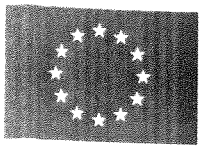

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Chapter I

The European Water Supply and Sanitation Markets

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INTRODUCTION

Providing drinking water and wastewater services to a consumer seems a relatively straightforward practice. Water is abstracted from a river, an aquifer or in some cases even the sea. This water is treated and pumped into underground pipes, ending up at the premises of consumers where it flows out of their taps. The wastewater that comes from the shower pit, the latrine and sometimes from the drains in the street flows into another underground piping system, ending up at a wastewater treatment plant. There, the materials that really harm the environment are removed before the wastewater is discharged into the environment. Water providers, all over the world, have managed this cycle for more than 100 years, and the fundamentals of the processes remain largely untouched (Thomas and Ford, 2005). The simplicity and clarity of the delivery process seems to be in stark contrast with the complexity and diversity in which the sector is organised.

About 30,000 water operators in the European Member States (excluding the ten Member States that entered recently) are managing the described delivery processes, generating a total production value of about 37 billion Euro annually (Eurostat, 2004). The size of, and diversity within, this group of operators makes it exceptionally hard to make general statements. This heterogeneity is due to the local public authorities' individual path and preferences in organising the service provision. Since the start of the 19th century, each local authority made continuous explicit and implicit policy choices shaping the way water services are to be provided, basing itself on changing local circumstances, as for example demographical, social and political dynamics. A dimension of water services, adding to the heterogeneous character of the sector, is the possibility to partially unbundle the different activities related to water services provision. Water services are not an amorphous whole but can be divided into numerous autonomously managed activities, as bulk water supply - water treatment - local water distribution - sewage collection - sewage treatment. All of these activities can be provided by one organisation – for example very recently the three separate water management of Amsterdam announced to become as of 2006 the first integrated water service organisation in the Netherlands, claiming 5% cost savings due to the prospected merger (VNG, UvW and DWR, 2005). Nevertheless, it is

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not necessary so, and even quite uncommon, that one single service provider is responsible for the whole range of activities in one spatial area. The majority of European member states divide the water supply activities from the sanitation activities. Moreover, in Member States like France and Spain, each and every activity of the water cycle is split over separate service providers (see Table 1).

Table 1: Heterogeneity of service suppliers

	Split Between Different Activities - Yes-No		
	Split Between Water & Wastewater	Water Supply; Split between Bulk supply & Distribution	Sanitation; Split between Collection & Treatment
Italy	No	Yes (limited)	No
Ireland	No	No	No
UK	No (limited)	No	No
Finland	No	No (limited)	No
Sweden	No	No (limited)	No
Greece	No	Yes	No
Denmark	Yes	No	Yes
Netherlands	Yes	No	Yes
Portugal	No	Yes	Yes
Austria	Yes	Yes	Yes
Germany	Yes	Yes	Yes
Belgium	Yes	Yes	Yes (Flanders)
Luxembourg	Yes	Yes	Yes
Spain	Yes	Yes	Yes
France	Yes	Yes	Yes

Especially the Southern Member States tend to split water supply into bulk water transfers and local water distribution. In these Member States water resources are not always available locally and regional/national coordination is required. Transporting water over long distances is costly. On one hand because water is a relatively low value product, with the selling price normally ranging between € 1 and € 2 per cubic metre, and on the other hand because water is very dense - meaning that it has a high mass per unit volume. In fact, water is one of the few compounds that is actually denser in the liquid form than in solid form (this is the reason why ice floats on water). Examples of distinct service providers dedicated to the bulk transfer of water can be found in at least seven, mostly Southern, Member States. In Portugal Aguas de Portugal provides bulk water supplies (via 20 water systems) to municipalities that in turn serve over 7 million people. In Spain the 11 water basin authorities and 2 island water boards provide (i.e. sell) bulk water supplies to the local service providers. In Greece Eydap Assets is responsible for bulk water supply to Athens (supplying over 4 million people). In Germany there are the various "Verbande" which provide bulk water supplies to many local water utilities (one supplies over 3.5 million people in South West Germany). In Belgium there are various regional bulk supply organisations. In Brussels, for example, there are currently two separate water supply entities – CIBE is responsible for water production and IBDE is responsible for its distribution. In Austria there are around 150 local authority associations who supply the local water companies with bulk water. In Finland there are at least 3 examples of regional water production companies.

Also in some Member States a split can be found between sewage collection and treatment (e.g. Denmark, Benelux, Spain, Portugal, Germany and the Netherlands). Here, the municipality typically manages the sewage collection system and the treatment works is managed by a regional or multi-municipal entity. For example, in Germany local authorities manage the sewage collection, while the Länder administrations are responsible for identifying the public bodies for wastewater treatment. The Länder administrations may then delegate the wastewater treatment responsibilities to private parties. If the service provision is currently organised via a multi service provider, the ongoing liberalisation of energy sector may have impact of public-private partnerships (PPP) in water sector, as can be noticed in Sweden and the Netherlands.

The markets in which each water provider operates are of a heterogeneous character. The ways in which markets are organised are highly dependent on local arrangements and circumstances. It is therefore not an easy task that we have set ourselves in this chapter to discuss the structure and dynamics of the markets. Especially of interest to us is to analyse how the private sector is currently involved, as liberalisation of the water sector is one of the major issues of the book. In this chapter, we will address the different forms of private sector involvement, the emerging market opportunities and the extent to which they are exploited by the private sector. The relevance of our analysis is that it

might help policy makers and practitioners in the water sector to understand how markets are arranged elsewhere, and to see whether alternative market structures might also be adaptable to their situation.

Of course, to identify the structure and dynamics of the European water and sanitation markets at the pan-European and EU Member State level cannot be done without generalising some of the characteristics of the sector. To do this we constructed a framework to analyse market structures and market dynamics. Our analysis of the European water supply and sanitation markets takes as point of departure the 30,000 service providers that are operating in various markets. The objective of our analysis is not to assess in depth the characteristics of these markets in each individual Member State but to be able to provide a broad overview of the European water supply and sanitation markets.

