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Eija M. Vinnari

Public Service or Public Investment? An Assessment of the Consequences of New Public Management in the Water Sector

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Thesis for the degree of Doctor of Technology to be presented with due permission for public examination and criticism in Festia Building, Auditorium Pieni Sali 1, at Tampere University of Technology, on the 9th of May 2008, at 12 noon.

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PREFACE AND ACKNOWLEDGEMENTS

This dissertation was mainly prepared at the Laboratory of Environmental Engineering and Biotechnology (LEEB), Tampere University of Technology (TUT), Finland. As the dissertation belongs to the realms of both water services management and public sector accounting, it is also strongly connected to the Department of Economics and Accounting, University of Tampere (UTA), Finland. In addition, one of the articles of this dissertation was written during my stay as a Fellow Scholar at The Water Center, University of Washington (UW), Seattle, USA.

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Copenhagen, 1st of April, 2008

Eija Vinnari

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ABSTRACT

Water services systems are essential to public health, economic development and the state of the environment. In order to secure the quality of services as well as ensure reasonable customer charges and sufficient investment, water services have traditionally been taken care of by the public sector in most countries of the world. However, a major problem with the public sector provision of water services, or any other services for that matter, has always been that their demand is invariably greater than the funds available for their production. Thus, countless reforms have been implemented to improve the public sector in terms of service quality, the efficiency and effectiveness of operations, and accountability to citizens.

The latest global wave of public management reforms, coined New Public Management (NPM), has advocated reducing the size of the public sector and the application of private sector management principles and practices. NPM-informed reforms have also been implemented on the local government level in Finland with the broad aim of increasing flexibility and municipal autonomy in service production while still safeguarding the foundations of the welfare society. This approach has brought along with it, amongst other things, the separation of the provision and production of public services; the adoption of accrual or business accounting; and the obligation to practice longer-term financial planning and budgeting. The reform has also involved the separation of water services within municipal accounting, as well as the implementation of full cost recovery through customer charges, including a reasonable rate of return on invested capital.

The principal objective of this research was to examine the consequences of NPM–influenced financial management and accounting reforms in the context of municipal water services. The aim was to ascertain whether or not the reforms have succeeded in achieving their original objectives and whether they have resulted in any outcomes that would require increasing regulation in the public sector. The research focused mainly on Finland, where enough time had passed since the initiation of the first local government reforms to allow an analysis of the consequences. The Finnish perspective was complemented with an exploration of parallel and similar developments in Tallinn, Estonia because, despite differences in politico-administrative history, the two countries shared certain relevant characteristics such as politicians' inexperience in the commercialization of water services and the need to secure water infrastructure investment funds.

With regard to methodology the research adheres mostly to the disciplines of public sector financial accounting and management. Since much attention is paid to the somewhat radical changes caused by the NPM movement in the water sector, the approach assumed in the research

may therefore be called critical. The method of reasoning utilized in the research is induction, which is not based on hypotheses as drivers of the research but which proceeds from specific observations to more general conclusions. The predominant method of arranging the research material is the case study, from which it is possible to make contextual rather than statistical generalizations.

The water services reforms explored in this research sought, through the application of various NPM principles and practices, to increase the transparency of municipal finances, to improve financial planning and management, and to secure sufficient investment into the rehabilitation and replacement of water services infrastructure. The positive consequence of the reforms reported in this dissertation is the accrual-accounting derived practice of infrastructure asset management. The more negative consequences are associated with the inherent difficulty of infrastructure asset accounting and the nationally devised accrual accounting terminology, which offer opportunities for investment deferral, hidden taxation, cross-subsidizing, short-sighted political decision-making, and the violation of intergenerational equity.

It therefore seems that some degree of economic regulation or other type of governance would be appropriate in the case of publicly owned water utilities in which profit-making is allowed. Guidance related to the long-term management of infrastructure assets is considered especially pertinent. The options outlined in this research for the Finnish context are either a combination of formal and informal methods or an expansion of this which involves the establishment of a water sector economic regulator. An ideal arrangement would in either case involve a long-term commitment of municipal decision-makers to water services management. In practice this could mean that the boards of municipal water services enterprises would also include non-politician expert members, and that some of the board members would occupy their positions for a longer time than the municipal election period.

Keywords: accrual accounting, asset management, creative accounting, Estonia, Finland, infrastructure assets, local government, New Public Management, public sector, reforms, sewerage, water services, water supply

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TIIVISTELMÄ

Toimiva vesihuolto on välttämätöntä niin ihmisten terveyden, taloudellisen kehityksen kuin ympäristönkin kannalta. Riittävien investointien, palveluiden laadun ja kohtuullisten asiakasmaksujen takaamiseksi vesihuoltopalveluista onkin useimmissa maissa yleensä huolehtinut julkinen sektori. Huomattava ongelma julkisen sektorin tarjoamissa vesihuolto- ja muissa palveluissa kuitenkin on, että niiden kysyntä on väistämättä suurempi kuin niiden tuottamiseen tarvittavat resurssit. Tämän vuoksi aikojen saatossa onkin toteutettu lukuisia uudistuksia, joiden tarkoituksena on ollut parantaa julkisen sektorin palveluiden laatua, toiminnan tehokkuutta sekä vastuullisuutta ja tilivelvollisuutta.

Viimeisin julkisen sektorin uudistamisaalto, josta käytetään yleisesti nimitystä uusi julkisjohtaminen (New Public Management, NPM), on korostanut tarvetta pienentää julkisen sektorin kokoa sekä ottaa julkisissa organisaatioissa käyttöön yksityissektorin johtamisperiaatteita ja –käytäntöjä. NPM-henkisiä uudistuksia on toteutettu myös Suomen kuntasektorilla, jolloin tavoitteena on ollut lisätä joustavuutta ja kuntien itsenäisyyttä palveluntuotannossa horjuttamatta hyvinvointiyhteiskunnan peruspilareita. Käytännössä tämä on tarkoittanut, että kunnallisten palveluiden järjestämisvastuu on erotettu varsinaisesta tuotantotoiminnasta, kunnat ovat siirtyneet kassaperusteisesta kirjanpidosta liikekirjanpitoon ja kuntataloudelle on asetettu kolmen vuoden tasapainovaatimus. Vesihuoltosektorin muutoksia ovat puolestaan olleet vesihuoltolaitosten kirjanpidon eriyttäminen kunnan kirjanpidossa ja laitoksille asetettu velvoite kattaa asiakasmaksuilla kaikki kustannuksensa, joihin voi sisältyä myös kohtuullinen tuotto pääomalle.

Tämän väitöskirjatyön päätarkoituksena oli tutkia uuden julkisjohtamisen hengessä tehtyjen kirjanpito- ja johtamisuudistusten seurauksia vesihuoltosektorilla. Tutkimus keskittyy pääasiassa Suomeen, missä tarpeeksi aikaa katsottiin kuluneen uudistusten aloittamisesta seurausten analysoinnin mahdollistamiseksi. Suomalaista näkökulmaa täydennettiin tutkimalla samanaikaista ja –kaltaista kehitystä Tallinnassa, Virossa, koska historiallisista poliittis-hallinnollisesta eroista huolimatta näillä kahdella maalla on samankaltaisia ominaisuuksia, kuten poliitikkojen kokemattomuus vesihuoltopalveluiden kaupallistumisessa sekä tarve varmistaa infrastruktuuri-investointeihin tarvittavien varojen riittävyys.

Metodologisesta näkökulmasta tämä tutkimus kuuluu enimmäkseen julkisen sektorin laskentatoimen ja johtamisen aloihin. Koska erityistä huomiota kiinnitetään NPM-uudistusten aiheuttamiin melko radikaaleihin muutoksiin vesihuoltosektorilla, lähestymistapaa voidaan kuvata kriittiseksi. Tutkimuksessa käytetty induktiivinen päättelymenetelmä etenee yksittäisistä,

tapaustutkimuksiin perustuvista havainnoista yleisempiin johtopäätöksiin. Tulosten yleistettävyys on siis luonteeltaan kontekstuaalisesta, ei tilastollista.

Tässä työssä tutkituilla julkisen ja vesihuoltosektorin uudistuksilla pyrittiin erilaisten NPM-henkisten periaatteiden ja käytäntöjen kautta lisäämään kunnallisten rahavirtojen läpinäkyvyyttä, parantamaan taloudellista suunnittelua ja johtamista sekä takaamaan vesihuoltolaitoksille riittävästi varoja tarpeellisten saneerausinvestointien tekemiseksi. Tutkittujen uudistusten myönteisenä seurauksena voidaan pitää liikekirjanpidon vaatimuksiin pohjautuvan, käyttöomaisuuden hallinnaksi (asset management) kutsutun kokonaisvaltaisen johtamisfilosofian kehittymistä. Uudistusten kielteisemmät seuraukset liittyvät infrastruktuuriomaisuuden kirjanpidollisen käsittelyn vaikeuteen ja kansallisella tasolla laadittuun liikekirjanpitoterminologiaan sekä edellisten mahdollistamiin investointien lykkäyksiin, luovaan laskentaan, piiloverotukseen ja sukupolvien välisen tasa-arvon loukkaamiseen.

Vesihuoltolaitosten liiketoiminnan jonkinasteinen taloudellinen valvonta tai muun tyyppinen ohjaus näyttäisi siis olevan tarpeellista ainakin niissä olosuhteissa, joissa liikeylijäämää tuottava toiminta on sallittua. Käyttöomaisuuden pitkäjänteiseen hallintaan liittyvää ohjeistusta voidaan pitää erityisen tähdellisenä. Tässä tutkimuksessa ehdotetut vaihtoehdot Suomen julkiselle sektorille ovat joko virallisten ja epävirallisten ohjauskeinojen yhdistelmä tai tämän laajennettu versio käsittäen taloudellisen valvontaelimen perustamisen. Ihanteelliseen järjestelyyn sisältyisi molemmissa vaihtoehdoissa myös kuntapäättäjien pitkäaikainen sitoutuminen vesihuoltopalveluiden hallinnointiin. Käytännössä tämä voisi esimerkiksi tarkoittaa, että muutkin kuin poliitikot voisivat toimia kunnallisten vesiliikelaitosten johtokuntien jäseninä ja että osa jäsenistä voisi pysyä virassaan yli vaalikausien.

Avainsanat: infrastruktuuri, julkinen sektori, kunnat, käyttöomaisuuden hallinta, liikekirjanpito, luova laskenta, Suomi, uudistukset, uusi julkisjohtaminen, vesihuolto, Viro

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LIST OF ORIGINAL PUBLICATIONS

This dissertation is based on the following peer-reviewed, internationally published articles, referred to in the text by their Roman numerals:

I Vinnari, E.M. 2006. Economic regulation of publicly owned water utilities: the case of Finland. *Utilities Policy* 14(3), 158-165.

II Vinnari, E.M. and Näsi, S. 2008. Creative accrual accounting in the public sector. 'Milking' water utilities to balance municipal budget and accounts. *Financial Accountability and Management* 24(2), 97-116.

III Vinnari, E.M. and Hukka, J.J. 2007. Great expectations, tiny benefits: decision-making in the privatization of Tallinn water. *Utilities Policy* 15(2), 78-85.

IV Vinnari, E.M. and Hukka, J.J. 2008. Institutional governance of water utility asset management and its implications for Finland. *Water Policy*. (in print)

THE AUTHOR'S CONTRIBUTION

Article 1:
Eija Vinnari wrote the article independently.

Article II:
Eija Vinnari wrote a substantial part of the article and is the corresponding author. The co-author provided inputs from her field of expertise.

Article III:
Eija Vinnari wrote the article and is the corresponding author. The co-author commented on the text and its content.

Article IV:
Eija Vinnari wrote the article and is the corresponding author. The co-author commented on the text and its content.

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ABBREVIATIONS AND ACRONYMS

AFLRA = Association of Finnish Local and Regional Authorities

FIWA = Finnish Water and Waste Water Works Association

FRS = Financial Reporting Standard (UK)

GASB = Government Accounting Standard Board (US)

NPM = New Public Management

TERMS AND DEFINITIONS

Accrual accounting = business accounting; standard model of accounting used in public limited companies

Cameral accounting = cash-based accounting; previously main method used in the public sector

Creative accounting = formulating or using accounting information in order to mislead the users

Divestiture = transferring ownership of infrastructure, often from a public sector entity to a business company

Full cost recovery = covering all the costs of producing goods or delivering services through fees charged to customers

New Public Management = a paradigm of management which advocates minimizing the size of the public sector and implementing market-based models of management and accounting

Municipal enterprise = an organizational form in the Finnish public sector, a hybrid form of enterprise that combines elements of a municipal department and a public limited company

Water undertaking, water utility = generic terms for all types of organizations producing water services, used interchangeably in this dissertation

Water services = abstraction, impoundment, storage, treatment and distribution of surface water or groundwater; as well as waste-water collection and treatment

1. INTRODUCTION

"I see it is impossible for the King to have things done as cheap as other men"
- Samuel Pepys, 21 July 1662

1.1 Background

Water supply and sanitation systems are essential to public health, economic development and the state of the environment. First of all, drinking water supply and sewerage with proper wastewater treatment and disposal play a significant role in the prevention of microbial-born and contagious diseases. Secondly, they lay the foundation for thriving economic systems both directly, through the consumption of services by users, and indirectly, by raising the users' productivity (World Bank, 1994). In the case of developing countries, the beneficial economic impact of infrastructure systems is especially notable: according to one estimate, meeting the water and sanitation Millennium Development Goals[1] would yield economic benefits ranging from USD 5.5 to USD 45.5 per USD invested, depending on the type of intervention (Hutton, Huller and Bartram, 2007). Finally, and with reference to environmental significance, sound and well-functioning water services systems minimize the use of a precious resource and prevent pollution in the receiving water courses or the environment.

In addition to being technical systems providing essential services, water infrastructure systems can also be characterized in terms of accounting and economics. In accounting terms, water infrastructure systems comprise long-lived, expensive assets, the true or fair value of which is extremely difficult to estimate. This is due to the practical non-existence of markets for such systems, which prevents a valuation based on arm's-length transactions, and the often underground location of the assets, which complicates condition-based assessments of their remaining lifespan. These difficulties continuously cause disputes about the "correct" method of valuing infrastructure assets.

In economic terms, water and wastewater infrastructure systems can be characterized as natural monopolies, meaning that it is only rational for one producer to operate in a certain geographical area. Therefore, in order to guarantee the necessary investments as well as ensure the quality of services and reasonable customer charges, water services have traditionally been taken care of by the public sector in most countries of the world. However, a major problem with the public sector provision of water services, or any other services for that matter, has always been that their demand is invariably greater than the funds available for their production. Public sector service provision and the optimal size of governments have been debated at least since the late 17th century, and several reforms have been implemented to improve the public sector in terms of service quality, the efficiency and effectiveness of operations, and accountability to citizens.

[1] A UN initiative consisting of altogether eight major goals for reducing global poverty. The sub-goal related to water services is to halve the number of people without access to safe water and adequate sanitation by the year 2015.

The latest public sector reforms have been ongoing since the 1970s. Although there is nothing new about these reforms as such (e.g. Pollitt, 1984, Savoie, 1994), it can be claimed that they differ from the past to the extent that they can be called a distinct wave of reforms (Kettl, 2000; Christensen and Laegreid, 2001). First of all, they occurred more or less simultaneously in several countries of the world, and secondly, they were more scientifically inclined than previously (Argyriades, 2006). The reforms were also extensive, targeting aspects such as public sector size, expenditure, tasks, governance and management systems as well as the number of personnel. The fairly simultaneous occurrence and similar theoretical origins of these reforms eventually gave rise to a paradigm coined New Public Management, or NPM (Hood, 1991), which advocates reducing the size of the public sector and the application of private sector management principles and practices. Methods related to financial management and accounting in particular have been a prominent element of NPM reforms (Power and Laughlin, 1992; Guthrie et al., 2005). The NPM reform movement was initiated in the Anglo-Saxon world, from which it spread to other OECD countries (OECD, 1995) and, through the influence of international financial organizations, also to transition and developing countries.

When NPM-informed reforms have been extended to the water services sector, they have usually taken two major forms: 1) privatization through the divestiture of infrastructure ownership from public sector entities to business companies; and/or 2) allowing bureaucratic managers more freedom in decision-making while imposing on them business sector practices. Although reforms of the first type are rather famous, or in some cases even notorious, they are still fairly uncommon with investor-owned companies serving only about 3 to 7 percent of the global population (OECD, 2003). Instances of the second type of reform are more ubiquitous but less uniform, and they can consist of for example corporatization or other organizational rearrangements, new methods of management and accounting, or changes to cost recovery and pricing. In addition, both types of NPM reforms may convey changes to economic regulation, that is, monitoring and setting limits to customer charges for water and wastewater.

NPM reforms were also implemented in Finland as a result of a consensual political decision to streamline the public sector and decrease public spending to cope with the severe economic depression of the early 1990s (Pollitt and Bouckaert, 2004). The consequent expansion of NPM ideas from state to local government level emerged from the perception that the traditional welfare state model of state-regulated service production by municipalities had reached its limits and needed to be reformed (Government of Finland, 1994). The local government reform in Finland thus aimed at increasing flexibility and municipal autonomy in service production while still safeguarding the foundations of the welfare society. This approach meant, among other things, that the municipalities were still held responsible for the provision of essential services, such as water supply and sewerage, but the actual production of these services was allowed to be delegated to another public or even a private entity. The municipalities were also required to adopt the private sector method of accrual or business accounting and prepare longer-term financial plans and budgets. As regards water services in particular, the reforms involved the reorganization of the former municipal water and wastewater departments into more independent units and their separation within municipal accounting. New legislative requirements were also

introduced on full cost recovery through customer charges, including a reasonable rate of return on invested capital, but contrary to parallel developments in the energy industry, no sector-specific mechanism or authority was established to monitor the charges or the rates of return.

The initial instigator for this research was the urge to explore the impact of the Finnish NPM-informed local government reforms on water services, as it was considered that enough time had passed for the consequences to have become discernible. Gaining a comprehensive understanding of the issue was considered to require an analysis of the objectives, elements and consequences of the reform against the backdrop of the global NPM reform movement. The idea of expanding the Finnish research focus to include parallel developments in neighboring Estonia emerged during the research process when it was realized that despite differences in politico-administrative history, the two countries shared certain relevant characteristics such as politicians' inexperience in water services commercialization and the need to secure funds for the repair and rehabilitation of the water infrastructure. Preconceived notions of the theoretical justification for and international relevance of the research were supported by a preliminary literature review, which revealed that international scientific research on the effects of water services NPM reforms other than complete privatization was somewhat scant, and therefore an in-depth inquiry into the subject was considered justified in order to complement the existing body of knowledge. The literature review has since been extended and is presented in a more comprehensive form in the next section, which summarizes briefly the well-known work on NPM reforms in general, and then describes in more detail the research done on NPM reforms in the context of water services.

1.2 Previous research

Public sector reforms and NPM have in broad terms been quite extensively researched. The identification of the design principles and doctrines underlying the reforms was a natural focus for much of the earlier writings (e.g. Hood, 1989; 1991; Flynn, 1990; Pollitt, 1990) but it has also provided scope for more recent work, including Gruening's (2001) thorough review of the origins and theoretical basis of NPM. Ever since the global nature of the NPM movement became apparent, several comparative studies have explored public sector reforms across various countries, attempting to identify both common elements and divergences in the motivations, content and implementation of the reforms (e.g. OECD, 1995; Kickert, 1997; Lane, 1997; Pollitt and Bouckaert, 2000; 2004; Nolan, 2001).

A more critical branch of research has challenged the beliefs underlying the reforms by highlighting their unintended consequences and paradoxes (e.g. Gregory, 1995; Hood, 1998; Maor, 1999; Christensen and Laegreid, 2001; Hesse, Hood and Peters, 2003). Concentrating on financial management in the public sector, a comparative study of eleven countries by Olson et al. (1998) has argued for example that the practical operation of reformed systems is often characterized by tensions, conflicts and uncertainties that reflect the underlying political contradictions and ambiguities of those systems. Several critical articles have also been produced

to counter the claimed benefits of a fundamental element of financial management reforms, the introduction of accrual accounting in the public sector (see section 3.2.2 and Article II). Although these issues have been debated at length, the scientific community still seems to be far from reaching a consensus, and there is thus a perceived need for more debate and dialogue on financial management as a significant element of public sector reforms, as well as its effect on public sector organizations (Guthrie et al., 2005). Support has also been expressed for research that explores who benefits and who is hurt by the specific reforms (Power, Laughlin and Cooper, 2003).

