rank companies and set prices. Based on experience from the electricity distribution sector, it is difficult to reach a model for benchmarking which will be perceived as fair by all as a price-setting mechanism. Furthermore, fairness may come at the price of simplicity and transparency. If the model is based on complex calculations of many conditions, this may make it harder for the companies to understand and accept why they are ranked as they are (Sørensen 2005).

All in all, given years of experience with voluntary benchmarking in the sector, there should be relatively good conditions for handling the challenge of heterogeneity, but it remains to be seen how the model to be worked out by the Utility Secretariat handles the challenge.

Service and environmental quality in benchmarking

In the new state-driven performance benchmarking, the intention is to benchmark other aspects in addition to economic efficiency, including environmental and energy efficiency. However, it is uncertain to which extent such elements will be integrated directly in the final calculation of the results and relative efficiency of the companies.

In the explanatory notes, it appears that performance benchmarking is to focus on both the economic and the environmental and energy efficiency of each company. However, the main focus will be on economic efficiency. It is argued that obligatory process benchmarking will ensure that the company also focuses on environmental efficiency.

In sum, it is yet uncertain to which extent measures of environmental impacts or other aspects of quality will be integrated in performance benchmarking. However, it seems probable that the state-driven performance benchmarking will focus primarily on economic efficiency.

5.5 Summary

Table 5.1 summarises the findings of the analysis of the four reform elements.

Table 5.1 Implementation of the Water Sector Reform – main challenges

Reform elements	Challenges of economic regulation	Challenges of integrated regulation
Regulatory authority	The Utility Secretariat seems well equipped to deal with capture in the sense of over-identification with the regulated parties. However, due to limited resources and asymmetric information it may be difficult to assert itself as a strong independent regulator.	Given other policy goals, the Utility Secretariat will hardly be able to produce efficiency improvements in the visible form of lower prices. The Utility Secretariat faces the challenge of communicating with 98 municipalities about the relationship between economic efficiency and service and environmental quality.
Corporatisation	Corporatisation institutionalises some degree of professional business management, but management is also influenced by the decision-making logic of the political system. The corporate form is compatible with explicit mechanisms to keep the company accountable for economic performance. However, such mechanisms are resource-demanding.	The corporate form in itself does not pose a barrier to the implementation of local policies because the municipalities have many regulatory competences vis-à-vis the company. However the extent of these regulatory competences is put into question with the introduction of centralised price regulation.
Incentive-based price regulation	The price ceilings will provide incentives for operational efficiency and consolidation. However, time and effort will also be spent on speculations about how to maximise future price ceilings.	Price-setting will be subject to discussions between three parties; the company, the municipality and the Utility Secretariat.
Benchmarking	Given years of experience with voluntary benchmarking in the sector, it appears that there are good conditions for handling the challenge of heterogeneity. However, making efficiency benchmarking part of regulation may generate more conflict.	It is yet uncertain to which extent measures of environmental impacts or other quality aspects will be integrated in performance benchmarking. However, it seems probable that the state-driven performance benchmarking will focus on economic efficiency.

6 Conclusion and Further Perspectives

The Danish Water Sector Reform is part of an international – and Danish – reform wave in the utility sector. The initiative for the reform was based more on inspiration from other countries and sectors than on any long-standing dissatisfaction with the price level or quality of Danish water and sewerage utilities. Furthermore, it has been chosen to largely disregard the ongoing modernisation efforts in the sector in order to institutionalise a new model of utility regulation similar to the one which has been introduced in the energy sector. However, regulation in the water sector poses special challenges because utility regulation is integrated with other aspects of water policy at the local level. The reform thus poses a number of challenges, both related to the realisation of the goal of improved economic efficiency and related to the reconciliation of centralised economic regulation of the utilities and local regulation of their service quality, consumer relations and not least their interactions with the local aquatic environment. The reform has thus been rather controversial in the sector, and many years have passed from it was first introduced on the policy agenda to the present day where the reform still has not been implemented to any significant degree.

Since the main reform is not yet implemented, it is too early to say to which extent it will have the intended effects of promoting operational efficiency improvements and consolidation in the Danish water sector. With no profit motive and disincentives for sales, the reform contains rather weak efficiency incentives which may be overshadowed by the bureaucratisation of price setting and the incentives this gives for strategic speculations.

It is also too early to say whether the new centralised approach to economic regulation will be a hindrance to the coming years' efforts to renovate and expand the sewerage system in anticipation of climatic changes and to achieve good status in the Danish aquatic environment.

However, it seems safe to conclude that the reform and the new regulations challenge the competences of the Danish local governments to use their water and sewerage utilities as a tool in an integrated approach to water resource management. It also seems safe to conclude that the new Utility Secretariat faces a considerable challenge. Not only must it try to match the information-processing resources of more than 200 Danish water companies, it must also judge the effectiveness and legality of expenses to reach environmental policy goals or service quality goals imposed by 98 municipalities. This challenge is without parallel in the other European countries which have introduced elements of performance regulation in the water sector, such as the UK or the Netherlands.