The chapter is structured as follows. First, we will introduce the framework we designed for analysing the market structure and dynamics. Then we will apply this framework to single out distinctive markets within this framework. This description of each of the four markets is followed by an analysis of the driving forces to change relevant to these markets. The conclusion of this chapter will provide an overview of the assessment of the main characteristics of all markets, and an overview of the market forces.

THE INTEGRATED MARKET FRAMEWORK

Constructing a framework for analysing the water supply and sanitation market, with the aim to provide a better understanding of liberalising tendencies in the water sector, requires a relatively unconventional approach. Usually markets are in the water sector discussed in a fragmented and one-dimensional manner. Mostly the focus is solely on the users of water services; market analysis has in this instance a more demographical character, aiming to identify (growth patterns of) different user groups. Especially for the purpose of water demand management such studies are valuable. Other studies aiming to shed light on sustainability issues of the water resources, have as primary focus the amount of water that is abstracted (and discharged) into the natural environment by water service organisations. These studies are only placed in the context of markets in the (few) cases where the rights to abstract and discharge are transacted between market parties. A third approach towards analysing water supply and sanitation market is from the point of view of international operators that work on contract basis. Market opportunities for such companies, encompasses the potentially interested governments that may be willing to contract them. Indicative in this respect was the confusion on the term 'customer' in an interview with two representatives of an international operator. For the interviewees the 'customer' could be either the mayor or the water user (Interview SUEZ, 2005). The last and probably the most fragmented dimension towards analysing markets is from the point of view of the companies that sell their products and services to water service providers. If you are a producer of 9-inch pipes you will judge the market potential by analysing the demand for 9-inch pipes of water service providers. Each and every product that water service providers are or could be, procuring provides a potential for a market.

For the purpose of our analysis we find it important to make an effort to construct a multi-dimensional framework of the water supply and sanitation markets. As the central objective of our research is to analyse the introduction of competition in the water sector (liberalisation), we want to point out that there is already quite some competition in the water sector; it only depends to which market one is referring to. Moreover, by constructing a multi-dimensional framework, we will also be able to indicate the interdependencies between the various markets. This is important, as we will show that modification in the structure of one market can alter the structure and level of competition in other markets. Another reason for us to take an integrated approach is to enable us to present also the different degrees and types of competition that are possible in the various markets. We will show that in some water supply and sanitation markets the barriers to competition are very high; while in others many types of competition are possible. Other considerations that led us to construct an integrated framework was the desire to indicate the different types of dynamics in each of the markets and the different types of regulation to which each market is subordinated.

Engaging into an analysis of the European water supply and sanitation markets requires a proper definition of what constitutes a market, as there are many possible definitions available. Traditionally a market was the place where buyers and sellers meet to exchange their goods, such as a village square. Households use the term to the companies from which they can buy a well-defined commodity, for example to buy groceries at the super-market. From the point of view of the industry it is the other way round; the buyers are arranging their market as the buyers are the ones to sell their product to (Lipsey et al, 1987). We prefer the terminology as is commonly used by economists, being a market is a collection of buyers and sellers that transact a particular product or product class. Hence, a market is created when exchange takes place. Exchange is the act of obtaining a desired product from someone by offering something in return. For exchange potential to exist, five conditions must be satisfied (Kotler, 1998):

- There are at least two parties.
- Each party has something that might be of value to the other party.
- Each party is capable of communication and delivery.

- Each party is free to accept or reject the exchange offer.
- Each party believes it is appropriate or desirable to deal with the other party.

Whether exchange actually takes place depends upon whether the two parties can agree on terms of exchange that will leave them either better off (or at least not worse off) than they were before the exchange. Exchange is frequently described as a value-creating process because it normally leaves both parties better off. In the water supply and sanitation sector numerous types of exchange take place.

Probably the first type of exchange that comes to mind is the delivery of water services, as water from the tap or wastewater handling, to customers in return for payment of a tariff. The regulated transaction that makes up this market is the provision of drinking water or sewerage services to customers by the service provider. To refer to this specific market we address it as the '**market for drinking water and sewerage services**'. Each of the services provided composes a separate sub-market. For instance, there is a sub-market for industrial water, for domestic water and for wastewater. Even there is a sub-market for making the water connections of customers.

Another type of exchange is when the water company acts as the buyer, purchasing inputs vital to its' business process from various suppliers. The regulated transaction that makes up the market for suppliers is the delivery of all kinds of inputs by external suppliers to the service provider. Again, each of these inputs composes a separate sub-market. For example, one refers to the labour market when the companies 'purchases' human resources, to the capital market when the company seeks finances, the energy market to purchase the necessary energy or even the market for 9-inch pipes when the company needs this type for their operations. For our analysis we combine all these sub-markets under the umbrella term of '**market for suppliers**, being the market in which the utility is operating to purchase inputs for its' business processes.

For our analysis we excluded one specific input from the 'market for suppliers' in view of its uniqueness, being the right to abstract raw water and discharge wastewater. This '**market for water abstraction and discharge**' relates to the need for a water utility to 'purchase' raw water from the natural environment and discharge wastewater to the natural environment. In return sometimes the water utility needs to pay a fee for abstraction or discharge to the 'owner' of the water resources. The owner of the water resources needs to accept that the service provider is implicating its natural water resources via these transactions. The market for abstraction and discharge involves the ownership and possible trading of rights to abstract water from, and discharge wastewater into the natural environment. In this sense the "buyer" is the service provider, the "supplier" is the entity that controls or owns the water resources and the "regulator" is typically a national or regional body.