Empirical research on NPM reforms in the water sector has tended to concentrate mostly on privatization, i.e. transferring the ownership of water services utilities to private operator companies. Numerous theoretical and empirical articles have argued both for and against the privatization of water services (see references in Article III, p. 1). Special attention has been paid to the notorious cases of private sector failures in e.g. Cochabamba, Bolivia; Buenos Aires, Argentina; and Jakarta, Indonesia (e.g. Castro, 2007; Bakker, 2005; Hall et al., 2004; Loftus and McDonald, 2001). These and other similar experiences have also prompted research on the regulatory methods needed for monitoring the prices charged by private water services companies especially in transition and developing countries (see references in Article I, p. 1-2). Within the realm of developed nations, the case featured most often is that of England and Wales, where the NPM reform resulted in the corporatization of the ten Regional Water Authorities into publicly listed companies with 25-year concessions for water supply and sanitation, and the establishment of the Water Services Regulatory Authority (Ofwat) to set limits on water and wastewater prices (e.g. Ogden, 1995; Shaoul, 1995; Bakker, 2004; Rouse, 2007).

Somewhat less attention has been paid to the second type of NPM reforms of retaining public ownership but introducing private sector management practices. The impacts of water services corporatization for instance have been reported from Australia (Sheil, 2004) and South Africa (Smith, 2004). In his critical article, Sheil describes the transformation of Australian water services utilities into publicly owned corporations with professional managers, boards of directors comprised of business experts, and the government role reduced to that of appointing directors, approving targets and collecting dividends. Implemented as a part of the National Competition Policy of Australia (see National Competition Council, 1998), the aim of the corporatization was to improve productivity and profitability through commercialization. Sheil, however, claims that these two indicators are not a reliable measure of the productive capabilities of the water services infrastructure as such and supports his argument by presenting two cases of major infrastructure failure experienced by the corporatized utilities. He then concludes that the ultimate consequence of the water utilities corporatization in Australia is that it works against the public interest while conveying “diabolical” (p. 153) risks to society, the economy and the environment. His implicit suggestion seems to be that these problems could be solved by returning to public sector involvement in running the companies.

Smith's (2004) case study of the commercialization of water services in Cape Town, South Africa also reaches negative conclusions as to the consequences of the water services management reform. The commercialization was implemented in the late 1990s through three new policies: charging for water according to the metered amount; the outsourcing of services; and the development of a system of debt recovery and water cut-offs to deal with non-payment. The aim of the commercialization was to improve efficiency in service delivery and to prepare the ground for the planned corporatization of water services. Smith's review of the consequences of the three policy measures concludes that they have not resulted in increased efficiency but rather lowered the quality of services and created inequalities in service provision, especially in the poorest neighborhoods. She suggests that overcoming the problems caused by commercialization requires increased public sector participation.

Studies on NPM changes in the water sector also include pieces that are less critical and normative than the two above. Bakker and Cameron (2005), for example, have described the restructuring of water services utilities and the resulting variety of business models in the province of Ontario, Canada. The authors do not explicitly mention the term NPM but refer to similar developments as the main factor behind the restructuring of the water sector: the devolution of asset ownership from provinces to municipalities, the parallel deregulation of the electricity industry, and legislation opening up possibilities for new business models such as corporatization. The neutral attitude of Bakker and Cameron is at least partly explained by one of their concluding observations, namely that the ideological debates about private versus public ownership or the associated business models have been much less heated in Canada than internationally. Accordingly, their analysis of the various organizational options chosen by municipalities traces the preceding decision-making processes but does not include an evaluation of the consequences of the restructurings.

On the European continent, much of the research touching upon NPM-informed changes in the water sector tends to originate from the Netherlands (e.g. Blokland, Braadbaart and Schwartz, 1999; Wubben and Hulsink, 2003; Kuks; 2006; Schwartz and Schouten, 2007; Braadbaart, 2007). Influenced by developments especially in their overseas neighbors England and Wales, the Netherlands also considered and debated the privatization of its publicly owned water companies (Kuks, 2006) but finally ended up almost at the other extreme by deciding to prohibit it in the Water Company Ownership Act of 2004. The influence of NPM ideas in the Dutch water sector can instead be seen in the application of a country-wide benchmarking scheme developed by the water company interest organization VEWIN in 1997 to measure and improve the companies' performance (Braadbaart, 2007). Practically all Dutch water companies participate in the scheme, which has thus far helped the industry avoid the establishment of an independent economic regulator (Schwartz and Schouten, 2007). However, the introduction of at least some type of formal economic regulation in the water sector emerges regularly in political discussion; a bill is now before Parliament to introduce a new Drinking Water Act, which would make participation in benchmarking compulsory (Cramer, 2007).

Turning to NPM reforms in Finland, research focusing on changes at the local government level has not appeared very prominently in international fora. Finland has featured as a case country in a five-country comparison initiated by the Finnish Ministry of Finance (Pollitt et al., 1997) and in the extensive twelve-country comparison of Pollitt and Bouckaert (2004). Other scholarly work has described NPM as implemented on state government level (Temmes, 1998); performance contracting in the public sector (Uusikylä and Virtanen, 1999), and the role of government ministers after NPM reforms (Tiili, 2007). Narrowing the scope to municipal enterprise activities such as energy and water services yields scientific articles for example on the restructuring and economic regulation of the Finnish electricity market (e.g. Pineau and Hämäläinen, 2000; Kinnunen, 2006) but none on the simultaneous and corresponding developments in the water services sector. Nationally published studies include a Master's thesis evaluating methods of economic regulation of water services in selected countries and their applicability to Finland (Mäkinen, 2005); a review of the objectives and methods of Finnish local authority corporate governance in environmental services from the point of view of organizational strategy (Maanonen, 2007); and a study on the development of municipal entrepreneurialism in the Finnish water sector from an institutionalist perspective (Windischhofer, 2007).

As can be seen from the above review of previous studies, research on the elements and consequences of public sector management reforms and NPM in general abound but there are still some sectoral and geographical aspects which have not been fully covered. The purpose of the study at hand is to provide more information that can fill some of these perceived gaps.

1.3 Objectives and research questions

The principal objective of this research is to examine the consequences of NPM–influenced financial management and accounting reforms in the context of municipal water services. The aim is to ascertain whether or not the reforms have succeeded in achieving their original objectives and whether they have resulted in any outcomes that would require increasing regulation in the public sector. The research therefore contributes to the international scientific discussion on the changes brought about by NPM reforms to the nature and provision of public services and on the role of accounting within the reforms. The secondary, more practical objective of this research is to inform further policy development by presenting recommendations based on international experiences and the views of Finnish experts on the regulation of public sector accounting, water services pricing, infrastructure asset management and public ownership arrangements. To complement the existing body of knowledge, the research focuses on local government reforms that involve retaining the public ownership of water services at least to a significant degree. The geographical gap in previous research is addressed by focusing especially on Finland and complementing this perspective with an exploration of parallel and similar developments in Tallinn, Estonia.

More specifically, the research seeks to answer the following questions:

- What are the objectives, elements and consequences of municipal water services reforms implemented in Finland and Tallinn, Estonia?
- How successful have the reforms been in relation to their original objectives?
- Do any consequences of the reforms cause the need to impose economic regulation on publicly owned water services utilities? If yes, what options are available for such arrangements?

Answers to these questions are sought through four case studies associated with NPM reforms in the water sector and each case is presented in a separate peer-review article as follows. *Article I* looks at the consequences of NPM in Finland from the point of view fifteen large, profitably operating water services enterprises, which produce half of the turnover of the sector, to see if the legislative requirement for full cost recovery and reasonable rate of return has succeeded in its aims of preventing hidden taxation and enabling the utilities to collect sufficient funds for infrastructure maintenance, repair and rehabilitation.

Article II focuses on two other NPM reforms in the Finnish local government, the transition from cash-based to accrual accounting and the separation of water services in municipal accounting, which aimed at increasing transparency and improving local government financial management. The case described is the sale of a municipal water enterprise to the municipality's own energy company, one of the first instances in Finland of multi-utility formation. The sale raised considerable discussion among water sector professionals because of the intra-municipal nature of the arrangement and the large sale price.

Article III describes the objectives and the consequences of the partial privatization of an Estonian water services company, AS Tallinna Vesi. The main aims of involving a private investor in the company were to source funds for the repair and rehabilitation of water services infrastructure while maintaining customer charges for the services at a fairly stable level. The partial privatization involved public disputes between political parties and also between the City, the private operator, and the water services company.

Article IV builds on the findings of the previous articles, by looking for ways to guarantee the integrity of publicly owned water services infrastructure in the context of the increasing commercialization of the water sector. The article presents one of the elements of NPM that is perceived mainly as a positive development, namely a practice called infrastructure asset management, which developed as a response to the accrual accounting demands for recording the value and use of public sector fixed assets. The article then compares and assesses regulatory and governance practices related to water utility asset management in England and Wales, New Zealand, Australia and the United States.

1.4 Structure and scope of the research

This research consists of four peer-reviewed scientific articles and the synthesis as shown in Figure 1.1 with references to the associated chapters of the dissertation (2-6) and the peer-review articles (I-IV). The dissertation at hand describes the research and is constructed as follows. *The first chapter* has described the background, justification and objectives of the research and presented a review of previous research on NPM-informed reforms, especially those related to the water sector.

The second chapter provides a contextual description of water services, defining and explaining the interrelated technical, accounting and economic aspects of water services which present certain problems for fair asset valuation and which have traditionally been used as justifications for the public ownership and operation of the services. The chapter continues with an outline of the water services context in Finland, recounting briefly the historical development of water services and then presenting an overview of the current operational and institutional environment.

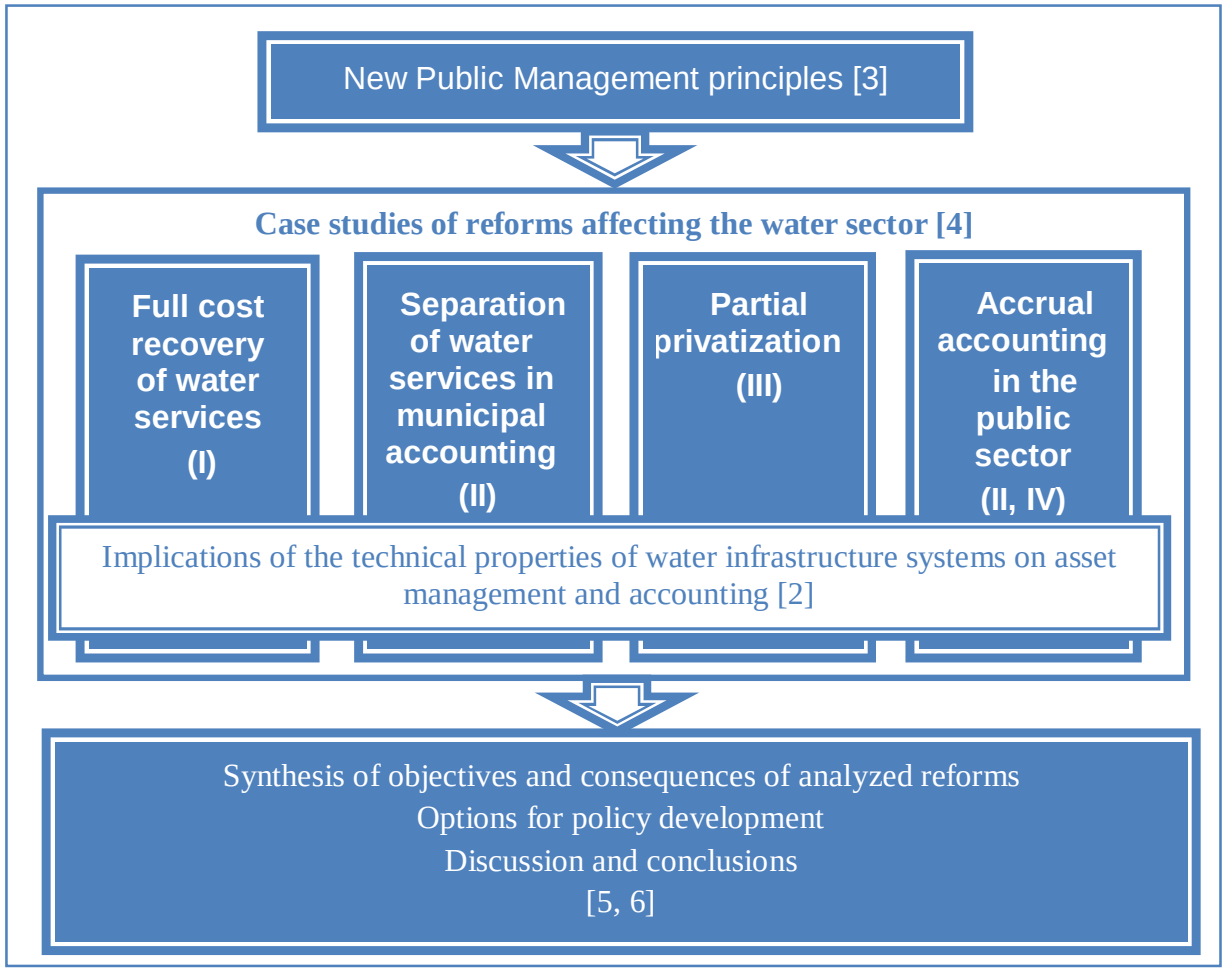

Figure 1.1. Structure of the research with references to associated chapters of the dissertation [2-6] and published articles (I-IV).

The third chapter presents the theoretical framework within which the research questions are addressed. It traces the theoretical origins of public management reforms from the traditional bureaucratic model of public administration through managerialism and public choice theorizing to New Public Management (NPM). The fact that NPM in itself is not a theory but rather an umbrella term for various public management reform principles is compatible with the pragmatic approach of the engineering sciences which does not call for testing particular theories but focuses on finding answers to practically oriented questions. The third chapter also presents a comprehensive model of public management reforms and utilizes it to illustrate the foci of this research. The final section of the third chapter presents the research approach, methodology and methods used in data gathering and analysis.

The fourth chapter presents summaries of the four peer-reviewed articles in their relevant legislative context. The contents of the articles have been presented in the previous section.

The fifth chapter discusses the research results in terms of their theoretical and practical implications; makes suggestions for policy development; and discusses the reliability and validity of the results and propositions made in the research; as well as the overall successfulness of the research design and methods.

The sixth chapter contains the conclusions and recommendations of the author as well as suggestions for further research.

2. CONTEXTUAL DESCRIPTION OF WATER SERVICES

> "Water is the Hub of Life…Water is its mater and matrix, mother and medium…Life is water dancing to the tune of solids." - Albert Szent-Györgyi, 1972

2.1 Nature of water services

2.1.1 Water services as an infrastructure system

In this research, the expression "water services" is used to denote both drinking water supply and sanitation. This corresponds to the terminology of the European Union Water Framework Directive (EC, 2000), which defines water services as "all services, which provide, for households, public institutions or any economic activity: (a) abstraction, impoundment, storage, treatment and distribution of surface water or groundwater; (b) waste-water collection and treatment facilities, which subsequently discharge into surface water". The phases of the water services cycle are illustrated in Figure 2.1.

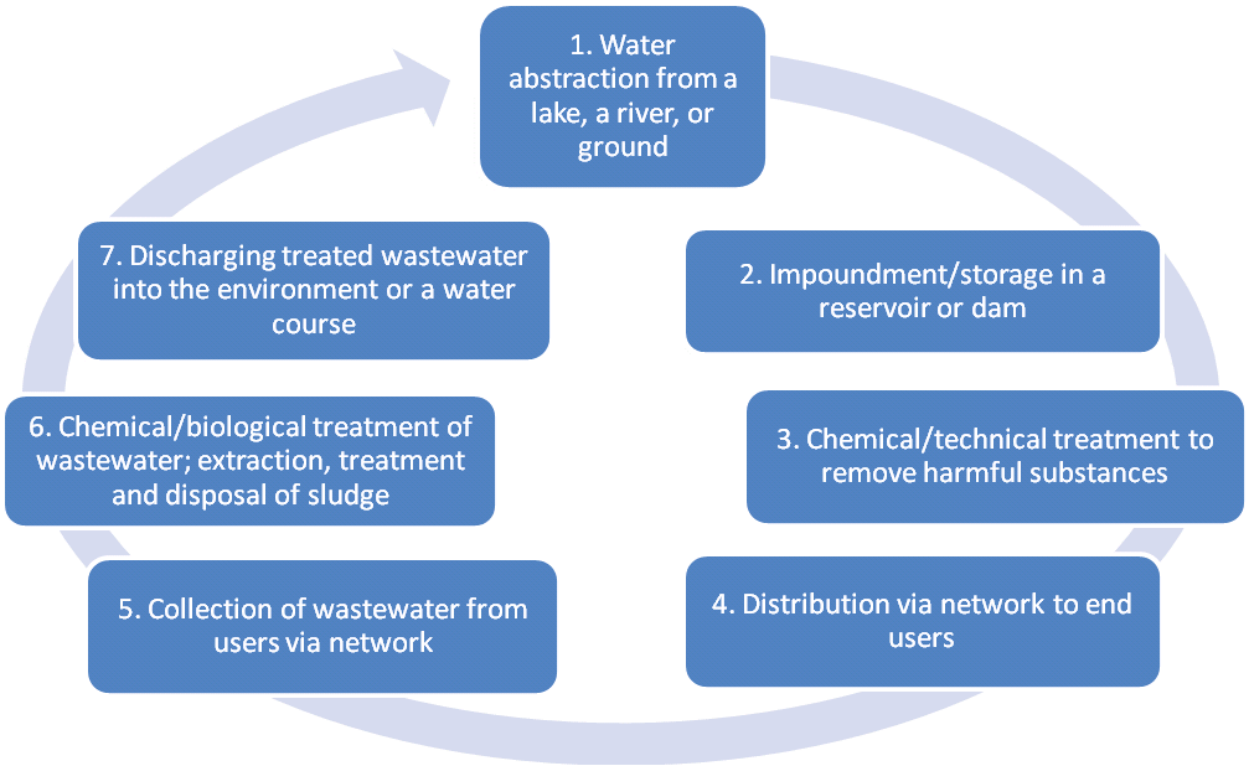

Figure 2.1. Cycle of water services (modified from Hukka and Seppälä, 2004).

In technical terms, water services belong to the category of physical infrastructure systems, which are usually considered to include the built environment, transportation, communications, energy, and solid waste management. The fundamental common element of these systems is that their establishment requires large initial investments into the construction of fixed, long-lived physical structures that are to a large extent located underground. These basic characteristics

have wide-ranging direct and indirect consequences for both the technical and the financial management of the physical infrastructure systems, especially in the case of water services. The remainder of this section looks at the technical implications, while the next section focuses on financial management and accounting.

Being fixed to a specific geographical location makes the systems subject to the conditions posed by the surrounding natural environment. In the case of water services, natural variables that influence the required technical solutions include the availability, location and quality of water resources; rain/drought patterns; temperature variation; altitude differences; geological formations; and soil types. Furthermore, these factors combined with the long lives and often underground location of water infrastructure assets complicate the estimation of the assets' maintenance, repair, and rehabilitation needs. The technical lifespan of for example water and wastewater pipes may be anything from a few decades to well over a century depending on various factors such as soil condition, soil acidity, groundwater levels, pipe materials, and bedding materials (Tafuri and Selvakumar, 2002). Since both direct (e.g. visual) and non-destructive (e.g. ultrasound) inspections of the networks are expensive and complicated, the maintenance and repair needs are often estimated on the basis of historical trends or rules of thumb. To overcome the unreliability and obscurity of such decision-making, various qualitative and quantitative methods and frameworks have been and are being developed (for a review see e.g. National Risk Management Research Laboratory, 2002). These approaches are based on for example condition rating (McDonald and Zhao, 2001; al-Barqawi and Zayed, 2006), statistical modeling (Kleiner, Sadiq and Rajani, 2006), risk-based assessments (Ezell, Farr and Wiese, 2000; McGill, Ayyub and Kaminskiy, 2007), and service-level performance indicators (Marlow and Burn, 2008). However, many such models cannot avoid variables that are, at least to some extent, based on subjective assessments.

The deterioration of pipelines is not the only pattern associated with water services systems since they also comprise other categories of fixed assets, such as small components (e.g. valves), machinery (e.g. pumps), and structures (e.g. buildings), each of which is characterized by a different pattern of wear and tear. An extensive study conducted in the aviation industry (Geraghty, 1995) for example shows that most individual components exhibit a high probability of failure immediately after installation but after this stage function almost indefinitely. A review of the depreciation rates in U.S. national accounts (Fraumeni, 1997, cited by Lufkin, Desai and Janke, 2005) in turn concluded that the best representation of the depreciation of structures is the geometric pattern, which proceeds at a constant rate and assumes the shape of a curve that is convex to the point of origin.