The new centralised regulation of utility incomes may be a logically and necessary supplement to the centralised regulation of municipal tax incomes which has become reality in Denmark over the last nine years. Given that municipalities cannot raise tax incomes, they have incentives to reach environmental goals through tariff-financed sewerage improvement rather than through projects which would require tax-funding or other kinds of funding with high local political costs (e.g. imposing costs on local farmers or industries). Local authorities are thus asked to find measures to implement the WFD in ways which are appropriate to lo-

cal conditions, but central authorities are keen to influence the calculations and prioritisations which are used to select those measures. The tension between competence delegation to the local level and regulation of the use of those competences is pronounced.

It shall thus be interesting to follow the implementation of the Danish Water Sector Reform and its interactions with broader aspects of water policy in the coming years.

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Interview

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Dansk sammenfatning

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Vandsektorreformen; nye udfordringer for staten, vandsektoren og kommunerne

I maj 2009 vedtog den danske regering en ny vandsektorlov. Denne lov er en del af den internationale udvikling mod liberalisering af forsyningssektorerne. Disse liberaliseringsreformer medfører ofte en betydelig mængde nye reguleringer, hvilket også er tilfældet med vandsektorloven. De vigtigste punkter i loven er obligatorisk selskabsdannelse af vand- og spildevandsforsyninger samt oprettelse af et statsligt forsyningssekretariat, som skal regulere forsyningerne ved hjælp af effektivitetsbenchmarking og prisloftsregulering.

Den danske vandsektorlov er banebrydende i den forstand, at den medfører statslig prisregulering i en kontekst, hvor kommunerne besidder brede kompetencer inden for vandforvaltning og implementering af vandmiljøpolitikken. Formålet med denne artikel er at beskrive den danske vandsektorlov for et internationalt publikum og at diskutere:

1 om det er sandsynligt, at loven vil medføre forbedring af den økonomiske effektivitet i vandsektoren, og
2 hvordan en statslig økonomisk regulering kan forenes med integreret forvaltning af vandforsyning, vandressourcer og vandmiljø i kommunerne.

For at besvare disse spørgsmål trækker rapporten på internationale erfaringer. Da Storbritannien og Holland ofte bliver nævnt som frontløbere med hensyn til vandsektorreformer, er britiske og hollandske erfaringer med privatisering, incitamentsbaseret regulering og performance benchmarking analyseret. Man må imidlertid konkludere, at den centraliserede organisering og regulering af den britiske vandsektor gør det svært at overføre britiske erfaringer til Danmark, idet Danmark har en vand- og spildevandssektor med mange små, offentligt ejede eller forbrugerejede vandselskaber. Desuden er Danmark karakteriseret ved decentralisering af den offentlige sektor. Hollandske erfaringer er også kun af begrænset relevans for Danmark, da performance benchmarking i Holland bliver organiseret af vandsektoren selv. Den bliver ikke brugt af staten til at fastsætte priser. Dermed ser den danske ambition om at kombinere statslig prisfastsættelse med kommunal regulering af vandselskaberne og vandmiljøet ud til at være en unik udfordring.

Det er derfor meget relevant at analysere udformningen af den danske vandsektorreform og de udfordringer, den vil give. Analysen fokuserer på fire hovedpunkter:

1 Den nye regulerende myndighed
2 Obligatorisk selskabsdannelse
3 Prisloftsregulering
4 Statsdrevet performance benchmarking

For hvert punkt er der udpeget to udfordringer. Den ene udfordring vedrører realiseringen af målet om forbedret økonomisk effektivitet, mens den anden handler om at forene statslig og kommunal regulering af vandsektoren.

Analysen er baseret på en blanding af kvalitative data, herunder skriftlige kilder og kvalitative interview med repræsentanter for vandselskaber og kommunale myndigheder i Danmark.

Den regulerende myndighed

Uafhængige regulerende myndigheder er karakteristisk for liberaliseringsreformer i forsyningssektorerne. Imidlertid har de to store udfordringer: *capture*, dvs. overidentifikation med de regulerende parter, og *asymmetrisk information* vis-a-vis de regulerende myndigheder. Derudover skal de finde en balance mellem *specialisering* i effektivitetsregulering og at bidrage til i*ntegreret regulering af økonomiske og miljømæssige aspekter af forsyningsvirksomheden*.

Det nye reguleringskontor, Forsyningssekretariatet, er en del af Konkurrencestyrelsen. Det har således gode vilkår for at modstå overidentifikation med vandsektoren og miljøområdet. Det kan dog forventes, at Forsyningssekretariatet vil lide under asymmetrisk information og derfor ikke vil blive en særlig stærkt uafhængig reguleringsmyndighed.