A fourth and final type of a market relevant for the water sector is the so-called '**market for delegated contracts**'. This is a relatively young market in which the seller is the responsible entity for service provision. It 'sells' the right to act as service provider for a geographical area to an operator. In return the operator can pay a fee to the responsible entity or can get compensated by gaining a profit from the service provision. The regulated transaction in this market is the granting of the opportunity to serve a monopolised water region. The entity that is finally responsible that the population receives water might choose from different parties to grant the right to operate the service provision. The 'market for delegated contracts' is especially relevant in view of the discussions about liberalisation of the European water supply and sanitation market. Most often when liberalisation is discussed it refers only to the 'market for delegated contracts'.

Hence four different markets emerge that together form the overall water supply and sanitation markets. As the water sector is a heavily regulated industry, each of these markets is subject to stringent regulatory regimes. The transactions in each of the markets are monitored and controlled by regulators. The nature and severity of the regulation will depend on the characteristics of each of the markets. In the market for drinking water and sewerage services the regulatory regime will be aimed at protecting customer interests, as the water service provider is a monopolist. Consequently regulatory interferences in this market will focus on controlling tariff and service levels. In the market for suppliers the regulatory interferences are of a different nature. They will be aimed at trying to establish a perfectly competitive market by establishing rules for tendering and regulating mergers between suppliers. In the market for delegated contracts the regulatory interventions will be similar to the market for suppliers in the sense that these trying to simulate a perfect competitive market, but moreover the regulatory regime will protect the general interest once the service provider has been installed. The regulator will see to it that the originally contracted and agreed upon targets are monitored and lived after. In the market for abstraction and discharge the intentions of the regulator will be aimed at ensuring environmental sustainability, for example through licensing of water abstractions.

Based on the above segmentation in markets, an analytical framework emerges that supports the analysis of both the structure and dynamics of the market (see Figure 1). The framework is based on the concept of regulated transactions.

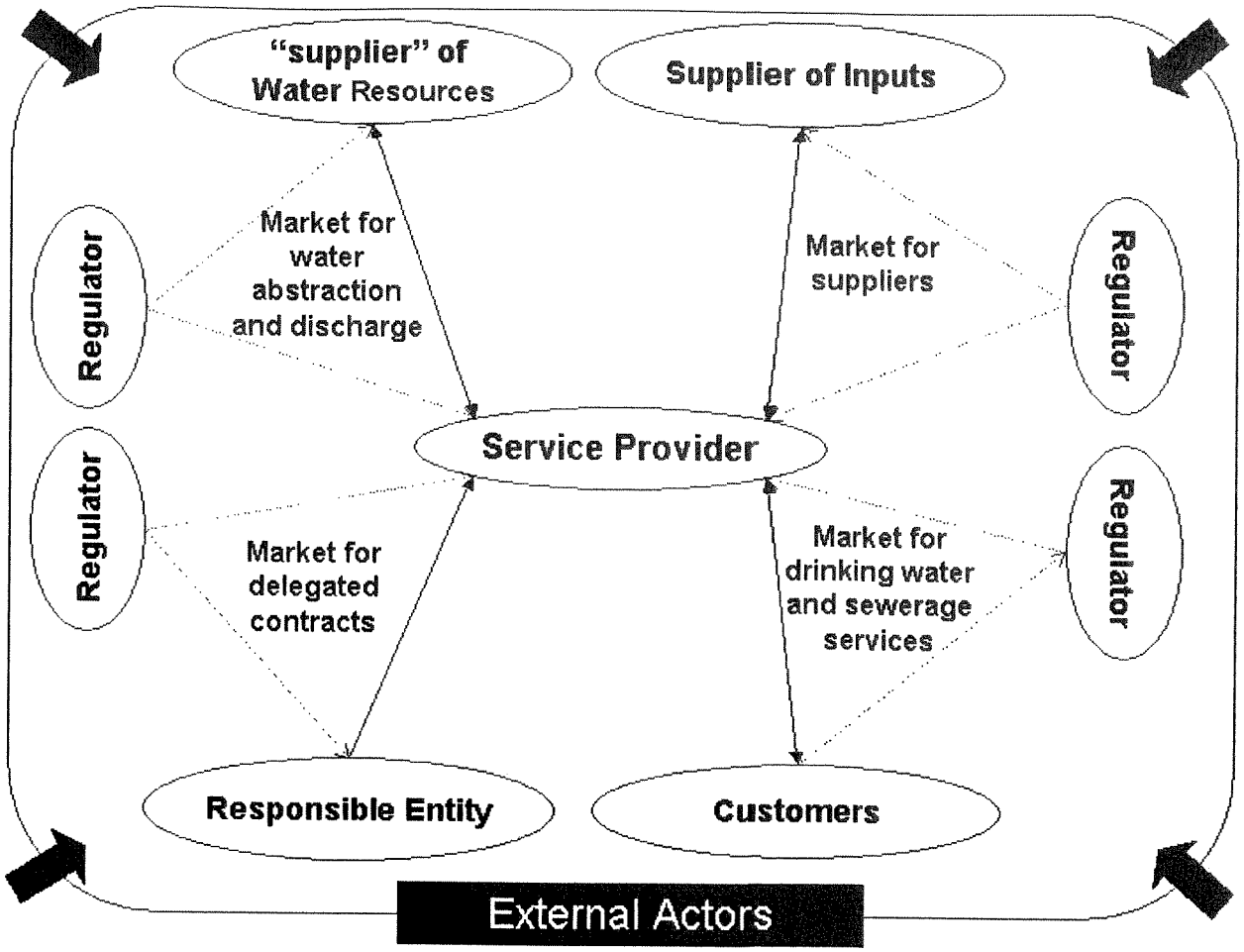

Figure 1: The butterfly-shaped integrated market framework

The, above presented, butterfly-shaped framework is based on the segmentation of the overall water supply and sanitation markets into four inter-related markets. Each of the four markets consists of a trilateral governance structure: a buyer, a seller and a regulator. By segmenting the overall market into four sub-markets we can explore the various interactions. Indeed some of the more complex linkages are not shown in the figure for presentational reasons. For example the environmental regulator might also interfere in the market for suppliers by imposing minimum requirements on supplier transactions as to avoid more indirect environmental implications. Another example of such more complex linkage is the interference of the regulator of the market for delegated contracts. The way the customers perceive the service delivery by the provider is an essential indicator for this regulator to possibly make regulatory impositions in the arrangement with the responsible entity. Often it is seen that one and the same regulatory body incorporates the regulatory regimes of several markets. For presentational reasons four separate regulators are identified, emphasising that each of the transactions that make of each of the four markets are subjected to different types of regulation.