The condition assessment difficulties caused by the differences between and within the various asset categories are exacerbated by the creeping nature of water infrastructure deterioration, contrary to for example road maintenance, where potholes are immediately visible to road users, or aviation, where the consequences of asset failure are not only immediate but potentially catastrophic. These complications affect also the financial management and accounting of water services systems as explained in the next section.

2.1.2 The financial management and accounting of water infrastructure systems

The large one-time investments into water infrastructure systems in relation to the incremental income received over a long period make water services production a very capital-intensive industry. The majority of the assets on a water utility's balance sheet consist of fixed or tangible assets, in particular the water and wastewater networks. On the balance sheet of Tampere Water (Finland), for example, tangible assets make up 85 percent and networks 64 percent of the book value of all the assets (Fig. 2.2). Capital-intensity naturally results in large capital costs; depreciation and interest on debt, which are generally estimated to account for 65 to 80 percent of the total costs of a water services utility (e.g. Kessides, 2003).

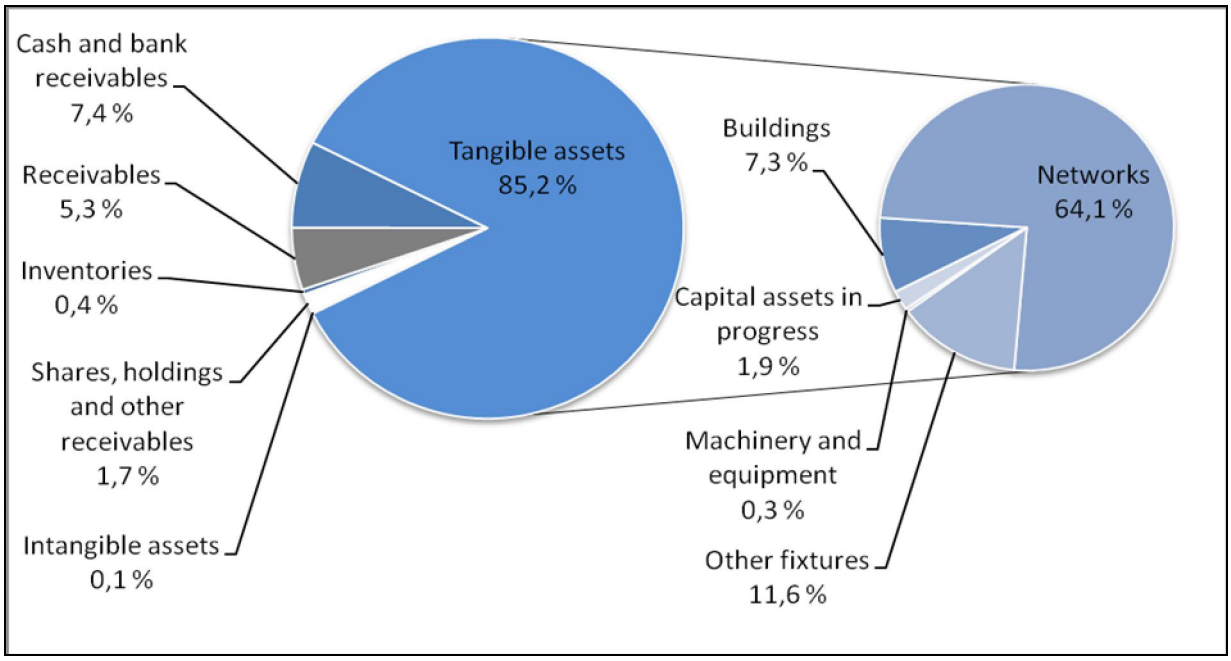

Figure 2.2. Breakdown of the values of different asset categories on the balance sheet of Tampere Water (Finland) in 2006.

Balance sheet values, however, may not be a very accurate reflection of the capital invested in the infrastructure. This is because, first of all, there are several methods for valuing capital assets (for an often-cited list see e.g. Edwards and Bell, 1961), all of which yield different but nonetheless "correct" figures. Secondly, there are also different methods for depreciating the assets. Conventional depreciation in accounting terms represents the recovery of the historical acquisition cost over the lifetime of an asset and adheres to for example straight-line or diminishing-value method of depreciation, but nothing guarantees that these profiles would resemble the actual loss in the value of water infrastructure assets. Therefore the economic lifespan of the assets may expire long before their technical lifespan, meaning that they may disappear from the balance sheet several decades before being replaced with new ones. Alternative depreciation schedules, such as the renewals accounting allowed in the UK (FRS 15) or the modified depreciation option in the US (GASB 34), are based on the fair values of assets

or the cost of maintaining them at a specified level of service but even these depreciation schedules cannot avoid the inclusion of the ultimately uncertain condition factors.

The fundamental difficulty of reliable asset valuation and depreciation causes problems for example in instances of infrastructure divestiture, as will become apparent in Articles II and III. It also influences the financial management of water services by providing opportunities for investment deferral, or asset stripping. In the case of publicly owned utilities, municipal politicians faced with competition for the use of funds might be tempted to favor visible and immediate investments such as new buildings over invisible investments into water services infrastructure. This "tyranny of the immediate" has been found to prevail for example on the local government level in the United States (AWWA, 2006). It is also possible for governments to use water utilities more blatantly as "job havens or cash cows" (Rogers and Hall, 2003: 22), thus leaving them under-funded. In the short term these strategies may seem to work well since the increasing deterioration may be noted only by the water services utility as an increase in leakage while nothing is visible to citizens. In the long run, however, drastic breakdowns may take place. Failures in wastewater force mains for example may cause the release of large amounts of untreated sewage, resulting in a rapid spread of contamination and diseases (Tafuri and Selvakumar, 2002), whereas failures in drinking water distribution systems, especially if initially unnoticed, may cause widespread microbial-born epidemics. In addition to threatening lives, such outbreaks may also have massive economic ramifications due to cost of repair, losses in employees' productivity, and so forth (cf. Kemp, 2005).

Even though asset age alone is not an exhaustive indicator of infrastructure condition, several Western countries with aged infrastructure have started to feel concerned about future large-scale rehabilitation and replacement needs. Finding the required financing will be challenging enough in itself but the situation is further exacerbated by an already existing investment backlog due to the extreme cost-cutting imposed by the world-wide economic crisis of the 1970s and 1990s. Utilities' funds are also being sapped by expensive technical solutions required to comply with tightening water quality or wastewater treatment standards. Many utilities are additionally facing dwindling revenues because of diminishing government funding and, in some areas, a declining customer base. These issues have emerged especially forcefully in North America; for example in the United States, estimates of the amount needed for infrastructure investments range from USD 276.8 billion to USD 1 trillion (WIN, 2000; AWWA, 2001; EPA, 2005). In Canada, the municipal deficit in water and wastewater system investments has been estimated at USD 31 billion (Mirza, 2007). Securing funds for the rehabilitation and replacement of aging infrastructure assets is also a major emerging issue in Finland, as will be explained in more detail in section 2.2.1. Before proceeding to the description of the Finnish water services sector, however, it is useful to complement the technical and financial view of water services systems needs by considering the associated economic aspects.

2.1.3 Water services as a natural monopoly

From an economics point of view, water services constitute a natural monopoly, which according to the classic catalog[2] by Farrer (1902, cited in Newberry, 1999) is characterized by the following attributes: economies of scale; capital-intensity; non-storability with fluctuating demand; locational specificity generating location rents; producing necessities or essentials for the community; and direct connections to customers. The essential prerequisite for a natural monopoly is the presence of economies of scale *internal* to the supplier, i.e. unit costs will decline only when more output is concentrated in a single supplier (Kahn, 1988), thus rendering the duplication of the systems meaningless within a given geographical area. A concept closely related to economies of scale is capital-intensity, i.e. the investments into assets being large in relation to the revenues generated from those assets. Non-storability and locational specificity in turn are the properties of water services that differ the most from other network services such as electricity, telecommunications, and rail. First of all, even though the demand for the service does fluctuate, the product can be stored, at least up to a certain point, in structures such as water towers and reservoirs. Secondly, locational specificity is especially strong in the case of water services and thus complicates common carriage, i.e. a system in which competing service producers would use a common pipeline to convey the water/wastewater and the owner of the network would take care of billing the customers (Webb and Ehrhardt, 1999)[3]. Although attempts have been made to introduce such a system in England and Wales, its practical significance is negligible (Foellmi and Meister, 2005).

In addition to the above characteristics, the fact that water services are essential to their users, who cannot choose their network, makes the services susceptible to exploitation by the owners. Natural monopolies are usually perceived as representing an instance of market failure because the monopolist can take advantage of his position as the only producer to restrict output and raise prices above competitive levels. This lowers social welfare because it transfers income from consumers to producers (Baldwin and Cave, 1999), and a certain degree of regulation is thus considered necessary to protect the consumers. Conversely, since the capital outlays into water services infrastructure are sunk costs and cannot be recovered to a significant extent, any form of regulation must also guarantee that the prices are high enough to enable adequate cost recovery for the service supplier (Train, 1991). The traditional solutions for balancing the interests of service users and service suppliers have been either public ownership of a natural monopoly or public regulation of privately owned companies (Newberry, 1999). In the case of public ownership, a particular service is provided through a state or local government monopoly enterprise and the government decides on the operations and strategies related to for example investments, financing, and pricing. Public regulation in turn refers to a combination of

[2] The idea was originally introduced by J.S. Mill (1848) although he did not use the term "natural monopoly" (Sharkey, 1982).

[3] Common carriage is also hampered by technical and legal-administrative difficulties such as water quality problems due to mixing water of different bio-chemical characteristics and the resulting liability complications; the high transaction costs of tracking the water flow for billing purposes; and the preclusion of specialized wastewater treatment plants due to the mixing of different types of wastewater (Kirkpatrick and Parker, 2004; Seidenstat, 2000).

legislative and administrative controls to structure the operation of particular markets through an independent regulatory agency (Wubben and Hulsink, 2003).

The protection of water users from natural monopoly failures has usually taken the form of public ownership, and often also operation, of the infrastructure through e.g. municipal public works departments. Although the very first piped systems were often established by private entrepreneurs, water quality problems, firefighting needs and inadequate investments in infrastructure caused such systems to be acquired or taken over by public authorities in most countries of the world[4]. However, notions of the public sector as the only possible owner and operator of water services started to change during the 1980s and 1990s as part of the broader movement which questioned the public sector's role and methods in the delivery of services, which led to the global phenomenon of public sector management reforms (see Chapter 3).

2.2 Overview of the water services sector in Finland

2.2.1 Development of water supply and sewerage systems

The construction of the first piped water and wastewater systems in Finland was begun in the 1870s (Katko, 1997) and centralized water services schemes have been operated by municipalities ever since. These municipal utilities have served mainly urban population centers, whereas smaller communities in rural and other sparsely populated areas have traditionally organized their water services in the form of small-scale user-operated cooperatives or more or less informal partnership arrangements.

The number of people served by centralized systems in Finland increased rapidly from 25 percent in the 1950s to about 90 percent in the 1980s (ibid.), in a period of extensive urbanization. Despite urbanization, however, the number of small-scale systems has not diminished because the development has been equaled by the simultaneous increase in summer houses, that is, second homes located in sparsely populated areas and used mostly during the summer period. The number of summer houses is currently 475 000, translating into one per every sixth average-sized household of 2.15 persons (Statistics Finland, 2007). At present, 89 percent of the population is connected to the public water supply and 81 percent have access to public sewerage (Finnish Environment Institute, 2002). The latter figure is likely to increase due to legislation demanding that wastewaters generated by residences in sparsely populated areas must also become subject to treatment by 2014.

The first large-scale water supply systems in Finland relied mainly on surface water but since the 1960s the share of groundwater has steadily increased and is currently about 60 percent of all

[4] One exception to this is the United States, where investor-owned, publicly regulated water companies have existed alongside publicly owned ones throughout the history of centralized systems. The proportion of water supplied in the U.S. provided by private water companies, whether measured by customers served or volume of water handled, has remained close to 15 percent since World War II (NAWC, 1999, cited by the Committee on Privatization of Water Services in the United States, National Research Council, 2002).

water supplied (Ministry of the Environment, 2006). The consumption of water increased steadily from the 1910s until the peak year of 1972 (335 l/c/d), after which it started to decline and is currently estimated as 240 l/c/d (Finnish Environment Institute, 2002). The decrease in consumption can be credited, first of all, to the global energy crisis and, secondly, to the introduction of a national wastewater charge in 1974, which replaced the practice of covering the costs of sewerage and wastewater treatment from local income tax revenue. These almost simultaneous events provided incentives for prudent water use by consumers and systematic attempts at leakage control by water services utilities, while also accelerating the development and installation of water-saving devices.

The first wastewater treatment plants were built in the 1910s but remained few in number for some decades as in most parts of Finland pollution control was based on the natural self-purification capacity of watersheds (Katko, 1997). It was not until the stipulations of the Water Act came into effect in 1961 that regulatory authorities were able to set legally binding obligations and deadlines for diminishing water pollution (Katko, Luonsi and Juuti, 2004). This resulted in the large-scale building of wastewater treatment plants by municipalities and the industry, and also a notable improvement in the quality of the receiving watercourses. The oldest treatment plants, some of which are still in operation, were based on either chemical or biological treatment, whereas currently the prevailing form is biological-chemical treatment at activated sludge treatment plants. The quality of wastewater treatment is high by European standards with the average removal rates of BOD7 and phosphorus being about 94% (Finnish Environment Institute, 2002).

A large share of the water and wastewater networks in Finland was constructed in the 1960s and 1970s (Figs. 2.3, 2.4) and the average ages of these networks are respectively 28 and 32 years. The oldest pipelines were made mostly of concrete and cast iron and their replacement (indicated as negative amounts in the figures) was begun already in the 1970s. Currently, the networks consist mostly of plastic pipes, even though some sewer pipes are still made of concrete. The present length of the water distribution network is 84,000 km and the corresponding figure for the sewerage network is 41,000 km (Finnish Environment Institute, 2002). In financial terms, total investments into water supply, sewerage and wastewater treatment peaked in 1975 at approximately EUR 470 million (Article IV, Fig. 1).

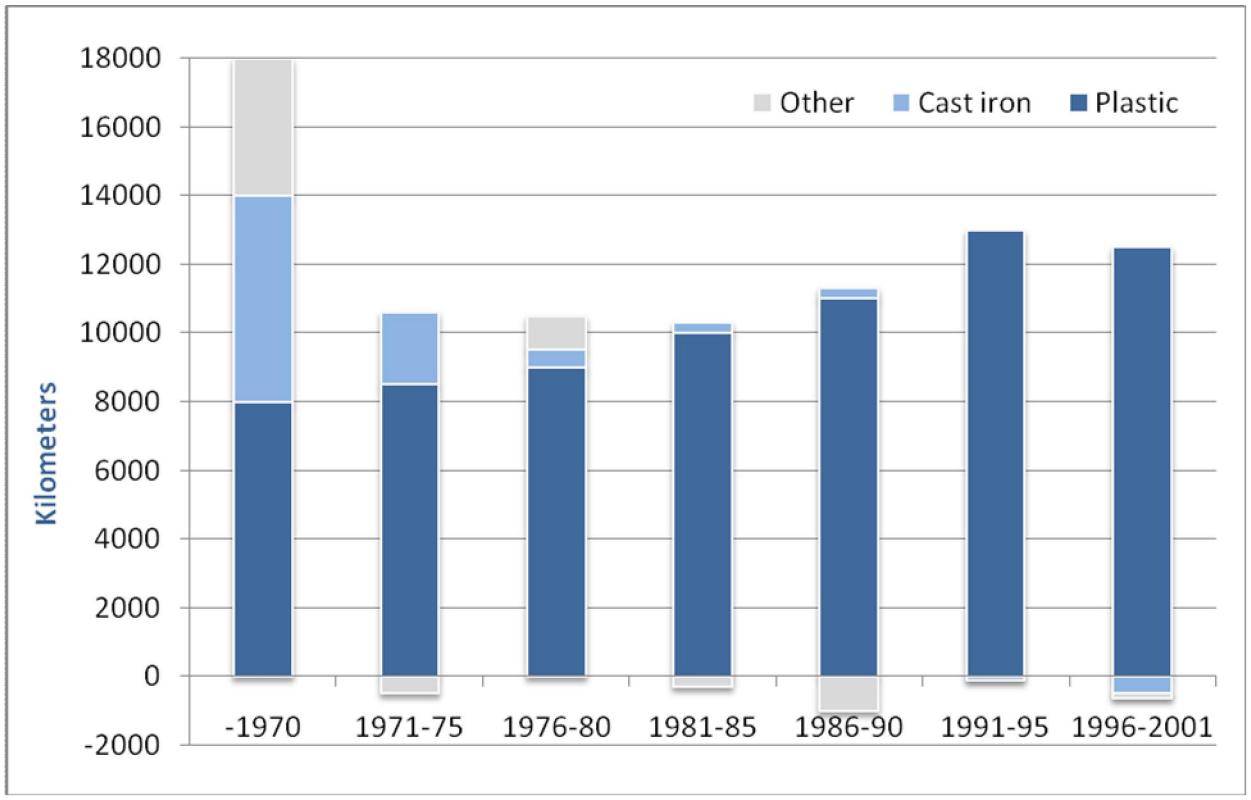

Figure 2.3. Construction of the water supply network in Finland (ROTI, 2007).

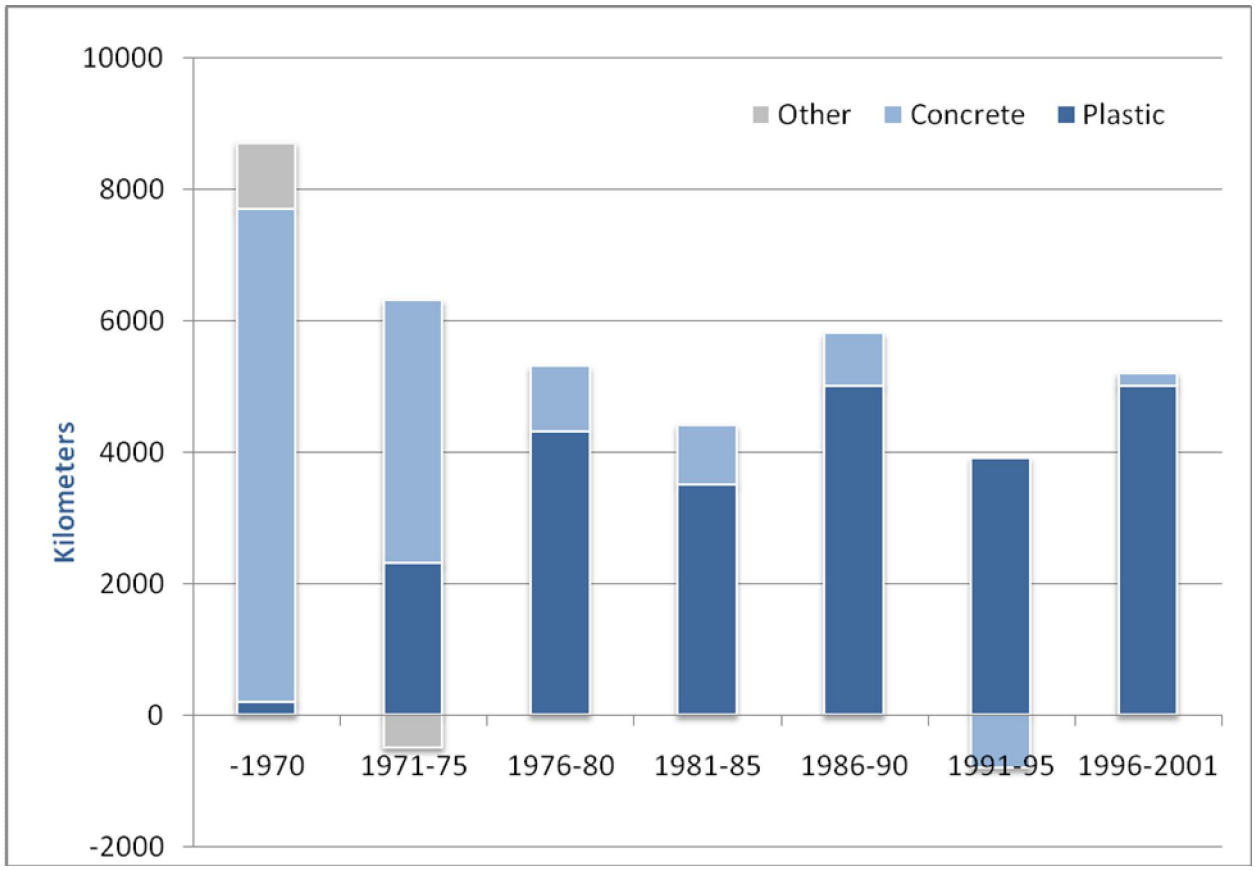

Figure 2.4. Construction of the sewerage network in Finland (ROTI, 2007).