Selvom Forsyningssekretariatet vil være i stand til at støtte en forbedring af effektiviteten, vil det næppe have et synligt resultat i form af faldende priser. For mange faktorer peger i modsat retning, såsom implementeringen af det europæiske vandrammedirektiv og nye investeringer i kloakering forårsaget af klimaforandringerne. Forsyningssekretariatet vil være nødt til at arbejde tæt sammen med andre myndigheder på centralt og lokalt niveau for at fremme effektivitet uden at stå i vejen for nødvendige projekter og investeringer, der forbedrer vandmiljøet og/eller det offentlige kloaksystem.

Selskabsdannelse

Selskabsdannelse hævdes at skabe gennemsigtighed og fokus på de økonomiske resultater. Imidlertid forudsætter en succesfuld selskabsdannelse, at de relevante offentlige interesser kan varetages på armslængde ved hjælp af love, licenser og kontrakter.

Erfaringer fra eksisterende danske vandværker tyder da også på, at selskabsdannelse fremmer professionel virksomhedsledelse og fokus på de økonomiske resultater. Ikke desto mindre er nettofordelene ved selskabsdannelse usikre i de mange små forsyninger i den danske vandsektor. Den oprindelige mening med loven var ganske vist at fremme en udvikling mod færre, større vandselskaber, men den vedtagne lov giver ikke tydelige incitamenter til strukturrationalisering, og fordelene ved selskabsdannelse kan dermed også diskuteres.

Baseret på de nuværende erfaringer udgør selskabsdannelse ikke en alvorlig barriere for, at kommunerne kan implementere deres politik for vandmiljø, forbrugerbeskyttelse mv. Kommunerne har mange beføjelser, hvormed de kan pålægge deres vandselskaber miljømæssige og andre forpligtelser. Der vil imidlertid blive stillet spørgsmål om udstrækningen af disse beføjelser i de kommende år, når Forsyningssekretariatet skal tage stilling til de økonomiske konsekvenser af sådanne forpligtelser.

Prisloftsregulering

Håbet er, at prisloftsregulering vil tilskynde forsyningsselskaberne til at holde udgifterne nede. Når deres indtægter ikke længere afhænger direkte af udgifterne, giver det forsyningsselskaberne incitament til at holde udgifterne nede og realisere overskuddet.

De danske vandselskaber og deres ejere vil dog ikke kunne disponere frit over overskuddet. Det skal reinvesteres i sektoren. Reguleringen mangler således stærke incitamenter til effektivitet. Desuden vil den opmuntre til strategiske spekulationer om, hvordan fremtidens prisloft kan maksimeres.

Prislofterne vil indbefatte tillæg for udgifter i forbindelse med centralt og lokalt fastsatte mål for service og miljø. Det må forventes, at under alle omstændigheder vil prisfastsættelsesproceduren involvere diskussioner mellem mindst tre parter: forsyningsselskabet, kommunen og Forsyningssekretariatet.

Benchmarking

Ved hjælp af resultatbenchmarking vil Forsyningssekretariatet skabe såkaldt *yardstick competition*. Det medfører en udfordring, idet forsyningsselskaberne har forskellige rammebetingelser, hvilket reguleringsmyndigheden må finde en rimelig måde at tage højde for. I den danske vandsektor har man umiddelbart et godt udgangspunkt for at finde en fair og effektiv model efter mange års erfaring med frivillig benchmarking i vandsektorens eget regi. Men tiden vil vise, hvordan reguleringsmyndigheden vil udforme den nye model.

Der må desuden tages beslutning om, hvordan effektivitetsbenchmarkingen kan tage højde for den miljømæssige kvalitet, uden at modellen bliver alt for kompliceret. Det er stadig usikkert, i hvilken udstrækning miljøpåvirkning eller andre kvalitetsaspekter vil blive integreret i benchmarkingmodellen, som Forsyningssekretariatet skal udvikle.

Perspektivering

Det er for tidligt at sige, i hvor høj grad den danske vandsektorlov vil forøge effektiviteten af vandsektoren.

Det kan dog med rimelig sikkerhed konkluderes, at det nye Forsyningssekretariat står over for en stor udfordring. Ikke alene skal det analysere mere end 200 vandselskabers økonomi, det skal også vurdere effektiviteten og legaliteten af 98 kommuners politisk vedtagne forpligtelser til investeringer i kloakforbedringer. Denne udfordring synes uden sidestykke i andre europæiske lande.

The Danish Water Sector Reform – Economic Efficiency and Central-Local Relations

In 2009, a Danish water sector reform was passed after years of negotiations between the political parties and sector stakeholders. The reform combines centralised price-regulation and decentralised implementation of water policies in a way which is unique in an international context.

One of the main challenges concerns how the relatively small regulatory authority will assert itself as an independent regulator and provide efficiency incentives for the many different water and sewerage utilities. Another main challenge concerns the future interactions between the three parties in price-setting; the companies, the municipalities and the regulatory authority. How those interactions will develop is not only significant to economic efficiency, but also to the balance between central control and local self-governance.

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