Whilst the proposed analytical framework identifies four major markets, it is important to understand the interrelations between the markets. Attempts to introduce competition in one market will potentially alter the structure and dynamic of the other markets. Indeed the linkages between the responsible entity and the service provider in the market for delegated contracts, and the suppliers responsible for delivering the inputs and the service provider, can be seen to operate in tandem. The background behind this argument is the assumption that especially multinational private parties operating upon a delegated management contract will be inclined to make use of their own supply chain companies to realise corporate profit margins, instead of organising competitive open tenders for these services on the open market. For example when transnational companies (such as Veolia, RWE or Suez) act as service providers they bring with them their large network of their own in-house suppliers, enabling them to purchase the various inputs outside market for suppliers' competition. In franchise bidding in the market for delegated contracts, the various input

prices for operation, equipment supply, and cost of capital are effectively subsumed into a single bidding process that typically produces a single all-in price. Private Service providers in the market for delegated contracts may also be able to manipulate the market for suppliers by awarding contracts to associated companies on favourable terms. For example, the economic regulator Ofwat (Office of Water Services) in England and Wales is closely monitoring the transactions between the private operators and associated suppliers of inputs. When competition in the market for delegated contracts is fierce, the competition in the market for suppliers tends to weaken and the other way round. This situation is what can currently be observed in Sweden (illustrated in Box 1).

Box 1: A Swedish illustration of the interrelations between competition in the market for delegated contracts and the market for suppliers

99% of the Swedish 289 municipalities are currently managing their water and wastewater provision either as a municipal administration (Direct Public Management) or as a municipally owned limited company (Delegated Public Management). Competition in the Swedish market for delegated contracts is consequently almost absent as only a handful of examples exist of municipalities organising competitive tendering for the right to serve a monopolised area (today there are only 6 management contracts in Sweden). On the other hand the market for suppliers in Sweden is very competitive. As much as 70% of all goods and services needed to operate municipal water and wastewater works are brought on the market for suppliers in open competition. Most of these contracts are short-term contracts with renewal once a year or every second year (Lannerstad, 2003). The argument made by pro-public representatives is that within the Swedish water sector the combined level of competition in the operators and the market for suppliers is higher compared to countries with higher levels of competition in the market for delegated contracts, as for example France (Lannerstad, 2002).

In contrast, increased competition in the market for delegated contracts itself will probably require greater competition in the market for abstraction and discharge as it will increase the need to free up existing abstraction licenses and 'consents to discharge' through some form of trading, time limitation and/or regulatory intervention. Neither of the identified water and sanitation markets is operating in a vacuum. Each of them is constantly subject to influences from external actors; as non-governmental organisations, labour unions, environmental activist groups, academics, etc. These external actors provide a constant source of turbulence to each of the defined water supply and sanitation markets, although the level of influence is dependent on various factors. One of the major determinants of the level of influence is the presence in the market of powerful interest groups aligned to change or maintain the status quo. In cases where there is a large public interest and press coverage on the (potential) liberalisation of the water sector, as for example in Sweden, the water sector and its' structure finds itself in the middle of a public discussion. Also the lobbying of labour organisations can be influential as can be witnessed in Northern Ireland, where employees are lobbying to maintain their existing position. In other countries, as Greece, the interest of external actors is far less and the water sector can operate relatively autonomously.

Of major influence to any structural changes of the markets are the experiences gained with reform measures, such as in the framework of liberalisation policies. These experiences can be gained either within the water sector or in other sectors. For example, a driver to change for other Swedish publicly organised water providers were the experiences in the municipalities of Karlskoga, Norrköping and Norrtälje that experimented with private sector involvement. Specifically the English experiences with privatising water are often used as a benchmark. For example in the capital city of Scotland, Edinburgh, a massive campaign of many levels of the Scottish society was organised in the beginning of the 1990s rejecting English-style outright privatisation (Juuti and Katko, 2005). In countries like Sweden and the Netherlands, the English experience is often used as an indication of the dangers of involving private parties in the water sector (see for example Gustafson, 2001). Also successes and failures of the liberalisation of the electricity, the gas and the railway sector can be influential. In the Netherlands the problems related to the liberalisation of the railway system have created a lot of distrust in liberalising also other sectors. The same can be seen in Northern Ireland, with the relative failure of liberalising the electricity sector. On the other hand, if the experiences in other sectors, as for example in Scotland, are perceived as positive, this can be an important trigger to change also in the water sector.

The following section is dedicated to analyse the four identified markets in the framework. The diversity and heterogeneity of each of the markets will be a reoccurring issue in the analysis. Not only because each of the markets is a complex set of sub-markets and actors, also the markets can differ a lot from one country to another. The emphasis in our analysis will be on two specific markets, being the market for delegated contracts and the market for drinking water and sewerage services, as these markets are the most discussed ones in the whole debate pertaining to the liberalisation of the water sector. We want to underline that the mere fact that we elaborate more on these two markets does not mean that we consider the other two markets of less importance in the discussion on liberalisation. Putting it even stronger, it is our clear conviction that all four markets and their interrelations should receive due attention in any decision making

on reform measures. That is exactly the reason for us to construct the market framework, pointing out that it is of eminent importance to view reform measures in the context of all of the four markets.