As inferred in section 2.1.2, a major challenge faced by the water services sector in Finland is the investment need related to the aging and deteriorating infrastructure. The water and wastewater systems are now reaching the end of their technical lifespan and will most likely need to be rehabilitated and replaced fairly soon. Oulasvirta (2004) for example has estimated the share of networks needing urgent repair as ten percent, and according to Tompuri (2005), the pace of renewal should be accelerated to four times the present speed. In addition to the emerging renewal needs, there is also a fairly large investment backlog which originates from the expense-slashing carried out during the economic depression of the 1990s. An expert committee assessing the condition of the national infrastructure has recently concluded (ROTI, 2007) that catching up with the past investment deferrals in the water sector requires an additional investment of EUR 50 to 100 million/year until the year 2020.

2.2.2 Current operational environment

Similarly to for example the United States, the water services sector in Finland is characterized by a large number of utilities: about 2,000 in total, of which 500 utilities offer both water and sewerage services, 1,450 offer only water services, and some 50 offer only sewerage services (Pietilä and Spokas, 2004). In terms of ownership, 415 of the utilities belong to the municipalities, while the rest are mostly user-owned small systems serving sparsely populated and/or rural areas. As yet no water services utilities in Finland have been privatized by divesting the infrastructure to a private company but there are a few instances of large-scale private sector participation in service delivery. One example of this is a 12-year contract between a municipality, an industrial enterprise and two operator companies for the rehabilitation and operation of a municipal wastewater treatment plant (Seppälä, 2003). Outsourcing services to the private sector is extensive, and it is most common in the case of non-core activities such as design, construction, sludge treatment, material supply, repair and laboratory services (Vehmaskoski, Pietilä and Seppälä, 2002).

The organizational options for arranging water services are presented in Figure. 2.5. The terms “External” and “Internal” in the figure refer to entities respectively outside and inside the municipal organization. The independence of the organizational options decreases when moving from left to right in Figure 2.5 The most independent type of entity is a user-owned cooperative, which usually provides services to small communities outside urban centers. There are currently about one thousand cooperatives, and their activities range from complete self-sufficiency in service delivery to just owning the network and acquiring the rest of the services from other cooperatives or municipal utilities.

The second type of External Entity is a company, which is not regulated by public law but by the Limited Liability Companies Act (624/2006) and therefore a municipality can influence its company’s decisions only in the role of a shareholder. Presently there are about 40 municipality-owned companies providing water services to individual municipalities or regional coalitions of municipalities, and another dozen companies providing bulk water or wastewater services.

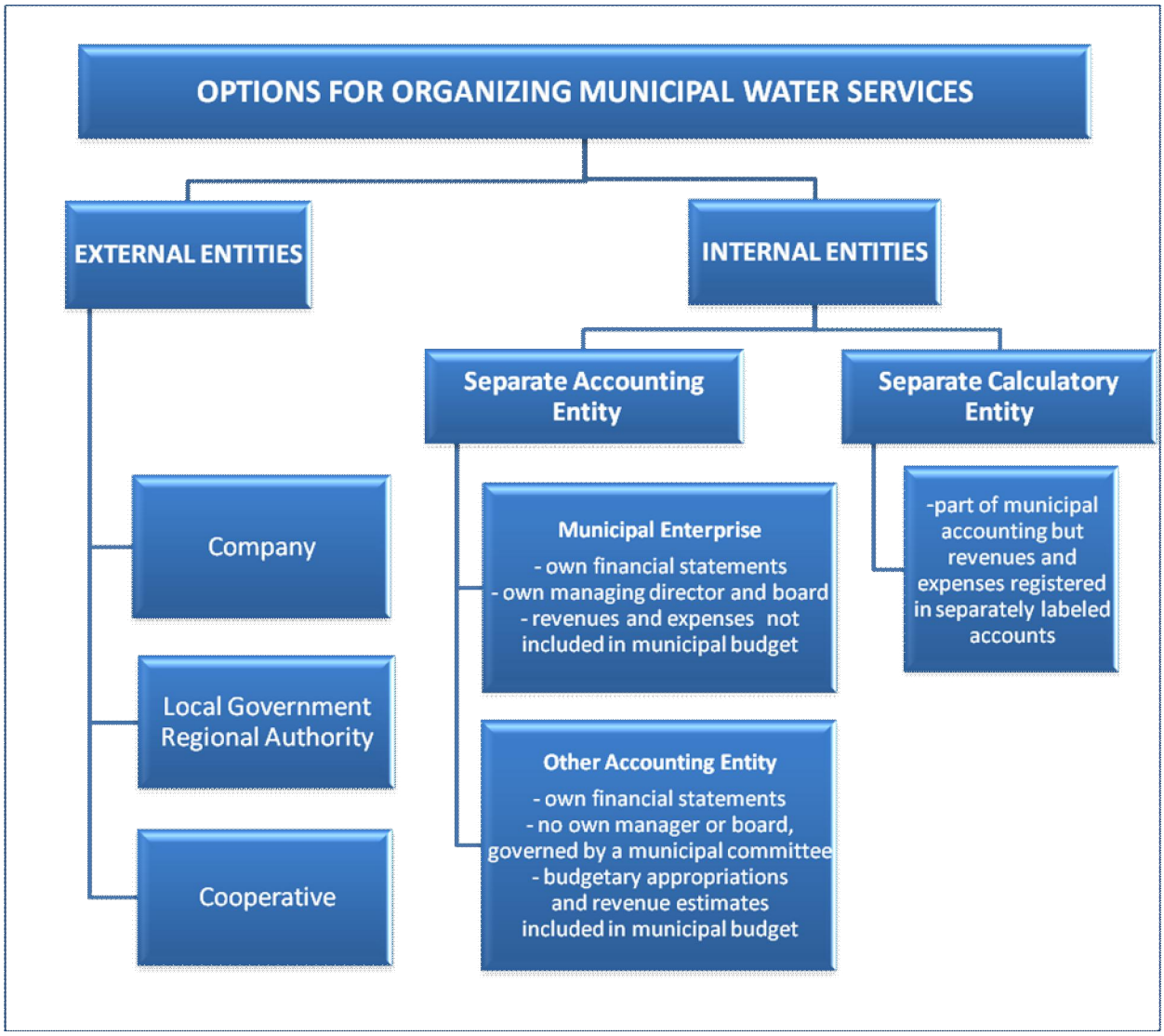

Figure 2.5. Options for organizing municipal water services (modified from Myllyntaus, 2001).

The third type of External Entity is the Local Government Regional Authority, which is similar to a company in some respects but is a structurally less complex organizational form of inter-municipal cooperation, regulated by public law. There are presently six instances of this type of organization.

With regard to the Internal Entities, the most independent form is a Municipal Enterprise, the funds of which are excluded from the municipal budget and which has its own Managing Director and Enterprise Board, which corresponds respectively to a CEO and a Board of Directors in a public limited company. A Municipal Enterprise is required to draft its own income statement and balance sheet; however, it is still part of the municipal organization and its revenues, expenses, assets and liabilities are also those of the municipality. In the closing of its accounts a Municipal Enterprise's bookkeeping is combined with the municipality's bookkeeping, so that the internal revenues and expenses as well as internal receivables and debts are eliminated. There are currently 54 Municipal Enterprises in the Finnish water sector, mostly large and mid-sized utilities, and they make up 62 percent of the turnover of the sector (Government of Finland, 2006). The largest fifteen Municipal Enterprises account for almost

half of the combined turnover of all municipal water services utilities in Finland, which makes them a natural focus of attention in this research. Some basic information about these utilities is provided in Table 2.1.

The second type of Internal Entity is the Other Accounting Entity, which also drafts its own financial statements but does not have its own Managing Director or Enterprise Board. Instead, the Entity is usually governed by a municipal Services Committee, a body set by a Municipal Council to govern all municipal technical or environmental services. Another difference between the Municipal Enterprise and the Other Accounting Entity is that the latter's budgetary appropriations and revenue estimates are integrated into a municipal budget. This type of arrangement is usually considered feasible for organizing water services in small and mid-sized municipalities.

Table 2.1. Basic indicators of the fifteen largest municipal water services enterprises in Finland in 2006.

	Water supplied, million m^3/a	**Turnover, EUR million**	**Operating profit, EUR million**	**Profit for the financial year, EUR million**	**Investments, EUR million**	**Employees**
Helsinki Water	83.7	100.2	42.0	4.5	21.9	316
Espoo Water	21.1	39.8	9.4	0.00	14.4	164
Tampere Water	20.4	36.3	14.1	1.8	7.4	155
Vantaa Water	17.0	32.8	10.5	- 0.1	10.3	78
Turku Water Utility	15.7	30.3	8.0	2.3	8.2	139
Oulu Water	10.5	19.8	5.2	0.7	6.8	89
Jyväskylä Water[1)]	9.26	15.0	3.8	0.5	5.1	69
Pori Water Utility	6.6	13.3	3.1	1.4	3.6	83
Kuopio Water	6.4	13.9	3.9	2.4	8.8	80
Vaasa Water	5.2	11.1	1.6	- 0.52	3.5	60
Kotka Water	5.1	10.5	1.4	0.6	4.4	39
Joensuu Water	4.4	9.5	2.9	2.2	3.2	44
Lappeenranta Water Utility	4.4	10.7	3.4	1.6	2.6	50
Porvoo Water	3.1	6.1	2.8	0.8	2.8	45
Rauma Water	3.0	5.7	0.7	0.4	2.4	24

1) Data from 2004 as it merged with Jyväskylä Energy Ltd. in January 2005.

Finally, the Separate Calculatory Entity is the least independent form of organizing water services as it is part of a municipality's bookkeeping with only its revenues and expenses recorded in separately labeled accounts. This option has been designed for the smallest municipal utilities for which further separation is not considered economically feasible (Myllyntaus, 2001).

2.2.3 Institutional framework

The current institutional framework of the Finnish water services sector is displayed in Article I, Figure 1. On the highest level of the framework, legislation is prepared by the Ministries and the Council of State and approved by the Parliament. When drafting acts and decrees, the national governmental bodies also take into consideration EU directives and policies. The intermediate-level institutions concerned with the financial management of water services are the Finnish Competition Authority and the Regional Environment Centres. The regulatory power of the Competition Authority is established in the Competition Restrictions Act and in the case of the water sector is currently limited to the reasonability of the customer charges. The Authority is therefore not allowed to comment on the rates of return paid by the municipal enterprises to the owner municipalities. This limitation is due to three consecutive court decisions (Dno 151/690/1999, Dno 173/690/2000, and Dno 117/690/2000), in which the Market Court of Finland established that even though financial calculations indicated that the rate of return paid by a municipal enterprise to its owner exceeds the limits of reasonability, this is not adequate proof that the customer charge as a whole is unreasonable. The Court also established that a decision stating the existence of unreasonable pricing must be based on very strong evidence.

The Regional Environment Centres are designated regulators of all water services utilities' adherence to wastewater treatment standards but with regard to financial management, they operate only in an advisory role, providing guidelines for and commenting on the municipalities' obligatory water services development plans. As regards non-governmental associations, the municipalities' interests are looked after by the Association of Finnish Local and Regional Authorities (AFLRA), which represents them on the state level and publishes position papers on contemporary issues of interest. AFLRA also publishes the guidelines of the Municipal Division of the national Accounting Board. The interests of the water services utilities are represented by FIWA, which forwards its members' wishes and opinions to the decision-making bodies of the government. Since FIWA lacks statutory regulatory power, its water and wastewater pricing guidelines and other communications are only of a recommendatory nature and their application is based on its member[5] utilities' voluntary action.

[5] FIWA currently has 310 member utilities representing 85 % of the country's water services production.

The legislative framework of water services governance consists of two main pieces, the Local Government Act[6] (365/1995) and the Water Services Act (119/2001). In accordance with the Local Government Act (§ 1), the main aims of a municipality are to promote the wellbeing of its citizens and to advance sustainable development within its territory (§ 1). As regards duties, a municipality should take care of those tasks which it has autonomously chosen to undertake and those which are allocated to it through legislation (§ 2). The municipalities' statutory responsibilities include the fields of social services and health care; education and culture; as well as infrastructure and environment (KM, 1993). The last group of services can be divided further into land use planning, transportation, construction and housing, waste management, energy, and water services. Existing duties cannot be taken away from, or additional duties imposed on, a municipality except through legislation (§ 3).

One of the fundamental elements of the Act in terms of NPM ideas is the separation of service provision and service production: § 2 states that a municipality may perform its statutory duties either of its own accord or in cooperation with other municipalities but services related to the execution of the tasks may also be acquired from other service providers. Thus the duty to provide statutory services cannot be delegated to a private entity because the decision-making power in such matters must rest with the local government authorities. Applied to water services, this stipulation allows private sector participation, even to the extent of infrastructure ownership, but denies the private sector ultimate responsibility for organizing the services. Another NPM-related stipulation sets the three-year municipal budget balance requirement and the requirement to transfer from cash-based to accrual accounting (see introduction to Article II in section 4.2)

The Local Government Act also outlines the composition of the municipal organization. The highest decision-making body is the Municipal Council, the members of which are elected by citizens every four years. The Council is responsible for the activities and finances of the municipality, for example deciding on the general grounds of the fees charged for municipal services, and on the operational and financial targets set for the Municipal Enterprises (§ 13). The other statutory municipal bodies are the Municipal Board and the Inspection Board. The Municipal Board, appointed by the Council, is responsible for preparing and executing the Council's decisions, and representing the municipality (§ 23). The Inspection Board in turn assesses how the operational and financial targets set by the Municipal Council have been achieved. In addition to these obligatory bodies, the Municipal Council can set Committees to take care of any tasks of a more permanent nature and also Enterprise Boards for the governance of municipal enterprises (§ 17). The composition of a Municipal Enterprise Board is left to the Municipal Council's discretion and can include Council Members as well as other citizens (§ 18).

The Water Services Act holds a municipality responsible for providing water services in its territory and also for the development of those services (§ 5). For this purpose all municipalities

[6] The Local Government Act has been amended several times since 1995. The latest amendment, which includes new stipulations on Municipal Enterprises, came into effect in May 2007. Since the consequences of these new stipulations have not had time to emerge yet, they have been excluded from this dissertation.

are obligated to devise water services development plans, which, however, are not legally binding documents. With regard to financing and cost recovery, the Act states that customer charges for water services should cover all the costs of a utility in the long run and they may also include, at most, a reasonable rate of return on invested capital (§ 18). The customer charges should be reasonable and equitable among different customers, customer groups and municipal areas. If considered necessary, water services utilities may be supported by municipal, state or EU funds. The tariff structure of a water services utility must comprise at least a volumetric fee but the users can also be charged a connection fee, a fixed fee and charges for the other services the utility produces (§ 19). Despite the requirement of equitability, the connection fee and fixed fee may vary within the municipal territory if this is considered necessary for the purposes of the rightful targeting of the costs of a service or if the use of the "polluter pays" principle is required. Finally, the Water Services Act orders the accounts of a water services utility to be separated in the municipal accounting (§ 20).

2.2.4 Water and wastewater prices

According to the annual statistics collected and published by FIWA (2007), the average volumetric price of water for a single-family house in 2007 was 1.13 e/m^3 and the corresponding price for wastewater 1.70 e/m^3. The volumetric charges of municipal enterprises are inclusive of a 22 percent value added tax. The prices for stormwater collection, conveyance and disposal are taken care of by the water services utilities and their costs are usually included in the wastewater charges. The formation of the tariff structure and the calculation of the charges are based on FIWA (2001) guidelines as follows.

The connection fee reflects the investment costs caused by the connecting property. The fee is determined by a simple formula, the variables of which represent property type and use, gross floor area, permitted building volume and/or property acreage. The aim of the connection fee is to cover at least partially the construction costs of the internal distribution network, but some of the capital costs of the trunk lines and treatment plants can also be included in the long term.

The fixed annual fee in turn reflects the fixed costs incurred by a certain property connection, i.e. such costs that are independent of the amount of water consumed. The fixed fee was introduced to correct the deviation in the previously applied tariff structures. More specifically, it had been noted that the majority (90 %) of the Finnish utilities' revenue came from variable income based on water use and only one tenth from fixed sources, while in practice the cost structure of water services is the opposite with fixed costs amounting to 80 to 90 percent of the total costs (Pietilä, 2006). It is naturally not feasible to recover all the fixed costs in the form of a fixed fee as this would diminish the customers' incentive for prudent use. In accordance with the FIWA guidelines, the revenue from the fixed fee should not exceed one third of the combined revenue from the fixed and volumetric fees. The actual amount of the fixed fee can be determined using the same method as the connection fee or, in the case of insufficient data, the customer's largest water need as reflected by the size of the water meter or by the property area.

Finally, with regard to the unit volumetric fee, the FIWA guidelines state that this fee must be the same for all connection types within a utility's service area regardless of the amount of consumption, the type of property or the location of the property. The volumetric fee should cover the utility's variable costs and also fixed costs to the extent that these are not covered with the fixed fee. The pricing should be based on the utility's long-term development plans, cash flow and financing calculations, previous income statements, a budget that takes into account necessary replacement and expansion investments, as well as the financial targets set for the utility by the owner (FIWA, 2001). Thus, all the water delivered to customers is metered and the wastewater charge is also based on the metered amount of water delivered to a connection point. As a general rule, single-family homes have their own water meters but apartment buildings have one meter and individual apartments pay only a flat monthly fee based on the number of inhabitants.

3. THEORETICAL AND METHODOLOGICAL FRAMEWORK

"Everybody's business is nobody's business" – Russell Hardin, 1982

3.1 Theoretical origins of public management reforms

3.1.1 Weber's model of bureaucracy

Although a number of important contributions have been made to the theory of public administration since the late 19th century, the classic model of public organization developed by Max Weber is one of the most influential due to its simplicity and accessibility to both theoreticians and practitioners (Lane, 2000). Weber (1947) begins from the idea that every stable system strives towards legitimacy of authority, which is achieved through actors' willing submission to specific commands given by someone in a position of authority. Weber then outlines three ideal-types of legitimate authority: i) traditional authority, which rests upon a common belief in the sanctity of tradition and its authority; ii) rational or legal authority, which is based on the belief in the legality of rules and the right of those people that are in authority, as a result of those rules, to issue orders; and iii) charismatic authority, which rests upon devotion and emotional attachment to the personal characteristics of an extraordinary individual. Weber continues that in the modern world the most common of these is the rational-legal authority, which in its purest form is exercised through a bureaucratic administrative staff comprising one person of supreme authority and a group of individual officials.

Weber developed his ideas into a theory of bureaucracy (1946), in which his basic insight is that "the gains in productivity and expertise that come from increasing division of labor and specialization of function come at the price of growing complexity and problems of surveillance", and that these problems incur growing costs of monitoring and administration. Without "an apparatus of monitoring and control" a society will be ineffective and instable. In addition, as a society grows in size and its economic activity expands, it requires a growing number of services to be delivered by public authorities. The need to control and manage increasingly specialized and wealthy societies results in the adoption of bureaucracy as the most rational type of administration, first in governments and then in business enterprises. Weber's model of bureaucracy comprises the following characteristics:

- organized according to a fixed hierarchy of tasks, skills and responsibilities;
- having limited areas of jurisdiction and performing specified, official duties;
- having ordered systems of authority and hierarchical control;
- based upon written documents maintained by officials;
- having formal training and qualifications, specified working hours and duties assigned to each position;
- managed according to transparently stated general rules;
- holding officials subject to authority only in their official obligations; and
- officials having tenure for life, fixed rank-based salary and pensions.

In Weber's view, compared to all other types of organization this kind of bureaucracy is technically superior in terms of precision, speed, continuity, reduced costs, etc; in other words, efficiency (Lane, 2000). A bureaucracy also provides an effective means of monitoring and thus enhances political control.

The classic framework of public administration developed by Weber and other accomplished scholars[7] reigned until the late 1930s, influencing the development of administrative law and the discipline of public administration. Since this period, the assumptions and ideas of classic public administration have been challenged, but not completely replaced, by different schools of thought, the most vocal of which are managerialism and public choice.