The market for abstraction and discharge

In Europe the "supplier" of water resources and the "regulator" in the market for abstraction and discharge are in most cases the same body, often in the form of an environmental agency or a water basin agency. The state retains the right to allocate the resource between uses and fix environmental standards. Mostly the environmental standards are based on European Directives (see in particular the Water Framework Directive and chapter three). This environmental regulation affects the service provider responsibilities by introducing constraints over some activities such as wastewater treatment. Due to the regulatory impositions there is a need for more expertise, know how and infrastructure investments. The quantity of water resources available to distribute varies greatly across Europe (see Chapter two for a more detailed analysis).

The market for abstraction and discharge is not typically a true market because water rights to abstract water and discharge wastewater across the EU are typically issued and controlled by the nation state. Currently all Member states have some form of abstraction permits, even if implementation deficits are noticed in Belgium, France and Portugal for abstraction permits. Also it can be observed that abstraction charges are quite ineffective everywhere, except in Sweden. Implementation of these charges is lacking in Portugal and the amount withheld in Italy remains symbolic, as the charges are negligible. Concerning sewerage, the prohibition of direct discharges in surface water is implemented in most countries, except Spain and Portugal where the measures exist but implementation is partial (see also Chapter two).

In the market for abstraction and discharge there are only limited possibilities to introduce competition. The existing water rights in the form of abstraction licenses and 'consents to discharge' could be subjected to some form of trading, time limitation and/or regulatory intervention. Introducing such type of competition in this market has proved to be very difficult. There are only a handful of examples in parts of California, Australia, Chile and Spain in which water rights are traded. The reasons are manifold but can be traced back to traditional reasons for market failure. Incumbent licence holders, especially the private service providers, have little incentive to trade the right to abstract water and discharge wastewater, since these are fundamental to their operations. Also informational bottlenecks proved difficulties for organising such trades in a transparent way and setting acceptable maximum volumes for the trading system. The shifting of abstraction rights or discharge rights within a catchment area as a result of trades resulted in environmental externalities. In general, it could be argued that the risk of market failure is severe enough to restrict any wide scale adoption of liberalising the market for abstraction and discharge.

The market for suppliers

In providing water and sewerage services the provider must undertake and manage a number of specific activities. These can be defined as individual, possibly contestable, services or products that together represent the building blocks or inputs of the water and sewerage service provision. These inputs can be provided either by the service provider directly or purchased from external suppliers. They either relate to the day-to-day operational management of the service or to the infrastructure required to deliver the service. Three main actors are active in this market, namely the service provider, the suppliers of inputs and the competition authority. The European water providers purchase annually a total amount of 20 billion Euro (Eurostat, 2004), of which France is by large the biggest purchaser. The supplier of inputs can deliver individual products or services to the service provider or they may be partly or wholly bundled together through various contractual arrangements e.g. turnkey construction contracts or operational management contracts. Both infrastructure provision and operation services may also be bundled together in the form of design (D), build (B) and operate (O) contracts. The market for suppliers can be broadly divided in three main sub-markets:

1. Labour market

The sector in the EU15 member states employs in total almost 186,000 workers (Eurostat, 2004). Total employment in the water sector fell from 1995 to 1999 with an average of 1.2% per annum. Since then the employment index registered two years of 1.6% growth, followed by a fall of 0.3% in 2002. Larger member states as Germany and the UK did not exhibit similar patterns. In both of these countries the employment in the water sector was marked by a contraction, with an annual decline of minus 2.6% in Germany and minus 0.9% in the UK. A country like Spain showed an annual employment growth of 5.7% during the years between 1997 and 2002. Average personnel costs were Euro 38,100 per employee. The majority of the work force in the water supply and sanitation sector is male. The men make up almost 80% of the workforce. There is small portion of labour contracts that have a part-time character. Almost 94% of the contracts have a full time employment arrangement. An indication of the efficiency of the water providers is the

indicator of the wage adjusted labour productivity, which should express how much value each employee is generating. The 15 Member States recorded a labour productivity of Euro 83,799 per person employed in 20001, which results in a labour productivity ration of 219.7%, indicating that the value added was more than double the level of personnel costs. Also this figure is varying in the diverse member states:

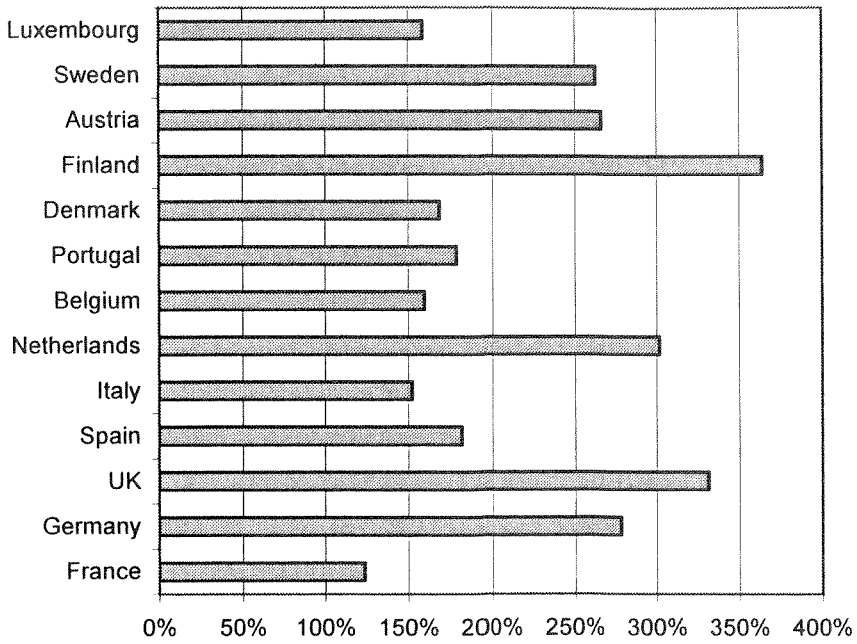

Figure 2: Wage adjusted labour productivity (Eurostat, 2004)