3.1.2 Managerialism

The managerialist school of thought is critical of bureaucratic methods of organization and management and considers them inferior to corresponding private sector practices (Aucoin, 1990). Managerialism therefore strives towards reducing the size of the public sector and making its operations more efficient through the application of private sector methods (Ingraham, 1997). These actions are believed to deliver several benefits, including reduced public sector spending, optimal resource allocation between competing causes, and cost consciousness in operations (Pollitt, 1990).

One branch of managerialism is said to have been influenced in part by Frederick Taylor's principles of scientific management and is therefore sometimes called neo-taylorism. Taylor (1911) promoted a view of management as a real science with certain rules and principles, and claimed that management practices were applicable to all human activity. He believed, for example, in the continuous improvement of activities, which he thought could be driven by performance-based rewards and verified through scientific performance measures. In Hood's (1991) view, the scientific management movement contributed to public management reforms through the ideas of professional management expertise, which is seen as portable, paramount over technical expertise, requiring freedom to manage, and which is seen as enabling a better organizational performance. Similar notions were also expressed by Simon (1947), who argued that public administration should be founded on rigorous, scientific observation and on derived laws of human behavior. Simon saw administrative authority as only one way of influencing the operative staff, and argued that the construction of an organization is about more than just rules, roles and the allocation of authority. In his theorizing, the role of public management is to find and implement effective means to achieve certain objectives in public sector activities (Lane, 2000).

According to Pollitt (1990), the central value in managerialism is management in itself; not only because better management improves organizational performance but also because it contributes

[7] E.g. Woodrow Wilson, Frederick Taylor and Henri Fayol

to solving many social and economic problems. Managerialists believe that economic growth and continuous improvements in economic productivity are integral to social development. Achieving increases in productivity requires the application of advanced technology, which is possible only with the aid of a labor force that has internalized the ideal of productivity. Management, then, is a distinct organizational function which has a crucial role in the planning, implementation and measurement of productivity improvements. The success of an organization in this respect is dependent on the characteristics and professionalism of its manager, and to fulfill these requirements the managers must be granted the right to manage. (ibid.)

3.1.3 Public choice

Public choice can be defined as the economic study of decision-making outside the market place or the application of economics to political science (Mueller, 1976). The theoretical basis of public choice was established during two decades (from the 1960s to the 1980s) by scholars who applied the rational-actor model of classical economics to problems of collective decision-making. In the classical economics approach, an individual actor in the market place is assumed to make rational choices based on self-interest and utility-maximization. This means that she is able to rank any alternative actions in terms of how much they increase her utility and then rationally chooses the action which maximizes that utility. Public choice theorists argue that this notion of self-interested rationality applies also to the actors in the political market place, including voters, politicians and bureaucrats (Shughart and Tollison, 2005). They also believe that whereas such behavior in the private market place would lead to an optimal consequence, in the public arena the result is usually the opposite (Starr, 1988).

In terms of politics and voting, public choice theory claims that elected officials often diverge from the interests of their electorate to guarantee their ultimate goal of being re-elected (Mueller, 1976). This may lead to an increase in public spending as the politicians want to please the voters by delivering more public services regardless of the associated costs (Savas, 1982). On the other hand, citizens as voters are also motivated by their self-interest and make their voting decisions in the public arena based on the same principles as their purchase decisions in the market place (Aucoin, 1995). They lack the incentive to monitor their governments because an individual voter's impact on the final consequence is negligible and indirect (Olson, 1965). The voters therefore act rationally by not spending their time acquiring information about political affairs (Downs, 1957).

The behavior and role of bureaucrats in government has also been of interest to public choice scholars since the initial theorizing by Tullock, Downs and Niskanen. Tullock (1965) highlights the excessive size of bureaucracies, which consist predominantly of long chains of superior-subordinate relations. This type of structure gives rise to problems in information transmission as the chain of people transmitting the information cause the distortion of the original message. To overcome these problems, Tullock suggests the decentralization of decision-making within the bureaucratic structure, for example from state to local government level. Decentralization, he

claims, will also enable better supervision of governments by citizens. However, it also makes the task of aligning the goals of the decentralized units with those of the entire organization more difficult. This leads to the third difficulty identified by Tullock, the superior's need for a monitoring mechanism to ensure the subordinates' compliance to the organization's objectives. His solution to this particular problem consists of randomly checking the performance of the subordinates. To further reduce the size of bureacuracies, Tullock recommends privatizing activities which are outside the public sector's core functions. This would have the added benefit of guaranteeing local governments' ability to allocate more resources to providing essential services such as traditional public goods.

Like other public choice scholars, Downs (1967) also believes that a public official acts in their own self-interest but notes that the bureaucrat's behavior may also be motivated by a wish to serve fellow citizens, by pride in performing their duties, or by loyalty to a program, department or government. Downs's contribution to public choice theories of bureaucracy is the observation that the life cycles of bureaus resemble those of human beings with the result that bureaus tend to become more conservative, except in the case of rapid growth or internal turnover. More specifically, this "Law of Increasing Conservatism" becomes manifest in four main ways. Firstly, as a bureau ages it becomes experienced in performing certain tasks, but the related efficiency gains do not lead to decreased inputs but increased output, while the bureau seeks to expand its activities. Secondly, as the organization gains experience in performing under different circumstances, it develops these experiences into formalized rules. Although such rules improve performance in situations for which the rules have been devised, they may also cause the employees to pay more attention to conforming to the rules rather than trying to attain the original objectives of the organization. Formalized rules also increase the rigidity and complexity of the organization. Thirdly, in the due course of time the managers of an aging organization may start to concentrate more on maintaining the functions of the organization rather than keeping to the original objectives. A managers' self-interest in maintaining their position in an organization makes them more willing to change its objectives if it ensures the survival of the organization. Finally, an aging organization tends to have more administrative personnel than a young one, emphasizing the accumulated formalized routines.

Niskanen (1973) similarly sees bureaucrats as self-interested actors, citing motivations such as "salary, perquisites of the office, public reputation, power, patronage... and the ease of managing the bureau". His core argument (1971, 1973) is that with the exception of the last two, a bureaucrat's motivations will cause the maximization of the budget and activities of their own bureau. Budget-maximization is possible because politicians are not always capable of preventing such behavior or, because of information asymmetries, they are not aware of the true costs of delivering public services. The true costs depend on the outputs of a bureau but these are sometimes difficult to measure and therefore the budget of a bureau is based on the levels of activities it provides rather than the outputs. The ultimate consequences of budget-maximization behavior are an increase in total public spending, the socially inefficient allocation of resources as certain goods or activities are overproduced, and the inefficient production of goods and services within organizations. Niskanen's recommendation for solving budget-maximization

problems involves the decentralization of public services and their financing to the lowest possible level of government that represents most of the beneficiaries of that service. With regard to the maximization of bureau activities, he claims that the optimal level of services is attainable by increasing competition among public bureaus for the delivery of a certain service; increasing competition among public bureaus and private service providers; and by providing bureaucrats with incentives to increase the efficiency of their bureaus.

3.1.4 New institutional economics

In addition to manageralism and public choice, the development of NPM has also been informed by new institutional economics, especially transaction cost theory and the principal–agent theory. New institutional economics is concerned with the rules and governance systems that develop to regulate or manage economic exchanges in an entire economy, in a specific industry or in a single firm (Scott, 1998). With regard to the regulation of a specific industry, new institutional economists apply Niskanen's theory about the oversupply of public sector outputs, arguing that it results in an expansion of regulation beyond economically efficient levels (Parker, 2002). In addition, the capture theory introduced by Stigler (1971) and Peltzman (1976) contends that although a regulatory agency might have been established to correct market failures, it will eventually become subject to capture by the industry that it regulates and start to issue regulations that are advantageous to the regulated organizations. The conclusion to be made from these arguments is that regulation will cease to act in the public interest (Parker, 2002) and does not differ from unregulated monopoly consequences (Vogelsang, 2002). The critique of traditional regulation encouraged economists, on one hand, to recommend the deregulation of competitive industries and, on the other hand, to develop better mechanisms for the regulation of the non-competitive sectors.

Two important subfields of new institutional economics are transaction cost analysis and principal-agent theory. Transaction cost analysis deals with the role of information costs in choosing the appropriate organizational model for carrying out economic transactions, whereas the principal-agent theory concentrates on designing contracts in cases where contracting parties have divergent interests and the agent has an informational advantage over the principal (Ferris and Graddy, 1998). Both theories were originally developed for the private sector context but they can also be applied in the modeling of public management structures and related problems, for example in a situation where governments (principals) seeking efficiency improvements restructure their organizational arrangements by contracting public agencies or private companies (agents), and in order to ensure the accountability of these agents transaction costs are incurred. The two theories then provide a framework for the comparison of different institutional arrangements for service delivery and for the design of contracts and regulatory schemes that minimize opportunistic behavior (Lane, 2000). The public sector context can also be perceived as a more complex arrangement with voters being the ultimate principals of the politicians, who have a double role as the agents of the voters and the principals of the ultimate

agents, the bureaucratic officials (e.g. Mayston, 1993; Broadbent and Laughlin, 1996; Selden et al., 1999).

3.2 New Public Management

3.2.1 Definitions and features

The axioms presented by managerialists, public choice scholars and other economic theorists contributed to the formation of a framework of public management, coined by Hood (1991, 1995) as New Public Management (NPM). Hood saw NPM as consisting of a set of seven doctrines (Table 3.1). The term New Public Financial Management (NPFM) was introduced by Olson et al. (1998) to emphasize the heavily accounting-oriented nature of the NPM reform movement, referring to financial management as "the technical lifeblood of NPM organizational structures" (p. 19). Some years earlier, Power and Laughlin (1992) had acknowledged the same phenomenon through the concept of 'accountingization'. Guthrie et al. (1999) have also paid attention to accounting-based terminology as a notable element of NPM reforms.

Table 3.1. NPM doctrines (modified from Hood, 1991; 1995).

Doctrine	**Typical justification**
Unbundling of public services	Make units manageable
Contract-based competitive provision	Lower costs and better standards
Private-sector management styles	Need to apply proven private-sector management tools
Discipline and frugality in resource use	Need to do more with less
Visible hands-on top management	Accountability demands clear assignment of responsibility
Explicit standards and measures of performance	Accountability and efficiency need clearly stated aims
Output controls	Need for greater stress on results

The main financial management components of NPM reforms have been identified by Olson et al. (1998) as follows:

i) Changes to systems of financial reporting, including the promotion of accrual accounting and a reliance on professionally set accounting standards;

ii) The development of commercially-based, market-oriented management systems and structures to deal with the pricing and provision of public services, such as cash management, contracting out and charging mechanisms;

iii) The introduction of performance measurement in the form of for example league tables, performance indicators, citizen's charters and program evaluations;

iv) The devolution or delegation of budgets combined with an attempt to integrate financial and management accounting systems; and

v) Changes in internal and external public sector auditing, especially in the monitoring of service delivery and reviewing the efficiency and effectiveness of public services.

The initial NPM framework has later been elaborated on and is currently suggested to include three diverse categories: organizational restructuring, the use of market-type mechanisms, and a focus on performance (Batley and Larbi, 2004). Organizational restructuring means mostly reducing the size of the public sector, but also the disaggregation of government departments into autonomous agencies with managerial autonomy in financial and personnel matters and a set of agreed performance targets to minimize the possibility of political intervention (Pollitt et al., 2004). Market-type mechanisms include, besides privatization, any practices used in business enterprises, for example user charges, accrual accounting and the outsourcing of activities. Finally, the focus on performance measurement represents a shift from controlling procedures and inputs to the actual results measured in terms of outputs and consequences (OECD, 2005).

Gruening (2001) has compiled a comprehensive list of the characteristics of NPM that he claims are practically always mentioned in research articles, as well as the more debatable attributes that are not always found in scientific discussions (Table 3.2). From these characteristics, the ones pertaining to the cases presented in this research include provision-production separation, changes in accounting, user charges, and changes in regulation. The first and third concepts are fairly self-explanatory and do not require further elaboration, whereas changes in accounting and regulation are more comprehensive developments and are accordingly described in more detail in the remainder of this section.

Accounting reforms in the public sector usually involve the transfer from cash-based or cameral accounting to accrual or business accounting in budgeting and/or financial reporting. Since there are several versions of each accounting system, exhaustive definitions of them cannot be provided but it is possible to list some distinctive features. Monsen and Näsi (1996) for example list three features of cash accounting that highlight its difference from business accounting: i) the central role of cash control and money management and the separation of the latter from the management of fixed assets; ii) the central role of the public sector budget and the significant role of accounting in controlling the execution of the budget; and iii) the nonexistence of a comprehensive balance sheet, which follows from the two previous features.

Expressed in technical terms (see e.g. Skousen, Langenferder and Albrecht, 1991), cash-based accounting keeps records of the cash revenue and expenditure, which are recognized when cash is respectively received and paid[8]. In accrual accounting, expenditures and revenues are recorded twice, on the debit and the credit accounts, when the transactions which incur them take place, regardless of whether any cash has flowed in either direction. The matching principle of accrual accounting indicates that interrelated expenses and revenues should be matched, that is, reported during the same accounting period. Accrual accounting always keeps records of the existence and use of fixed capital assets. After a fixed asset has been acquired, its cost is spread over its

[8] The strict form of cash accounting is based only on cash flows, whereas the modified form can include elements from accrual accounting.

economic lifetime, that is, a certain portion of the cost is reported as a depreciation expense in the income statement each year during the period when the asset is expected to generate revenue. On the balance sheet, capital assets are usually recorded at their historical cost less the accumulated depreciation.

Table 3.2. Characteristics of New Public Management (Gruening, 2001).

Undisputed characteristics	**Debatable attributes**
Budget cuts	Legal, budget, and spending contracts
Vouchers	Rationalization of jurisdictions
Accountability for performance	Policy analysis and evaluation
Performance auditing	Improved regulation
Privatization	Rationalization or streamlining of administrative structures
Customers	
Decentralization	Democratization and citizen participation
Strategic planning and management	
Separation of provision and production	
Competition	
Performance measurement	
Changed management style	
Contracting out	
Freedom to manage (flexibility)	
Improved accounting	
Personnel management	
User charges	
Separation of politics and administration	
Improved financial management	
More use of information technology	

Cash accounting used to be the main model employed in governments all over the world (OECD, 2002) but it was criticized for not giving an accurate picture of all costs, not showing the costs of using capital assets, and not providing a complete record of the liabilities of public sector entities (Connolly and Hyndman, 2006). Consequently, accrual accounting was adopted as a part of NPM reforms in several countries, for example UK, USA, Australia, New Zealand, Canada, Finland, Sweden, Ireland, Switzerland, Portugal, Japan, France, Italy, Spain, the Netherlands, and Belgium (OECD, 2002; Guthrie et el., 2005), although the degree of implementation be it local and/or central government, budgeting and/or reporting varied according to country. To enable the global harmonization of accounting practices, the International Federation of Accountants has, since 2000, developed the International Public Sector Accounting Standards (IPSAS). The IPSAS are based on its private sector counterpart, the International Accounting Standards, but include both cash-based and accrual-based versions. IPSAS standards have been or are in the process of being adopted by over 60 countries worldwide, and Anglo-Saxon countries have implemented accounting systems that are broadly consistent with IPSAS (IFAC, 2007).

With regard to regulation, both previous practices and the implemented changes have been less uniform than in the case of accounting. As mentioned earlier, prior to the NPM reforms public services in most countries of the world had been both provided and produced by state or local governments. In the case of natural monopolies, such as water services, public ownership and operation had been considered adequate to protect consumers from the detrimental effects of market failures. In the exceptional case of the United States, investor-owned companies in 45 states have been and are still regulated by independent Public Utilities Commissions, and in 21 states their jurisdiction also extends to publicly owned systems (The Committee on the Privatization of Water in the United States, 2002). The commissions apply a method called rate-of-return regulation, whereby they calculate the rate base i.e. the value of assets on which a return can be earned; the allowed rate of return to recover capital costs; and the allowable operating expenses for each utility. After calculating a utility's total revenue requirements, the commissions also approve the prices that can be charged from customers. (ibid)

The drawbacks of rate of return regulation had been observed even before the criticism levied by new institutional economists. Averch and Johnson (1962) argued that, due to asymmetries in information between the regulator and the regulatees, the latter have an incentive to exaggerate operational and capital expenditures or over-invest in the utility's asset base to justify higher profit. Baumol and Kleverick (1970) reiterated this observation and added that rate of return regulation also leads to reduced incentives to improve overall cost efficiency. When combined with the NPM ideas stemming from public choice and new institutional economics theories these notions of the failure of rate of return regulation led to the development of incentive-based methods, the most widespread of which are the price-cap method and yardstick regulation.

The price cap method of regulation (Littlechild, 1983) establishes a price ceiling so that the profitability of the firm then depends on the extent to which it is able to keep its costs below the determined maximum revenue set by the price cap (Weyman-Jones, 2003). The cap is initially set to allow a utility to break even on the basis of forecasted revenues and expenses, so the utility is able to make a profit by reducing costs through efficiency improvements. Because these efficiency improvements reduce the costs but the customers still pay a certain price, the price needs to be reset regularly. In yardstick competition[9] (Schleifer, 1985), the regulator sets the regulated utilities a benchmark level of performance to be attained according to industry averages. The prices that the regulated utilities can charge are also dependent on the average levels (Vogelsang, 2002). The utilities have an incentive to increase efficiency and reduce costs because they make a profit if the other utilities are not able to do the same.

Along with the NPM reforms, the price cap and yardstick schemes were introduced in the regulation of some newly privatized natural monopolies, but they have not completely replaced rate of return schemes. The water services utilities in England and Wales for example are regulated with a hybrid of the two new methods, whereas the U.S. has maintained the rate of return scheme.

[9] Industry engagement in voluntary yardstick competition is called benchmarking.

3.2.2 Results and consequences

Conclusions as to the consequences of NPM reforms are varied. The OECD (2002) for example suggests that to a certain extent, the reforms have increased efficiency, transparency, customer orientation, flexibility, and focus on performance. On the other hand, it also notes that too heavy an emphasis on performance results could favor short-term outputs over long-term consequences, and that the separation of purchaser and provider may threaten public accountability because of the public confusion over who is ultimately responsible for the service delivered. Dibben, Wood and Roper (2004) share the concern about decreased public accountability. The authors contend that NPM places too much stress on efficiency and value-for-money considerations, and that the idea of citizens as customers overemphasizes individual preferences compared to collective citizenship rights. Dibben et al. (ibid.) further criticize the public choice theory for its assumption of private sector superiority and its negative attitude toward public sector employees. Dent, Chandler and Barry (2004) in turn question NPM's emphasis on performance measurement, claiming that often public sector activities do not yield accurately measurable outputs or consequences; that sometimes consequences are influenced by unexpected external factors; and that certain basic principles of service delivery may not be taken into account.

Financial management reforms in the public sector have also been associated with confusion, tension and paradoxes, which are discussed for example by Bowerman (1998). Bowerman argues that contrary to their original aims, the financial management reforms have in many cases resulted in dominant managerial accountability and decreased public accountability. She also notes that the tendency to give supremacy to managers over citizens leads to tensions between the ethos of managerialism and the ideals of democracy. The relationships between central and local governments also display signs of tension as the former have been reluctant to decentralize and may have actually increased their control of the latter. Bowerman also finds that there are gaps in the implementation of the reforms, especially with regard to the array of public services that different countries consider essential and thus unsuitable for yielding to market forces. This leads to her final observation on the general confusion about the applicability of private sector practices for the public sector and the operational impacts of the public management reforms.

A particularly debated topic in this sense is the applicability of accrual accounting for public sector purposes. Some of the early advocates of accrual accounting justified it as being "inevitable" (OECD, 1993) or "superior" to other alternatives (Mellor, 1996) without basing their views on empirical evidence. Recent, more robust lines of argument in favor of accrual accounting can be summarized into three themes (Carlin, 2005). Firstly, accrual accounting has been said to increase both internal and external transparency. According to Chan (2003), accrual accounting provides a more reliable measure of a government's solvency in the long run and forces the disclosure of unfunded liabilities. Second, the increases in internal transparency have been claimed to instigate better organizational performance through the improved allocation of resources. Finally, it has been argued that accrual accounting enables public sector entities to

identify the full costs of their activities, which in turn would contribute to better performance, increased efficiency, and the improved allocation of resources.