2. Markets for products and services

Numerous products and services are required and purchased separately by service operators. Service provider procures all kinds of materials. Not only pipes are procured, also chemicals and many other types of operational materials need be acquired. Moreover, in almost all cases, energy needs to be purchased. Typically these products are acquired in a competitive setting from private parties. Also numerous supporting services are procured to operate the infrastructure, such as leakage management, sludge disposal, and regular inspection of assets. Also support is hired to do the activities related to customer liaison and account management, such as billing, meter reading, debt recovery, customer complaint and enquiry handling. More general supporting activities that are required are activities as regulatory affairs, human resource management, accounting and finance, research and development, information technology, planning, property management, public and employee relations, and vehicle management. Also supporting scientific activities such as sampling, measurement, monitoring, data analysis and presentation are sometimes procured. Across the EU, the above-mentioned inputs are more service-oriented and are generally provided by the service provider itself. However, the private sector is playing an increasing role, either directly through being contracted for a fixed time period to provide one or more of the above services, or indirectly through being used as benchmarks for public utilities.

3. Capital market

The service provider requires access to capital finance such as bonds, loans, grants, retained earnings and possibly share equity, to fund both infrastructure provision and to a lesser extent working capital. Water providers are continuously in need for financing of their investments. Annually investments in water infrastructure encompass an amount of almost 9 billion Euros (Eurostat, 2004), distributed in the following manner over the member states:

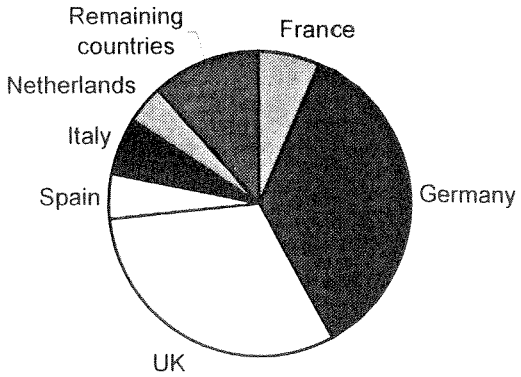

Figure 3: Gross investments in tangible goods in the European water sector in millions of Euro (Eurostat, 2004)

It is often argued that the discipline of the financial markets in the management and allocation of different risks is a vital ingredient in the potential success of private sector participation. Mainly banks are offering their services as suppliers of capital. In most European Member States public service providers have the opportunity to attract capital finance from the government or public banks at a lower rate than the market rate, outside the competition.

Competition in the markets for suppliers can be introduced as it involves various operational inputs, including contestable service contracts and turnkey infrastructure provision. Competition in the markets for suppliers is sometimes seen (in Member States such as Sweden and Germany) as a viable surrogate to competition in/for the operators and market for drinking water and sewerage services. There is also a possibility for comparative competition within the market for suppliers, e.g. market testing to assess transfer prices as undertaken by the responsible entity or the competition authorities (i.e. incentive based regulation of conduct). The market for suppliers is typically competitive, while the degree of competition varies between different product-service market segments. A high portion of the service provider's activities can be supplied directly by private parties. Member States with highly competitive market for suppliers generally produce internationally competitive suppliers. Germany and to a lesser extent Sweden, Finland and Denmark are the home of internationally renowned suppliers of water treatment technologies, pumps, process control and automation systems, and water quality monitoring equipment. An analysis of intra and extra European trade in 1995 for liquid pumps, water treatment equipment and water instruments highlighted that Germany was by far the leading exporter.

The market for delegated contracts

Typically the responsible entity for service provision is the municipal council. There are some notable exceptions to the municipal council being the sole responsible entity - especially where water and sewerage services are provided at a regional scale by service providers that operate under private law. Whilst the structure of local government varies across Europe it is evident that local government, by its very nature, is fragmented (see Figure 4). In 1998 Europe had about 73,460 municipalities, of which the vast majority had less than 5,000 inhabitants. This large number, along with cultural preferences, may help to explain the heterogeneity adopted as local authorities attempt to gain economies of scale. Local government has been reorganised in most Member States. The general move has been towards smaller municipalities either disappearing in larger authorities or working together in supra-municipal bodies. This has been mainly driven by the recognition that it is very difficult to provide the full range of municipal services in the smallest local authorities. The latest examples of such reorganisations are Greece, Portugal and Italy. Specifically for Italy the aggregation was also created to enable the establishment of an integrated system for water management. The larger the service area, the higher the attractiveness to the private sector to become involved, although as a counter force one could also assume that the larger the service area, the better incumbents are able to avert interference from international operators, as for example in Sweden and the Netherlands. Exceptions to this trend of consolidation of municipalities are France and Spain that have retained their smaller municipalities for a variety of cultural and political reasons. They have obtained the required economies of scale in service provision through franchising with large private sector companies and the extensive use of multi-municipal service provision. Hence the adoption of these institutional arrangements in the water supply and sanitation sector may partly be driven by the political decision to maintain the existing fragmented local authority structure.

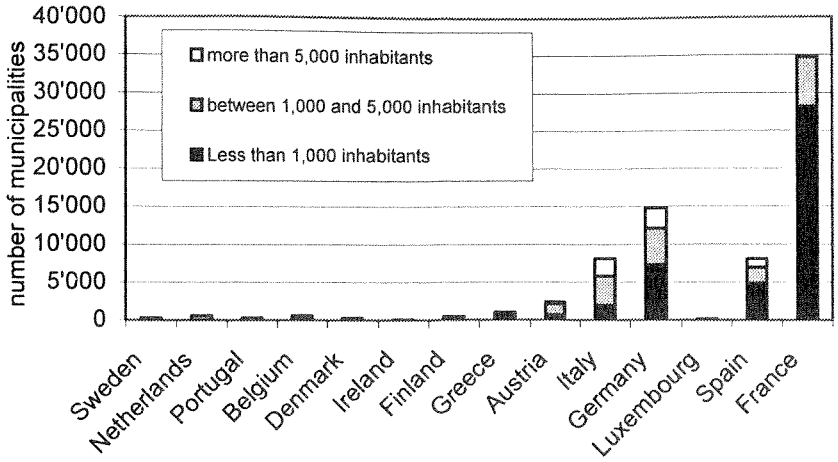

Figure 4: Number of municipalities distributed according to size (Council of Europe, 1998)

A large number of small municipalities acting as responsible entities and service providers may encourage associations, which may then be attractive to PPP. As indicated also by Camdessus (2003) there is a minimum size of a contract needed for private parties to become interested in a potential partnership. Added to this is that in cases of small-scale responsible entities often the expertise is missing to act as a full worthy partner in a PPP. Nevertheless, the need for private sector skills and finances may be felt harder if the municipality is smaller. Small municipalities find it difficult to maintain expertise so they are tempted to buy it in from private sector. Large municipalities, acting as responsible entities and service providers may be able to finance and manage systems very well, like in Sweden.

The responsible entities have several choices to make related to how they structure their relation to the service provider. It has something to sell, being the (temporary) right to serve inhabitants of a monopoly region with water services. It is this temporary right, which is the regulated transaction that makes up the market for delegated contracts. A system of regulation – informal or formal- is required to ensure that the public interest is served properly in transacting this right. The regulatory interventions in the market for delegated contracts are quite similar to those in the market for suppliers that also focus to create a level-playing field for competitors. Its' intention is to facilitate that the terms for competition are in place in transacting the right to serve a monopoly region.

The responsible entities need to structure their relationship with the service provider. In two consecutive studies across the European water sector, Eureau made this relationship their object of research (Eureau, 1992 and 1996). Although there are a number of differences between the Eureau studies and Euromarket, such as the exclusion of the wastewater sector in the Eureau studies, the concepts supporting the Eureau analysis are useful. Eureau managed to identify a number of communalities at pan-European level for the institutional relationship between the responsible entities and the service provider. These communalities provided a classification of management systems. Eureau's focus on a limited number of features reduced the large diversity of management systems in this manner. Although it needs to be acknowledged that systems in the same class might show significant differences. If we analyse the classification Eureau ends up with, two strong variables are paramount in shaping an institutional arrangement for the water supply and sanitation sector, namely:

1. Direct management or delegated management. The character of water as a good of public interest implies that the public sector (as the responsible entity) will assume the ultimate responsibility for service provision but the way that it arranges the management of the service provision is for the responsible entity to decide upon. It may choose to execute the management of the service provision itself, with a very limited degree of separation with a service provider. If the responsible entity decides to go for full divestiture as in England and Wales, also a situation of direct management is created since a new (private) entity takes over the service provision and assumes both the responsible entity's and the service provider's role. Another option is to rely on a service provider to execute the management of the services at arms' length, by providing the service provider with a certain degree of autonomy.

2. Public management or private management. Another dimension that reflects the institutional arrangement is whether the service provision is managed by public or by private actors. A responsible entity might choose to

involve the private sector to carry out the management of service provision, thereby bringing with it commercial attitudes, external financial resources and know how.

According to the EUREAU studies the identified groups may be placed on a continuum, where the link between the responsible entity and the service provider clearly decreases in strength from total dependence to total independence.

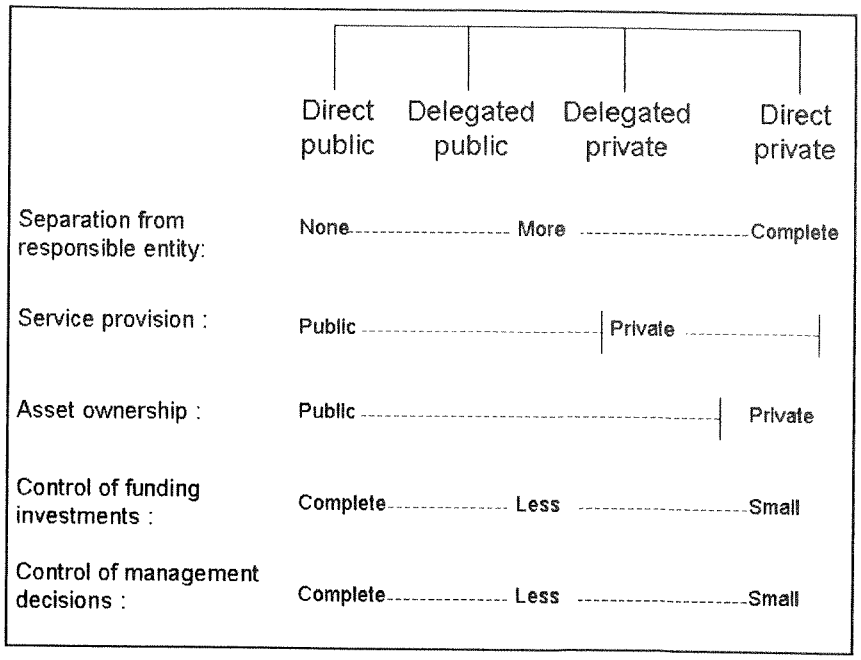

Figure 5: Comparison of the 4 defined institutional arrangements (IWA, 2003 modified by authors)

In some Member States responsible entities choose to have a service provider very close by, so they are able to directly influence its operations. If such an arrangement is chosen, the responsible entity needs to realise that there is a trade off. On the one hand, it might be easier for it to influence the service provider's behaviour, but it negatively affects the autonomy of the service provider. On the other hand, there is also a trade-off if the responsible entity delegates the service provision. Delegation might increase the degree of autonomy of the service provider, but the responsible entity needs to put in place a regulatory system to ensure that the operator does not abuse his autonomy status. Since it is common in the water supply and sanitation sector to separate ownership from managerial control, responsible entities find difficulty to ensure that the service providers work on their behalf, instead of letting their self-interest prevail. Therefore responsible entities set up regulatory impositions within which the service provider operates. In general, as the degree of separation between the service provider and the responsible entity increases, the more there is a need to put regulatory guarantees in place that the service provider keeps serving the public interest. In direct public management, regulation is accomplished largely through community governance (political oversight) rather than explicit regulation, while in delegated private management, the regulation is largely embedded in the terms and conditions of the service contract, which is negotiated with and endorsed by the responsible entities. For the most distanced arrangement, direct private management, regulation is typically accomplished through formal and independent regulatory authorities. The following paragraphs will discuss each of the four identified institutional arrangements in more detail.