On the other hand, critics of accrual accounting argue that it misallocates resources, does not provide for the adequate disclosure of assets and liabilities, and also enables organizations to defer liabilities, thus inducing a burden on future taxpayers (Hoque and Moll, 2001). The reliability, fairness, and neutrality of accrual accounting have also been questioned (McCrae and Aiken, 2000). Public sector accrual accounting that includes capital assets on the balance sheet has been deemed challenging because it induces further measurement problems, has less theoretical support and is more subjective (Chan, 2003). The recognition of infrastructure assets, such as those used for water services production, has been questioned especially in cases where they are used to provide essential public services, their lifetime can be extended indefinitely through repairs (Pallot, 1990; Aiken and Capitanio, 1995) and there are no generally accepted and reliable valuation standards (Cooper, 1993; cf. discussion in section 2.1). The need for greater standardization has been generally recognized by both academics (Lapsley, 1999) and EU legislators (EC, 2000).

Turning to regulation, the new incentive-based regulatory schemes have corrected some of the perceived inadequacies of the traditional rate of return regulation but have not been deemed perfect solutions themselves. The criticisms related to price cap regulation are fourfold. Firstly, from the regulators' and regulatees' point of view, setting the efficiency factor requires considerable judgment and has in practice proven somewhat problematic (Crew and Kleindorfer, 1996). Secondly, from the customers' point of view, there is a delay in receiving the benefits of lower prices between the regulatory reviews. Thirdly, it has been suggested that looking for efficiency improvements may lead to excessive cost-cutting in the form of under-investments (Burns and Riechmann, 2004). Finally, in the case of state-owned utilities where there are no investors to reward managers for profits, the latter might not have enough incentive to reduce costs and instead set prices below marginal cost, or strategically in order to reduce the impact of a binding price-cap constraint (Sappington and Sibley 1992; Law, 1997). Because of the last perception it has been suggested that publicly owned utilities would in fact operate more efficiently under rate of return regulation than price caps (e.g. Arocena and Waddams Price, 2002).

Yardstick regulation and its milder form benchmarking are in turn problematic if the utilities are too heterogeneous and no realistic benchmark can be set. Each utility might argue that certain characteristics of the local operating environment e.g. altitude differences, distances, or soil type cause the utility to incur higher costs than others. Accounting for these factors in the benchmarking model requires using cost information from the local water utilities themselves, thus resulting in a slight loss of incentives (Newberry, 1999). Studies of public sector benchmarking also suggest that instead of enhancing service provision this activity can become a compulsory exercise where the key criterion is not to learn but to protect one's existing position (Humphrey, Miller and Smith, 1998).

3.3 Model of public sector management reforms and the foci of this research

Many early explanations of public management reforms credited them as resulting from the combined effect of the global economic crisis and the influence of new economic and management ideologies. Recent retrospective research, however, is inclined towards a more comprehensive view of the underlying causes as a complex network of interrelated factors, such as the model of public management reform developed by Pollitt and Bouckaert (2004) displayed in Figure 3.1. The central element in the model is elite decision-making, since most changes have been initiated and executed by politicians and senior officials on the basis of what they consider, on one hand, desirable from their own point of view and, on the other hand, feasible in terms of being accepted by others. The elite's decisions have in turn been influenced by four sets of factors: socio-economic forces, the political system, the administrative system, and chance events.

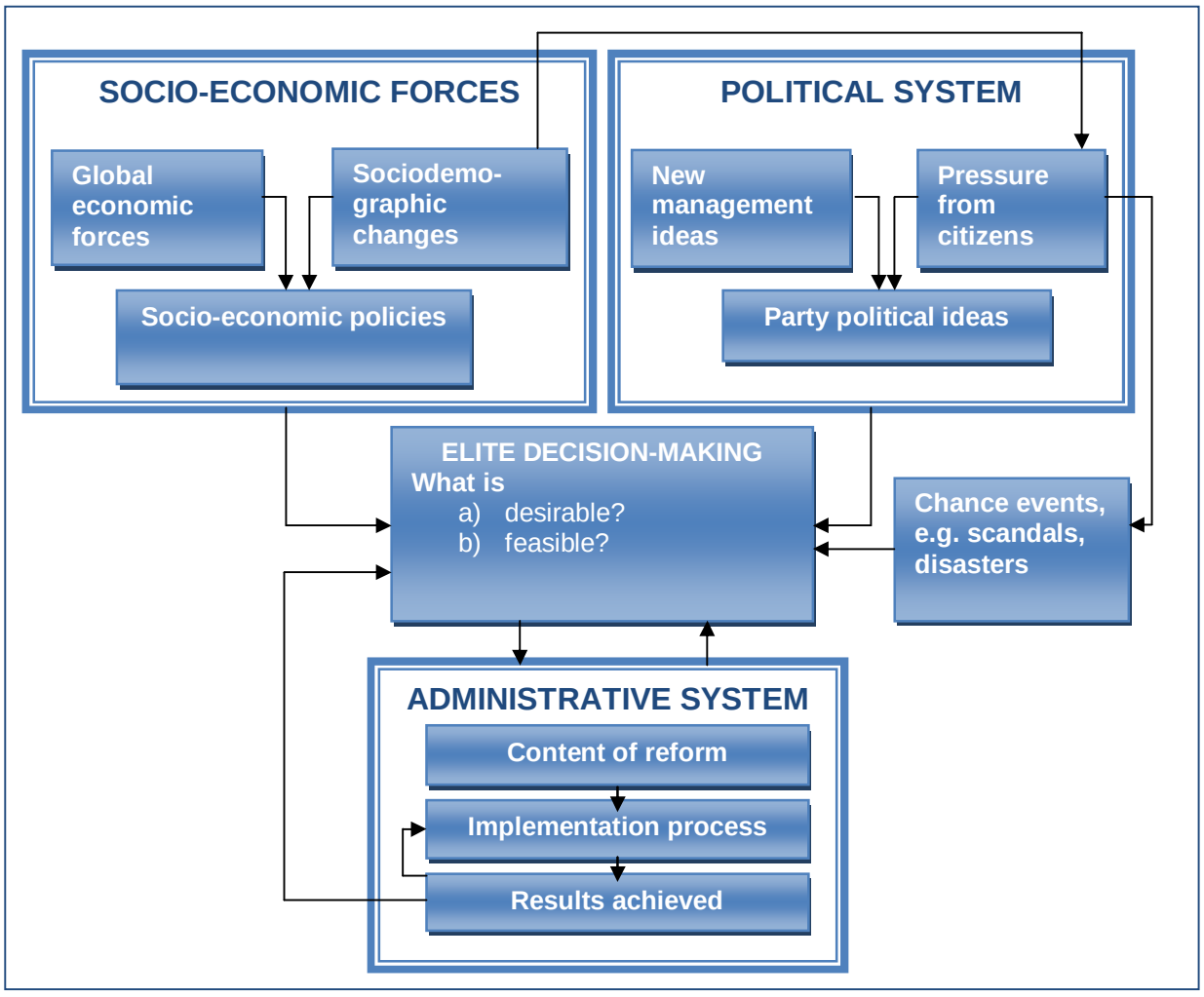

Figure 3.1. Model of public management reform (Pollitt and Bouckaert, 2004).

The first group of forces in Pollitt and Bouckaert's model consists of both structural and more short-term socio-economic factors which have had an effect on public management. Until the

1980s several countries had experienced continuous public sector growth, which did not present a major problem due to simultaneously occurring positive economic development. However, national governments' control over their economies has been consistently weakened by global economic forces such as globalization, international markets and free trade. Combined with the economic recession of the 1970s, these developments resulted in severe pressures to diminish bureaucracy and curb public spending (e.g. Barzelay, 2001; Hughes, 2003). At the same time, sociodemographic changes such as the extension of individuals' life spans and increased unemployment exerted considerable pressures on social security systems and created incentives for politicians to slash benefits and increase efficiency through associated socio-economic policies.

The second group of forces which Pollitt and Bouckaert's model suggests as having brought about public management reforms is associated with the political system. The fundamental background variable in this group is the combination of the structural and cultural features of each national system, which may have either facilitated or hampered the implementation of reform policies.

In addition to the fairly static forces explained above, a more dynamic group consists of the new management ideas, promoted by scholars and management consultants and distributed worldwide through international organizations such as the OECD, World Bank and International Monetary Foundation. These new ideas were a consolidation of the main lines of thought presented in section 3.1. Such ideas were eagerly adopted by political parties and merged into their ideologies. As the NPM movement was initiated in the United Kingdom under Prime Minister Margaret Thatcher's rule and in the United States during Ronald Reagan's era, the new management ideas have been associated especially with right-wing politics. However, this view has been contested by the observation that the NPM movement quickly spread from the UK and the US to New Zealand and Australia even though these were at the time governed by left-wing oriented governments (Pollitt, 2003). The connection between public management reforms and political ideologies is further severed by the fact that consequent reforms in other countries have been implemented by governments of all types of political persuasion.

Another factor driving political parties towards the promotion of public management changes has been citizen pressure for better services. Due to a rise in general standards of living and the level of education, citizens' values shifted towards individualism, while their satisfaction with government performance decreased. Instead of remaining mere consumers of public services, people increasingly wanted to be treated as customers of the government (Osborne and Gaebler, 1992). The public sector growth emanating from the socio-demographic changes described above increased citizens' tax burden and led them to demand that politicians "do more for less". The politicians in turn required that governments make their operations more efficient and thus deliver "more value for the [taxpayers'] money" (Pollitt, 1990).

The third main group in Pollitt and Bouckaert's model is the administrative system, which, along with the political system, often acts as a restraining element in public management reforms. The

slow pace of change may be due to the various types of costs associated with changing existing laws, norms, and structures, or by general resistance to change. The contents of a specific reform are compiled in the process of elite decision-making and are then followed by the more important part, the actual implementation. The feedback loop, which goes from results to the decision-making process, indicates that having learned about the successes and obstacles encountered during the implementation of the reform, the decision-makers are able to revise the existing strategy and policies accordingly. The actual consequences of the reforms might or might not resemble the original ideas of the decision-makers but they certainly influence their views about the desirability and feasibility of different types of reforms. Finally, in addition to the socio-economic, political and administrative factors, elite decision-making may also be affected, to a certain extent, by random events such as natural disasters.

The model displayed in Figure 3.1 can be utilized to outline the main foci of this research. Concentrating on only some elements of the model is considered justified since research exploring all aspects displayed in the figure would have been a pointless replication of the work of Pollitt and Bouckaert, especially with reference to stable factors such as socio-economic forces. This research focuses especially on the boxes labeled “new management ideas”, “content of reform”, and “results achieved”. These are analyzed from what can be said to be a position at the junction of public sector financial management and accounting as well as water services infrastructure management. The central element, “elite decision-making”, occupies a less dominant position in this research than in the model; however, its significance is recognized in the Articles; both explicitly (II and III) and implicitly (I and IV). In addition, this research serves the role of the feedback arrow, pointing from the results of the reforms on decision-making processes, as one of the aims of the work is indeed to inform decision-makers about the consequences of particular reforms and to enable further policy development. The provision of recommendations, which some may consider too normative for scientific research, is considered justified because of the significance of the research results in relation to the functioning of water services infrastructure.

3.4 Research methodology and methods

3.4.1 Approach and methodology

The ontological and epistemological foundations of this research are located between the hermeneutic and the positivist approaches. The research approach resembles positivism in the sense that social phenomena and structures are believed to exist independently of our interpretation of them, whereas the hermeneutic influence is reflected in the beliefs that not all social structures are directly observable; that our interpretation or understanding of the phenomena affects consequences; and that our knowledge of the world is theory-laden and thus fallible (cf. Marsh and Furlong, 2002). Expressed more concretely, the research is founded on the belief that regardless of the researcher’s interpretation, there exist 1) different organizations and bodies associated with public sector and water services management; 2) interrelations

between these actors; and 3) structures and rules governing their actions. Some of these structures or phenomena can be directly observed, such as income and expenditure or the assets and liabilities of a water services utility, as expressed in numerical form in its financial statements. These figures can be analyzed with quantitative methods to obtain other figures, which are absolutely true in a numerical sense and which can according to established views be utilized as indicators of a utility's financial performance and financial standing. However, these figures may also become subject to qualitative, interpretive discussion as regards, for example, the public sector applicability of certain private sector accounting concepts.

Some structures or phenomena are less yielding to direct observation to begin with, one example of which could be the different motivations guiding different actors' understanding of and adherence to the rate of return stipulation in the Finnish Water Services Act. Interpretation and understanding also play a considerable role in the analysis of the research material, which in addition to the abovementioned financial statements consists of text, both in the written form (e.g. legislation, newspaper articles, strategy papers) and the spoken form (interviewees' responses). First of all, these texts in themselves are the products of the authors'/interviewee's interpretation of, knowledge of, and attitudes towards certain subjects. Secondly, the analysis of the texts within the research framework is affected by the researcher's understanding of the subject and her knowledge of previous research and related theories.

Methodology-wise, the research adheres mostly to the discipline of public sector accounting and to some extent also to public management. The research pays special attention to the radical changes introduced into water services sector infrastructure accounting and management by the NPM movement and it may therefore be called critical (Burrell and Morgan, 1979; Chua, 1986, Hopper and Powell, 1985; Baker and Bettner, 1997; Mouritsen; 2002) (cf. Figure 3.2).

The method of reasoning utilized in the research is induction, which is not based on hypotheses as drivers of the research but which proceeds from specific observations to more general conclusions. The predominant method of arranging the research material is therefore the case study, defined by Yin (1994: 13) as "*an empirical inquiry that investigates a contemporary phenomenon within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident*." The case study has been deemed ideal for the purposes of a holistic, in-depth investigation (Feagin, Orum, and Sjoberg, 1991). The construct in this research is that of embedded explanatory case studies (Patton, 2002), in which the main case that is reported in this dissertation consists of the individual case studies reported in the four peer-review articles and the summary of the expert views on the research findings. The aim of explanatory case studies is to find explanations for observed social practices in a specific set of circumstances by using existing theories to explain and understand the specific rather than to produce statistical generalizations through a large sample (cf. Ryan, Scapens and Theobald, 2002). Thus the cases do not comprise a statistical sample but have been selected purposefully based on the preceding findings of the research and, necessarily, the availability of data and resources.

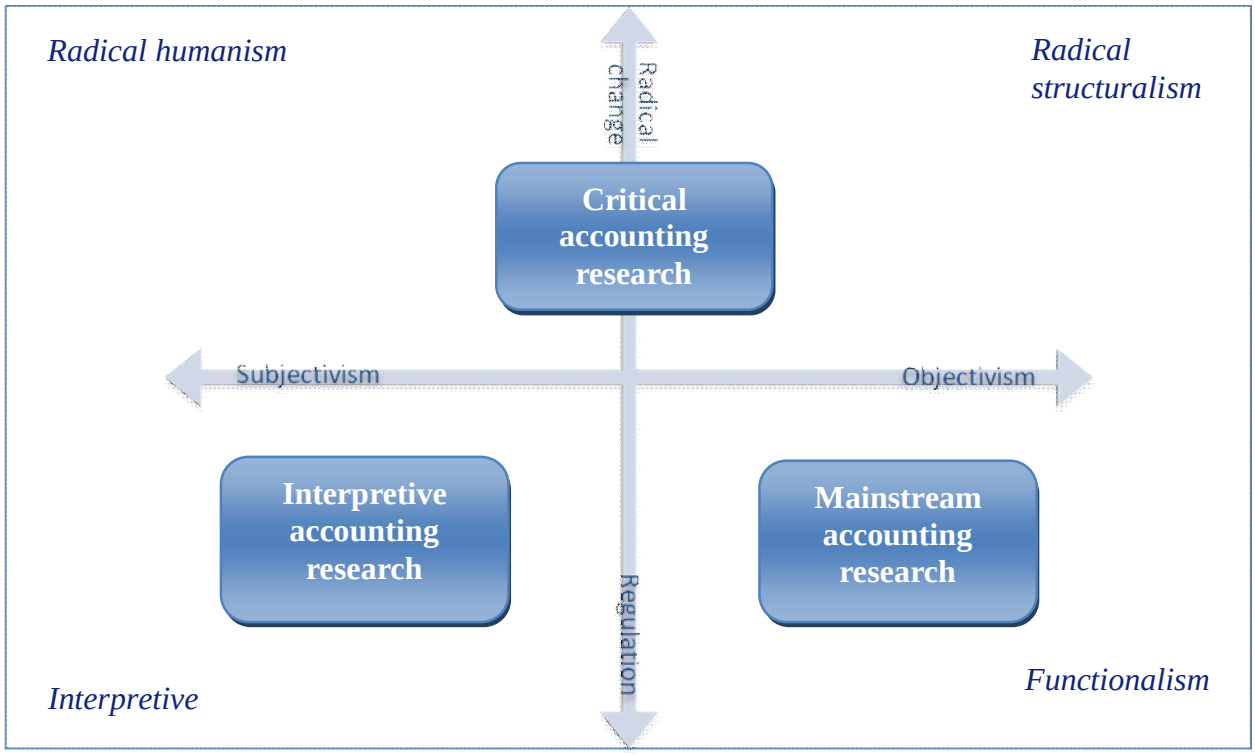

Figure 3.2. Hopper and Powell's (1985) taxonomy of accounting research (modified from Ryan et al., 2002).

Although qualitative research in general and case studies in particular have sometimes been criticized for lacking reliability, objectivity and generalizability as well as being based on personal interpretation, their advantages are clear when the aim of the research is to explore people's experiences, practices, values and attitudes in depth (e.g. Devine, 2002). The claims about the lack of generalizability have been called into question by counter arguing that although statistical inference is not possible, case studies can be generalized theoretically or analytically (e.g. Yin, 1984; Scapens, 1990; Spicer, 1992). In their discussion on the difficulty of generalizing the findings of qualitative research and case studies, Lukka and Kasanen (1995) call this kind of generalization "contextual", thus making generalizability dependent on the researcher's ability to analyze the results in the context of prior research and the real-world context of the studied phenomena. The fundamental idea behind this approach is the Aristotelian notion that the general becomes apparent in the individual and therefore a thorough scrutiny of a single case can be trusted to reveal clearly enough what is significant about the phenomenon and which aspects recur when it is analyzed on a more general level (Hirsjärvi et al., 2000).

3.4.2 Data and methods

In order to ensure methodological triangulation (e.g. Denzin, 1984), diverse data has been gathered for this research and analyzed with a combination of qualitative and quantitative methods (Table 3.3). Scientific literature notwithstanding, the main source of information for the research comprises various documents such as newspaper and periodical articles; legislation;

policy and strategy papers; semi-formal recommendatory or guidance documents; as well as financial statements and budgets. Data gathering was facilitated by the fact that the majority of such documents are currently available on state or local governments' official internet sites. Only the newspaper and periodical articles utilized in Article III needed to be acquired through an Estonian contact person.

Table 3.3. Data and methods utilized in the research.

	Article I	**Article II**	**Article III**	**Article IV**
Case study approach	Explanatory, embedded	Explanatory, embedded	Explanatory, embedded	Explanatory, embedded
Selection of case(s) based on	Significance in Finnish water sector	Political importance	Political Importance	Similar degree of applying NPM ideas
Data collection methods	Expert interviews, financial statements, literature	Financial statements, budgets, newspaper articles, literature	Newspaper and periodical articles, expert interviews, financial statements, literature	Legislation, strategy and position papers, professional associations' documents, literature
Data analysis methods	Financial statement analysis, document analysis	Analytical narrative, financial statement analysis, document analysis	Analytical narrative, financial statement analysis, document analysis	Document analysis

A notable amount of information was also gathered through expert interviews and more informal discussions. Kvale (1996) defines qualitative research interviews as "*attempts to understand the world from the subjects' point of view, to unfold the meaning of peoples' experiences, to uncover their lived world prior to scientific explanations.*" A major benefit of interviewing as a research method is that the process can be conducted flexibly by conforming to the situation and the interviewees' responses. An interview is often the chosen method when the research topic is known to produce intricate answers which need to be clarified or followed up (Hirsjärvi et al., 2000). The expert interviews in this research were conducted in both a semi-structured and fully structured format (Kvale, 1996). The semi-structured format of Article I consisted of simple yes/no questions and more broad thematic questions, thus yielding answers that could be analyzed both qualitatively and quantitatively. The final set of interviews, in which experts commented on the validity and reliability of the research results, were also conducted in the semi-structured format and contained only open-ended questions. The fully structured format (Article III) was utilized to enable the interviewees to respond in writing. Since the aim of those

interviews was to produce material for a narrative account of the events, the questions were mostly open-ended in nature.

The empirical data from the documents and interviews were analyzed using document analysis, financial statement analysis and analytical narratives. Document analysis was not applied in the conventional, linguistic sense but as a way of finding relevant information that could not be found in the scientific literature (e.g. original pieces of legislation), or it was used to discover how extensively certain developments such as organizational rearrangements were dealt with by the media.

Financial statements comprise the income statement, the balance sheet, and the cash-flow statement. As explained earlier, an accrual-based balance sheet shows an accounting entity's assets and liabilities, an income statement matches an organization's expenditure with the related revenue, and the cash-flow statement shows the actual money paid and received. In formal financial statement analysis, the figures reported in the statements are used to calculate ratios that enable the comparison of an organization's financial situation with other organizations or its own past. In Articles I and II of this research, financial ratios were calculated to indicate the rate of return on an owner's capital investment in a water services utility. The financial statements were also analyzed more informally, by highlighting the differences between the financial statement items of a Finnish municipal enterprise and those of a regular limited liability company. In Article III, the water company's financial statement figures as such were analyzed and compared with the company's own past. This was because both the organizational form and the ownership arrangements of the water services utility changed during the time period under investigation, and calculating all ratios would therefore not have been possible. Another reason for showing the figures as such is that it enables interested readers to proportion them to the water and wastewater prices charged by the company.

An analytic narrative is a detailed and textured account of context and process, where the emphasis is on identifying the reasons for the shift from equilibrium at one point in time to a different equilibrium at a different point in time (Bates et al., 1998; Levi, 2002). The narrative of analytic narratives establishes the actual and principal players, their goals, and their preferences while also illuminating the effective rules of the game and its constraints, and incentives (Levi, 2002). The narrative is a useful tool for assessing causality in situations where temporal sequencing, particular events, and path dependence must be taken into account (Mahoney, 1999). In this research, the analytical narrative was utilized for analyzing the empirical data in Article II and Article III. The latter is based on the EU-funded project WaterTime, which was structured around a framework that provided for the use of the basic concepts of actors, factors and events, and the organization of these through analytical narratives into sequences of events which together comprise an episode of decision-making leading to changes in public policy (Sanz, Caballero and García., 2003; Hall et al., 2007). The analytical narrative structure was not preserved when writing Article III as it was considered clearer to arrange the findings as a comparison of the relevant issues pre and post privatization. In Article II, the chronological narrative structure has been preserved but the method is not mentioned explicitly.

4. RESULTS OF THE RESEARCH

> "Nothing appears more surprising to those, who consider human affairs with a philosophical eye, than the easiness with which the many are governed by the few" – David Hume, 1758

4.1 Article I

The main NPM reforms pertaining to the topic of Article I were conveyed through the stipulations of the Water Services Act (119/2001) which state that the customer charges for water services should cover the investments and costs of a water services utility in the long run and that the charges may also include at most a reasonable rate of return on invested capital. In addition, the utilities were also to be separated in municipal bookkeeping through one of the organizational options displayed in Figure 2.2. As explained in the government proposal for the Act, the objectives of these stipulations were to prevent the charges from being used for hidden taxation; to improve the utilities' financial standing by enabling them to collect funds for maintenance, repair and replacement; and to make the composition of the charges more transparent in order to enable monitoring by customers and authorities (Government of Finland, 2000). Despite the allusion to authorities monitoring the composition of the charges, the Act required no economic regulator to be established for the water sector; the only authority in this sense is the Finnish Competition Authority, whose scope of jurisdiction is limited to the overall level of customer charges as explained in section 2.2.3.

Article I sets out to explore whether the above reforms in the water services sector have been successful from the utilities' point of view. Most of the 15 managers interviewed for the article stated that there is a need for more stringent economic regulation in the water services sector. They explained this somewhat exceptional view with the fact that the owner municipalities' income requirements from their utilities are too high from both the utility and customer points of view. First of all, it is considered unfair to make the customers pay, in a sense, twice for the infrastructure which they have already financed through their customer charges when it was constructed. Secondly, many managers were of the opinion that their utilities did not have enough investment funds because of the owner municipalities' requirements. Thirdly, they were afraid that if this is allowed to continue, municipalities facing dwindling incomes will demand more money from their water utilities. As Table 1 of the article (reproduced below as Table 4.1) shows, the largest municipalities in Finland indeed receive notable amounts of money from their water enterprises as compensation for basic capital. Calculated as a percentage of the amount of basic capital, the rate of return varied from 0.0 to 18.0 from 1997 to 2003, with the average being 7.9 percent.

The comparison of these numbers alone seems to indicate oversized rates of return for municipalities. However, the comparison is complicated by the fact that the values of a utility's basic capital cannot be considered a commensurable measure in the various utilities because they reflect the motley asset valuations conducted by municipalities when transferring from cash-

based to accrual accounting in 1997. In addition, part of the capital might have been invested in the form of a long-term loan, the regularly paid interests of which are not included in the compensation for basic capital Therefore the second column in Table 4.1 shows the rates of return for the owner in a more commensurable form; i.e. as the sum of all recurring payments made by these water utilities to the owner municipalities as a percentage of the formers' annual revenue. These figures show that in the most extreme case a water utility has paid almost half of its annual turnover to the municipality, the average being 23.2 percent. This result supports the interviewed managers' notions of water utilities being used for hidden taxation and cross-subsidizing by local governments.

Table 4.1. The average rates of return on 15 large water services undertakings in Finland for their owner municipalities, 1997-2003, calculated from the data provided by the utilities in their annual financial reports.

	Population served in 1999	**Compensation for owner's basic capital, %[1)]**	**Total owner's rate of return, % of turnover[2)]**
Helsinki Water	549 840	9.0	45.5
Espoo Water	203 490	10.0	38.8
Tampere Water	186 210	11.9	29.3
Vantaa Water	165 850	8.2[3)]	28.7[3)]
Turku Water Utility	165 220	7.8	27.8
Oulu Water	117 314	18.0	23.7
Kuopio Water	82 216	5.5	17.5
Jyväskylä Water	77 530	13.2	27.1
Pori Water Utility	73 934	4.5	18.7
Vaasa Water	56 247	5.8	15.3
Lappeenranta Water Utility	53 724	6.0[4)]	14.9[4)]
Kotka Water	52 900	5.2[5)]	21.0[5)]
Joensuu Water	50 815	12.0	31.5
Porvoo Water	38 930	0.0	0.0
Rauma Water	37 300	2.0[6)]	8.0[6)]
AVERAGE	**127 400**	**7.9**	**23.2**

1) Return on basic capital divided by basic capital
2) Sum of return on basic capital, loan installments, loan interest payments, and other regular payments to the municipality, divided by turnover
3) Independent accounting only from 2002 onwards
4) Independent accounting only from 2003 onwards
5) Data available for years 1999-2003
6) Data available for years 1998-2003

Article I concludes that the present system of regulation needs revision. It outlines, as suitable options, either formal regulation by the already existing Energy Market Authority or a more flexible system of self-regulation in the form of self-evaluation, peer reviews and benchmarking,

depending on what kind of ownership developments are considered realistic in the water services sector.

4.2 Article II

The NPM changes that were mentioned in connection with Article I also form part of the legislative background of Article II. The other reforms related to the case described in Article II were conveyed by the Local Government Act (365/1995). One of the requirements of this Act is that a municipality shall draft an annual budget and a three-year financial plan to be approved by the Municipal Council. In the case of actualized or predicted deficit spending, the municipality is to supplement the financial plan with a scheme for balancing the deficit during the same three-year period (§ 65). The Act also requires the municipal budget as well as the financial accounts to be drafted according to the method of accrual accounting (§ 67). According to the government proposal for the Act (Government of Finland, 1994), the aim of these stipulations was to encourage municipalities towards more long-term thinking and strategic planning. Transferring from cash-based to accrual accounting was believed to result in the compatibility of the municipal budgets, financial account information and cash-flow information, and thus enable comprehensive analyses of the municipalities' financial standing. The former system of recording fixed capital assets was considered especially unclear as it had been based on fair values, which in practice meant the fixed assets had been subject to discretionary or index-based revaluations and their value had increased in disproportion to other balance sheet items.

Set against this legislative background, Article II focuses on the consequences of two NPM reforms in the Finnish public sector / water services sector: the application of accrual accounting and the separation of municipal enterprises in municipal accounting. The Article examines these changes through a case study set in the context of a mid-sized Finnish municipality (referred to anonymously as Owner City). The case describes the sale of the municipal water enterprise (Water Utility) to the municipal energy company (Energy Company) and analyzes its motivations as well as its intermediate and ultimate consequences.

Article II shows that, similarly to some of the largest municipalities in Finland, Owner City also collected notable amounts of money from its water utility as compensation for basic capital. The compensation rate ranged from 7.9 percent to 14.5 percent of the utility' basic capital from 1994 to 2004. This was equal to 20 to 27.5 percent of the utility's annual turnover. When that income was no longer sufficient to cover deficit spending in the municipal accounts, the decision-makers of Owner City came up with the idea of selling Water Utility to Energy Company. The fair value of Water Utility's fixed assets was evaluated by two different consulting firms and two different methods yielded values from EUR 74 million to 210 million, at the time the book value of the assets was EUR 37 million. The sale price was agreed at EUR 150 million, and a long-term bullet loan for the corresponding amount was granted by Owner City to Energy Company (Figure 1 of the article reproduced below as Figure 4.1).

These arrangements reduced the sale to an intra-group accounting operation, which was conducted to enable Owner City to record the revenue on its income statement and thus obtain a positive bottom line for the three-year financial plan as required in legislation. This objective was openly expressed by the decision-makers, as were their expectations concerning its taxation and synergy benefits, as well as an increased stable income flow to the City.

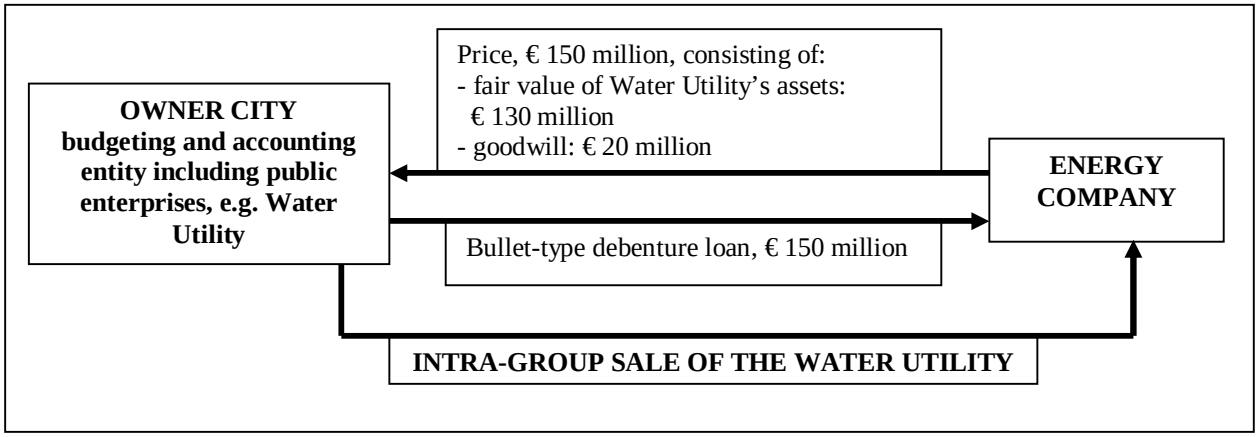

Figure 4.1. Sale of Water Utility to Energy Company.

The intermediate consequences of this intra-group reorganization are on the one hand increased, tax-free income to Owner City and on the other hand increased water prices for the customers. The investments made by previous generations of water users were cashed in to correct for the poor financial management of the municipality, while future generations are thus being made to pay again for those same investments in the form of higher water charges. Ultimately, the sale was only a temporary solution to the fundamental financial problems of Owner City, which have plagued it in the past and which are predicted to also persist in the future. The case described in Article II proves that the accounting separation and the use of accrual accounting have not resulted in increased transparency, accountability, or better financial planning by municipalities; instead, they have opened up possibilities for creative accounting. The opacity of the financial accounts is due to the national accounting regulations, which include certain devised concepts that may even mislead non-professional users of accounting information. In the case described in this article, this results in a violation of the principle of intergenerational equitability. Despite its questionable nature the arrangement seemingly complies with legislation, and therefore it is possible that other municipalities grappling with financial deficit issues will resort to similar solutions. Article II therefore concludes by recommending the further development of public sector accounting principles and the establishment of uniform standards to regulate accrual accounting in the public sector.

4.3 Article III

The legislative background for Article III comprises, first of all, the Estonian Commercial Code of 1995, which established the transformation of most municipal water services utilities into public limited companies by September 1997, their shareholders being mostly municipalities.

The Code holds the municipalities responsible for utility operation and tariff collection to cover the full costs of operation. Another significant piece of legislation in terms of Article III is the Estonian Public Water Supply and Sewerage Act of 1999, which allows water services utilities to be owned by both public and private entities but holds the water company responsible for the sufficiency of services. The Act also requires charging customers according to the metered amount of water used, based on the service fees established by local authorities.

Article III explores the objectives and consequences of the partial privatization of the Tallinn water services company AS Tallinna Vesi, conducted in the context of the NPM ideas that spread to Eastern Europe in the post-communist era. Along with other Eastern European countries, Estonia was eager to move towards a market-based economy and engage the private sector in service provision. In Tallinn, the idea of the partial privatization of the municipal water services utility had emerged regularly in the City Government meetings even before the country-wide corporatization that took place in 1997. In 1999, the City Council announced that it would sell one third of the company's shares to an international investor in order to secure investment funds, while the water company supported the idea by saying that this would postpone the need to raise customer charges.

The water company and a privatization consultant had calculated that the company would need to raise EUR 21.3 million annually for the following 12 years to cover the costs of the infrastructure rehabilitation needed to reach EU standards and otherwise improve service levels. External funding was considered unavoidable as the water company claimed to have exhausted its loan capacity and the City of Tallinn had a statutory limit on taking out loans. The City Council finally acquiesced to the sale of 50.4 percent of the water company's shares to a private company in order to improve the company's loan capacity and enable increased investments through larger share capital. As compensation for losing its majority share the City of Tallinn retained a so called Golden Share, which gives it veto power on various issues related to the company's activities. The City sold the shares to a private investor coalition based on the sale price offer (EUR 85.1 million, of which EUR 44 million was received as capital investment and EUR 41.1. million was received as cash) and the coalition's promises of rate stability for the following five years.

Article III found that the impact of the sale of the water company's assets and liabilities and customer prices differed from the original objectives (Table 1 of the article reproduced below as Table 4.2). Already the investment level agreed in the Business Plan, EUR 12.8 million/a, fell short of the original target of EUR 21.3 million/a, as did the realized average level of EUR 12.1 million/a. The planned and realized investment levels after the sale were also below the pre-sale average level of EUR 18.5 million/a. Moreover, the investments made after the partial privatization have, in practice, been financed through loans from the European Bank of Reconstruction and Development as the private owner has replaced considerable amounts of equity with debt. By the end of 2005 the private owner had, through share buyback and large dividends, already recovered more than its initial investment into AS Tallinna Vesi. This has also

benefited the other owner, the City of Tallinn, while the water company has mainly suffered losses.

As regards the impact of the partial privatization on customer charges, Article III finds that these have risen and will continue to rise until 2010, the final level being 36 percent higher than the pre-sale level. To reach agreement on these figures, the City and the private owner needed to renegotiate the Service Agreement in 2002 because of their opposing interpretations regarding price adjustments in accordance with the consumer price index. The renegotiations were conducted by the new City Government of Tallinn, which consisted of parties that had opposed the privatization.

Table 4.2. Financial information and number of employees of AS Tallinna Vesi, 1994–2005 (EUR million).

	Net profit	Invest-ments	Non-current liabilities	Share capital	Reserves	Dividends	Number of employees
1994	2.4	3.1	-	-	28.7	-	1280
1995	2.9	6.2	1.6	-	30.6	-	1121
1996	7.2	23.6	7.7	-	12.5	-	995
1997	5.7	27.8	20.3	54.5	2.3	-	927
1998	5.5	20.7	24.5	54.5	8.0	-	819
1999	0.3	9.7	35.1	54.5	11.0	-	729
2000	1.5	15.9	29.8	54.5	15.6	-	647
2001	10.8	14.2	21.6	98.5	5.4	11.7	564
2002	10.9	11.2	73.5	37.6	6.0	8.5	480
2003	6.7	10.9	71.4	37.6	6.0	2.9	351
2004	11.0	10.1	66.5	37.6	6.0	4.8	350
2005	11.1	14.3	74.5	37.6	1.3	7.2	335

Article III also finds that the consequences of the partial privatization did not correspond to the original objectives set for the level of investments and customer charges. The main reasons for this seem to have been the City Council's inexperience in privatization arrangements; the eagerness of the right-wing City Government to privatize; and the fact that the sale proceedings had already been earmarked to be used for balancing the City budget. These factors led to hasty, uninformed decision-making and the careless drafting of tender documents, business plans and other significant documents. It seems the City did not even realize that the Golden Share might be against EU legislation, which means that it can be abolished, thus stripping the City of its control over the water company. Furthermore, although a Supervisory Foundation was established in 2002 to monitor the water company, its members are chosen by the owners, thus raising suspicions about the true degree of its independence. The article concludes that the City of Tallinn should have based the sale decision on comprehensive financial, technical and social analyses, and concentrated more on safeguarding the interests of its citizens than on earning income for City.

4.4 Article IV

Most of the legislation relating to the topic of Article IV has already been cited in connection with Articles I and II. In addition to these the topic is associated with one more stipulation, namely § 5 of the Finnish Water Services Act, which obligates municipalities to develop water services within their territory and as proof of this, regularly devise and update so called water services development plans. According to the legislator, these plans are not legally binding but instead meant for the municipalities' internal target-setting and therefore strict legal requirements as to their contents have not been considered necessary. Guidelines have instead been crafted by the Regional Environment Centres, which comment on the plans before these are approved in the municipal councils.

Set in this legislative context and with reference to the results of Articles I and II, Article IV seeks policy-level measures for securing the integrity of the aging water services infrastructure in Finland. The deterioration of water infrastructure is a global problem, and some professional associations have suggested, as one solution, the application of a management philosophy called infrastructure asset management, the origins of which can be traced to the NPM and an accrual accounting emphasis on the recording and valuation of fixed assets. The usual elements included in a water utility asset management framework include asset inventory, asset valuation, long-term investment planning, and so forth. Since infrastructure asset management seems to be considered one of the more useful elements of NPM, its implementation into official regulations or recommendations in at least some form is considered pertinent in the situation faced by the water sector.

After describing the Finnish situation, Article IV proceeds with an international comparison on how to arrange the economic regulation of water services with specific regard to ensuring adequate investments in infrastructure. The countries chosen for the comparison are those which were the first and most thorough in embracing NPM reforms: the UK, the USA, Australia, and New Zealand. The composition of the water services sector varies from country to country, which allows for the identification of characteristics similar to Finland and the associated formal or informal methods that could be applied in the Finnish case. A summary of the NPM consequences in these countries is presented below.

In the *United Kingdom*, the NPM reform brought about the privatization of the ten Regional Water Authorities in England and Wales and the establishment of an independent economic regulator, Ofwat. To support its pricing limits, Ofwat requires the water services companies to draft five-year business and asset management plans but it is currently considering extending the period to 25 years. In *New Zealand*, the NPM reform did not result in the privatization of the water services utilities, and no economic water sector regulator was established. The driver for asset management is instead the legal obligation for municipalities to draft long-term strategies for financial management, including the management of infrastructure assets. The municipalities are assisted in this task by asset management guidelines crafted by a professional organization. In *Australia*, the NPM reform resulted in the corporatization of the largest water services utilities

and the privatization of one of those. Cost recovery limits for water services are set on the national level and monitored more or less closely by the states' multi-utility regulators. Some states or regulators require asset management planning from the municipalities or the water utilities but it is also practiced on a voluntary basis with the aid of guidelines crafted by a professional organization. Finally, in the *United States*, NPM did not result in any large-scale organizational changes in the water sector. However, a government accounting standard, GASB34, was introduced which makes an asset management plan obligatory in cases where a utility wishes to depreciate its assets on the basis of preserving their condition, instead of the conventional straight-line depreciation. Water utility asset management is promoted vigorously in the U.S. for example by the Environmental Protection Agency (EPA) and several professional organizations.

In a comparison of the asset management regulations and recommendations in the four countries, Article IV finds the Ofwat method rather too complex and costly but considers the extension of long-term planning to 25 years a practice worth replicating. The Australian and New Zealand practice of complementing formal requirements with detailed, practical handbooks crafted by professional organizations is also seen to support the implementation of asset management on the utility level and prevent the plans from becoming another compulsory document. The utility-level implementation of asset management can also be supported by the information technology solutions developed in the United States. The article concludes that a combination of formal regulations and informal professional guidance could be expected to guarantee the integrity of water sector infrastructure without resorting to over-regulation.

5. DISCUSSION

> "Governments cannot be supported without great Charge, and 'tis fit every one who enjoys his share of the Protection, should pay out of his Estate his proportion for the maintenance of it. But still it must be with his own Consent, i.e., the Consent of the Majority, giving it either by themselves, or their Representatives, chosen by them" - John Locke, 1690

5.1 NPM reforms in the water sector context

The main aim of this research was to examine the consequences of NPM–influenced financial management and accounting reforms in the context of municipal water services. The research was implemented through four case studies, two of which were associated with financial management and accounting reforms within Finnish local government and the water sector, the third one with the partial privatization of the Tallinn water company in Estonia, and the fourth one with the accrual-accounting based practice of infrastructure asset management in the "core" NPM countries and its applicability to Finland. The findings of the four cases, reported in the previous section, are summarized in Table 5.1.

Table 5.1. Objectives, elements and consequences of the reforms explored in this research.

Objective	**Element**	**Consequence (Article no.)**
Preventing hidden taxation through water services charges; enabling water services utilities to collect funds for maintenance, repair and replacement of infrastructure	Full cost recovery through customer charges, including, at most, a reasonable rate of return on invested capital	Hidden taxation practiced by large municipalities; water utilities' means for making necessary rehabilitation investments compromised (I)
Increasing the transparency of municipalities' internal income flows to facilitate monitoring by citizens and authorities	Separation of water services in municipal accounting	Information available but opaque due to nationally devised accounting concepts; monitoring by authorities limited; municipalities view themselves as investors rather than service providers (II)
Encouraging municipalities towards long-term thinking and strategic planning; increasing transparency; improved recording of the value and use of fixed assets	Accrual accounting in the public sector	Opportunities for short-term solutions which comply with legislation but violate intergenerational equity (II); improved practices for managing infrastructure assets (IV)
Larger share capital; increase in infrastructure investments; stable customer prices	Partial privatization	Equity replaced with debt; decrease in investment level; rising prices (III)

The introduction of full cost recovery, including, at most, a reasonable rate of return on investment, aimed at preventing hidden taxation and enabling Finnish water services utilities to prepare financially for infrastructure maintenance and refurbishment. However, since the rate of return limitation was not accompanied by a straightforward definition or the establishment of an economic regulator and since the scope of the Competition Authority's jurisdiction was narrowed by the Market Court of Finland's rulings, the result was a regulatory gap which allows hidden taxation to continue in municipalities that have profitable utilities, while rehabilitation investments are deferred.

The separation of water services in municipal accounting was an attempt to address the same problem from another perspective, by increasing the transparency of internal income flows to citizens and authorities. More information has indeed become available in the form of the water utilities' separate financial statements but the usefulness of this information to lay readers is hampered by the nationally devised accounting terminology and concepts, while authority monitoring is limited due to the reasons already stated. The accounting separation and the associated application of business sector terminology in the public sector have also caused municipalities to view themselves not only as providers of an essential service but also as investors who seek to maximize the rate of return on their investment.

The main objectives of introducing accrual accounting in the public sector in Finland, and also elsewhere in the world, have been to increase transparency, encourage long-term, strategic planning and provide clarity to the recording of the value and use of fixed assets. However, assessing the true or fair value of infrastructure assets, as discussed also in sections 2.2 and 3.3, remains problematic. In Finland, this difficulty combined with the nationally devised public sector accrual accounting system offers opportunities for hidden taxation and cross-subsidizing, i.e. the balancing of the municipal budget and financing other public services with income from water utilities. On a global scale, discrepancy in infrastructure asset valuation has been listed as one of the reasons for refuting the suitability of accrual accounting for the public sector. On the other hand, the business accounting requirement for recording the value and use of fixed assets has also conveyed the application of systematic infrastructure management practices such as asset inventories, condition inspections, as well as the long-term maintenance and refurbishment strategies, which can be considered a beneficial development.

Infrastructure rehabilitation and replacement needs have caused problems also in the context of the partial privatization of the Tallinn water services company in Estonia. The main stated objective of the arrangement was to source financing for infrastructure refurbishment because needs estimates were claimed to exceed the investment capacities of the company and the city owner. A few years after the privatization, it is now evident that the realized investment levels are in fact below the pre-privatization level and the level agreed in the business plan, which in itself was already much lower than the estimates used to support the involvement of a private sector investor. It also seems that the water utility fell victim to political short-termism due to the fact that the sale proceeds had been included in the following year's budget before the final decision had been reached.

To summarize, the major cross-cutting issue in this research is the fundamental uncertainty about the true condition of water infrastructure assets and the associated accounting-based opportunities for investment deferral, hidden taxation and cross-subsidizing. The NPM-influenced reforms explored in this study sought to overcome or alleviate these and related financial management problems through the application of various business sector principles and practices but in most cases these efforts did not prove too successful; in some aspects they might have even exacerbated the situation or provided new opportunities for using water utilities as cash cows.

Some might argue that hidden taxation and cross-subsidizing are not serious violations since the money collected as water and wastewater charges is used for less profitable services, such as health care, and therefore stays within the public sector. However, the fact is that these practices are often associated with continuous asset stripping, which in the long run may have disastrous consequences for public health, the environment and the economy. If the deterioration of water services infrastructure is not addressed properly by authorities, parts of it will in time become truly dangerous. As discussed in section 2.1.2, a major sewage pipe burst or the infiltration of harmful micro-organisms into leaking pipes carrying drinking water may result in widespread epidemics and pollution. If that occurs, the costs caused by the accident and the collateral damage will necessarily be higher than if the maintenance and repairs had been taken care of earlier. It is particularly useful to illustrate the point that Roberson (2006) advocates of making comprehensive assessments of situations in which a community's water supply has been completely cut off due to such an accident. Normally analyses are limited to situations where contaminated drinking water needs to be temporarily boiled or replaced with bottled water and do not consider the implications of a complete lack of water for showering, toilet-flushing, firefighting or industrial production. In the same vein, Cromwell et al. (2007) emphasize the necessity of proactive asset management and raising the level of the rehabilitation and replacement investment as the only reasonable way of preventing disasters. They contend that utility managers and boards should make these issues known to all stakeholder groups since long-term commitment to infrastructure renewal cannot be maintained if the stakeholders' views on the issue are not in touch with reality.

The second argument against condoning hidden taxation and cross-subsidies is that as long as these are made light of, municipal decision-makers feel less compelled to improve their financial management and planning practices. This is because they know that they can balance the budget by demanding more income from the municipal water services utilities. Since this practice cannot be continued ad infinitum, the following step may be a one-time cashing in of all or part of the infrastructure through sale to another public or even a private entity. These solutions will provide financial relief in the short term but most likely they will not remove the fundamental problem of poor management and only postpone finding a proper solution. The solutions may also produce undesirable long-term consequences such as increased customer charges.

A final argument against hidden taxation is that it is a clear violation not only of transparency, accountability and intergenerational equity but also the Lockean principle according to which

taxes should not be levied without the people's consent. Locke's view was that this consent could be given personally or through elected representatives; either way it can be argued that the people should at least be aware of what their consent is required for.

It therefore seems that some degree of economic regulation or other type of governance would be appropriate in the case of publicly owned water services utilities in which profit-making is allowed. Guidance related to the long-term management of infrastructure assets is considered especially pertinent. Based on the research findings, two options can be outlined for the Finnish situation. The first one, founded on the assumption that water services will remain predominantly in public ownership, relies on a combination of formal and informal guidance. This option involves revising the Water Services Act to include a clear obligation for municipalities to ensure that their regular income flows, such as compensation for basic capital or interest on long-term loans, do not compromise the municipal utility's ability to maintain, repair, rehabilitate and replace its infrastructure assets. Municipalities would also be encouraged to grant their water services utilities autonomy over investment decisions, based on carefully devised and mutually agreed long-term business and investment plans. These plans could be submitted, for example, as a section of the municipal water services development plans to be approved by the Regional Environment Centres. To support the implementation of the plans by the utilities, professional associations might consider arranging in-service training and publishing practical handbooks on infrastructure asset management. An ideal arrangement would also promote the long-term commitment of municipal decision-makers to water services management. In practice this could mean that the boards of municipal water services enterprises would also include non-politician expert members, and that some of the board members would occupy their positions for a longer time than the municipal election period[10]. On a more general note, public sector accounting standards and concepts should also be developed further, based on generally accepted principles, to enable true monitoring by all stakeholders and to provide at least some uniformity for infrastructure asset valuation.

The second option, based on formal monitoring by an economic regulator, is an expansion of the first one and this may be considered if it is believed that the private ownership of water services will become more ubiquitous in the future. When considering the size of the country, a natural location for a water sector economic regulator would be as a sub-department of the already existing Energy Market Authority (EMA). For this purpose, the Water Services Act would need to be revised to include the EMA as one of the regulatory authorities. Similarly, as in the energy market, the water services authority could regulate the rates of return for the owners and decide on the principles used in the valuation of the fixed assets, as well as control mergers. Due to the large number of water utilities in Finland, the regulation could be limited only to those exceeding a certain threshold in terms of e.g. yearly turnover or the number of customers served. Industry self-regulation through a professional association is considered more suitable for small municipal

[10] This kind of arrangement is already legally possible (see section 2.2.3) and is currently fostered for example by the Joint Local Authority of the Tuusula Region's Water Supply.

utilities, and could take place through the voluntary benchmarking scheme currently developed by FIWA, which can be used by its member utilities[11].

5.2 Validity and reliability of the results

The findings of this study are in line with the results of previous research on the consequences of NPM reforms (sections 1.2 and 3.4), which have reached mainly negative but also some positive conclusions. It confirms Bowerman's (1998) observation that there is still confusion about the suitability of private sector practices in the public sector. With reference to Sheil (2004) and the OECD (2004), this research also finds that the implementation of certain NPM practices may favor short-term outputs over long-term consequences, and threaten the productivity and integrity of the water services infrastructure. However, it disagrees with Sheil's implicit solution of increasing public sector involvement since that seems to be the root cause of the negative consequences observed. The findings of this research are also compatible with recent nationally published results on the commercialized nature of local authority corporate governance in water and other environmental services (Maanonen, 2007; Windischhofer, 2007). The study has also answered the calls for more research, as presented in section 1.2, by presenting the implications of NPM reforms on public sector organizations and the nature and provision of public services (cf. Guthrie et al., 2005), as well as by showing that the reforms explored here are harmful to the water infrastructure and to water users and mostly benefit municipal politicians or private investors (cf. Power et al., 2003).

In addition to a comparison with previous findings, the reliability and validity of the research results was evaluated by subjecting the results and policy suggestions to commentary by representatives of organizations associated with the financial management of water services utilities (Appendix). Since the issues identified in the research involve legislation, political decision-making and the interests of various stakeholder groups in a small country, the experts wished to remain anonymous and hoped that their views would not be quoted directly or singled out.

The validity and reliability of the propositions on the consequences of the reforms were not contested by any of the interviewed experts but their views were heterogeneous as to the suggested solutions for correcting the perceived problems. The establishment of a national economic regulator for the water sector was considered necessary for a situation in which the private sector would own a notable share of the infrastructure, as is the case in Tallinn. However, in the Finnish case some experts were opposed to national regulation on the grounds of it being a cumbersome system and violating the municipalities' constitutional autonomy in decision-making. Some were of the opinion that a larger problem in Finland is the inadequate cost recovery of small water utilities, while others subscribed to the FIWA benchmarking system and self-assessments as a substitute for formal regulation. Those opposed to formal regulation also

[11] Of FIWA's 310 members, 37 have registered as users of the system; the aim is 100 participants. The users pay for the service according to amount of water produced.

thought that preventing hidden taxation would only require that municipal decision-makers be given information about the deleterious outcomes of postponing investments.

Among the experts there were also those who promoted the establishment of an economic regulator for the Finnish water services sector because they considered benchmarking inadequate for monitoring the rates of return, controlling asset valuations in the case of utility mergers and ensuring the adequacy of investments and long-term business planning. This positive view towards regulation was justified by the claim that municipal decision-making is often short-sighted and based not on an equal consideration of all options but rather on monetary concerns. These respondents also feared that the increasing consolidations and mergers of the utilities into regional water services corporations and/or multi-utility companies will lead towards an increased business-orientation, private sector participation and, in the case of more cash-strapped municipalities, even to arrangements similar to those in Tallinn.

Regarding the identity of the possible economic regulator, establishing a completely new regulatory authority was considered unnecessary by all but one expert. Most favored the establishment of the water sector regulator as a subsidiary of the EMA. The respondents argued that the mechanism would not incur costs that were too high and could be more acceptable in terms of the state productivity program, which does not take kindly to establishing new offices.

As regards ensuring the adequacy of infrastructure rehabilitation investments, emphasizing the need for long-term planning in the Water Services Act was deemed appropriate by most interviewees because in their view that is the only way to match the short-term horizon of municipal politics with the long-term nature of infrastructure investments. Making the actual long-term plans compulsory was generally considered useful but also gave rise to concerns that the plans would become just another obligatory paper written to comply with regulations and not made use of in practice. The experts also agreed that increasing professional education was a worthwhile activity to be pursued.

5.3 Assessment and self-evaluation

Although New Public Management has been investigated from different perspectives by a number of scholars, it can be argued that the subject has not yet been exhausted. Due to divergences in countries' socio-economic, cultural, political and administrative backgrounds, each NPM reform has been and will be unique in terms of its content, implementation and consequences. Furthermore, even though some Western countries might already be transcending NPM (Christensen and Laegreid, 2007), many developing nations are only at the beginning phases of reform processes. Reporting consequences and experiences from implemented reforms is therefore justified as it expands the knowledge base that can be consulted for the process of policymaking.

Another factor supporting the choice of the research topic is that studies of NPM reforms in a particular sector are still in the minority. In particular, water services reforms consisting of other arrangements than outright privatization have not been reported very extensively. This is an understandable bias since privatization is a politically sensitive issue and bound to raise strong feelings. However, the enthusiasm for privatization seems to have subsided for the time being and instead hopes are being vested in publicly owned utilities that operate under commercial principles. It thus seems likely that such arrangements and the economic regulation of publicly owned utilities will be discussed to an increasing degree in the future.

Finally, the research is also considered significant from a practical point of view since both developed and developing nations should realize the threats caused by poor financial management and deferred investments in the case of infrastructure services. In Western countries, municipalities' tendency to practice hidden taxation for purposes of cross-subsidizing may at first glance seem rather harmless but the ultimate consequences of water infrastructure asset stripping are far from it. In developing countries, infrastructure maintenance, repair and rehabilitation are at the moment overshadowed by the MDG goals of extending service coverage, yet in the long run systematic asset management would most likely reduce overall costs and thus support development.

Some might argue that the research results will become irrelevant if the municipal enterprise as an organizational form ceases to exist in Finland, a situation which might result from either of two contemporary developments. A more longer-standing phenomenon is the corporatization of municipal water enterprises into municipal or regional companies, which is taking place at a slow but steady rate. The more recent development is the European Commisson's precedent pertaining to a Finnish state-owned road enterprise. On December 11, 2007 the Commission stated that the non-application of normal bankruptcy and corporate income taxation gave the said state enterprise an unfair competitive advantage and that these practices should be discontinued. In January 2008, the Finnish Cabinet Committee on Economic Policy initiated an assessment of the compatibility of the state enterprise model with European internal markets, and in February 2008, the AFLRA initiated its own investigations into municipal public enterprises. However, these developments are not considered to threaten the validity of the research results since, first of all, municipal water service enterprises operate as regional natural monopolies, while the EC decision pertains to a state enterprise which competes on open markets with business companies. Secondly, as was illustrated in Article II, a corporatization arrangement can also be designed to guarantee a long-term tax-free income flow to the owner municipality, corresponding to the compensation for basic capital.

As concerns methodology, some might criticize the research for not adhering to the traditional positivist research paradigm, the aim of which is to make statistical generalizations based on the hypothesis-driven empirical testing of a large sample. However, as was already discussed in section 3.4.1, this research has utilized both quantitative and qualitative methods and the information obtained has been arranged as explanatory case studies, which aim at finding explanations for observed particular practices and in which generalizations are made in relation

to prior research and the real-world context. Instead of obscuring the research process, methodological variety is considered to have enriched the study through triangulation. A conscious attempt has been made to balance qualitative, subjective statements with quantitative and, at least in some sense, objective financial information. The methodological variety has also suited the structure of the research, consisting as it does of four independently reported peer-review articles. In the author's opinion, the methodological limitations of the study are associated with the fact that the cases to be studied were not chosen in advance but were made during the course of the work and based on previous findings. This flexible approach usefully allowed the redirection of the research towards unprecedented information-rich cases but also led the researcher down time-consuming pathways which could not be included in the final dissertation.

6. CONCLUSIONS AND RECOMMENDATIONS

"We never know the worth of water till the well is dry" - Thomas Fuller, 1732

6.1 Conclusions and recommendations

Referring to the research questions presented in section 1.3, the following conclusions can be drawn:

i) In broad terms, the financial management and accounting reforms explored in this research sought, through the application of various NPM principles and practices, to increase the transparency of municipal finances, to improve financial planning and management, and to secure sufficient investment into the rehabilitation and replacement of the water services infrastructure. The positive consequence of the reforms reported here is the accrual-accounting derived practice of infrastructure asset management. The more negative consequences are associated with the difficulty of infrastructure asset valuation and the associated opportunities for investment deferral, hidden taxation and cross-subsidizing, short-sighted political decision-making, and the violation of intergenerational equity.

ii) Based on the above consequences, the reforms analyzed in this research cannot be considered very successful in terms of meeting their original objectives. Some of them may have even exacerbated the phenomenon they were supposed to curb or opened up new kinds of opportunities for using public water enterprises as cash cows.

iii) It seems that NPM ideas have changed the nature of water services, at least in municipal decision-makers' minds, from being merely a public service to also being a public investment, the profits from which must be maximized. An overall conclusion is therefore that securing the integrity of water services infrastructure, and thereby protecting the customers and the environment, requires some degree of overseeing or the regulation of publicly owned water services utilities when profit-making is allowed. The options outlined in this research for the Finnish context are either a combination of formal and informal methods or an expansion of the former, which involves the establishment of a water sector economic regulator. It is suggested that the relevant authorities take these options as a starting point for further policy and legislation development.

6.2 Suggestions for further research

The focus of this research in the Finnish cases was on those financial management elements of the local government reform that were referred to in the Water Services Act: the separation of water services in municipal accounting, the implementation of accrual-based financial accounting and reporting, and the full cost recovery of services including a rate of return for the owner. In terms of further research it might be interesting to take a more comprehensive view of NPM in the Finnish local government reform to see, for example, which of the many features of NPM were included in the reform and how were they reflected in the water services sector. Most

likely this would lead to a closer examination of performance management, results-based budgeting and performance indicators.

Another topic considered worth further investigation is associated with the fact that two thirds of municipality-owned water services utilities do not operate profitably but have to be supported from municipal tax revenue. It has been suggested that this financial unviability results from small municipalities' unwillingness to raise customer charges for water and wastewater to cost recovery levels, but the underlying reasons for this behavior have not been established with certainty. Anecdotal evidence suggests that municipalities set prices according to the country's average levels and pay particular attention to the price levels in neighboring municipalities in the competition for taxpaying residents. Further research is needed to verify whether this is the true reason behind insufficient cost recovery or whether some other explanations could be found.

A third idea for further research could be the possibilities for reporting and benchmarking water utility asset management. To what extent do water utilities report non-financial indicators regarding the condition of and long-term planning related to their infrastructure assets? How could such indicators be developed to enable benchmarking between utilities as well as aid in the monitoring of the condition of the water services infrastructure by citizens and authorities?

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APPENDIX

Experts who commented on the findings of the research

Timo Heinonen, Managing Director, Hämeenlinna Region Water Company
Pertti Isokangas, Managing Director, Riihimäki Water
Kai Kaatra, Director, Water Resources Management, Ministry of Agriculture and Forestry
Jussi Kauppi, Director, Urban Infrastructure Division, Association of Local and Regional Authorities
Pasi Leppänen, Deputy Managing Director, Audiator Ltd.
Timo Mattila, Assistant Director, Finnish Competition Authority
Oiva Myllyntaus, Development Manager, Municipal Finances, Association of Local and Regional Authorities
Jukka Piekkari, Managing Director, Helsinki Water
Rauno Piippo, Managing Director, Water and Sewerage Works Association
Janne Salonen, Controller, Chief of Finances, City of Tampere
Anneli Tiainen, Chief of Legal Affairs, Water and Sewerage Works Association
Teemu Vehmaskoski, Project Manager, Kiuru & Rautiainen Consulting