Direct Public Management

In Direct Public Management, the responsible entity chooses to execute the management of the service provision itself. In this respect there is no real separation between the responsible entity and the service provider. As such direct public management can be characterised by the following distinctive features:

- Usually a department of the municipality undertakes the management of the water services, on behalf of the municipal council (being the responsible entity).
- Usually the service provider is not autonomous in selecting or hiring its' management.
- Since the service provider is a department of the responsible entity, the service provider is only in exceptions capable of making decisions on hiring and firing of staff.

- Almost always tariff setting is conducted by the responsible entity
- Usually the service provider is not autonomous in setting its' budgets, since they are part of the larger municipal administration and budgeting process.
- Usually the service provider is not autonomous in attracting external funds since its' access to funds is via the municipal administration.
- The service provider is not autonomous in deciding upon the quantity and quality requirements of investments, in view of the tight relation with municipal budgeting and investment planning.
- The responsible entity owns the infrastructure.
- Since the service provider has very limited autonomy, regulation and control is very direct from the responsible entity to the service provider.

In the past, Direct Public Management was by far the most widely adopted institutional arrangement that the responsible entities chose in order to organise the management of water services. The following table indicates which services are dominantly organised in this manner for each European country. As in all the clusters, variations between the Member States within this cluster are large.

Table 2: Countries dominantly organised as Direct Public Management

	The full range of water supply and sanitation services	***Only sanitation services***	***Only sewerage collection services***
Countries	Denmark, Luxembourg, Switzerland, Sweden, Austria, Northern Ireland, the Republic of Ireland, Finland	Germany	The Netherlands, Belgium

In many countries, for example Northern Ireland, this model is in transition towards alternative structures, but especially in countries as Luxembourg, Switzerland and Denmark the constraints for change are too strong for structural changes in the relationship between the responsible entity and the service provider to occur. In some countries still this urge to change can be found. For example, in Sweden smaller rural municipalities are rapidly merging their water and sanitation activities and entering Delegated Public Management arrangements to attain efficiency improvements and find a solution for the lack of funding for capital investment. A factor in some countries is the desire to create large players that can participate in the emerging market for abstraction and discharge in Europe, especially South East Europe. The main constraint to change in countries that are currently dominated by a Direct Public Management arrangement is the strong record of the incumbent service providers. Therefore the urge to change is absent. If change is planned, opposition mobilises in the form of labour unions, incumbent service providers and customer organisation, supported by the public. For example in Switzerland, with its' tradition of the public directly influencing political decisions through public polls, the opposition of the public towards liberalisation is large. In 2002 the public voted in a poll against liberalisation of the energy market, and after this result also liberalisation of the market for abstraction and discharge has not appeared on the political agenda.

Delegated Public Management

In Delegated Public Management, the responsible entity appoints a service provider to execute the management of water services on its behalf at arms' length. Often several neighbouring responsible entities (e.g. municipalities) combine the execution of water services for a region in one service provider.

- The service provider takes the form of a separate public company operating at arms-length from the responsible entity. The service provider's management is controlled as such by its' public shareholders. Although the service provider remains public, it is able to operate in a relatively autonomous fashion.
- Normally the nomination of the managers of the service provider is arranged for by the responsible entity.
- The service provider is autonomous in hiring and firing of staff.
- Tariff setting is usually delegated to the service provider
- The service provider is autonomous in setting its' budgets, although it is common that responsible entities have the final say on it since it affects tariff setting.
- As semi-autonomous entities, service providers have the ability to access funds beyond the responsible entity, although subsidies from the responsible entity are common for major investments.
- The service provider is autonomous in deciding upon the quantity and quality requirements of investments.

- The responsible entity normally owns the infrastructure. It needs to be noted that it is possible for the responsible entity to sell a minority of the shares to private parties. In that case still the institutional arrangement will be categorised as delegated public management. If the majority of the shares is sold to private parties, then a situation of devolving is occurring.
- Responsible entities are usually shareholders in the service provider, in order to be able to control the management. In some cases the responsible entity allows a minority shareholding from private investors.

The following table indicates which services are dominantly organised in this manner for each European country. As in all the clusters, variations between the Member States within this cluster are large.

Table 3: Countries dominantly organised as Delegated Public Management

	The full range of water supply and sanitation services	*Only water and sewerage treatment services*	*Only water services*
Countries	Italy, Portugal, Scotland, Greece	The Netherlands, Belgium	Germany

In these countries service providers operate in a more autonomous fashion. They remain within the public sector, although a possibility of minority private shareholding exists. Variations within this group of countries are considerable. In some countries experiments with delegated private management and majority selling of shares are undertaken but these are still on a small scale. For example, in Greece the two major water companies of Athens and Thessaloniki have allowed minority shareholding by the private sector and in Belgium the private sector is greatly involved in the wastewater treatment sector.

The main driver for change towards changing the relationship between the responsible entity and the service provider is the increased financial pressure due to investments required for rehabilitation and upgrading. For example, in Greece the need to improve the operating efficient of existing public sector bodies combined with the perceived failure of direct public management where it failed to cope adequately with a long drought from 1989 to 1993, has resulted in an increase in the separation between the responsible entity and the service provider. In the Netherlands, water utilities were historically set up under Direct Public Management, but were transformed in the last decades of the 20th century into delegated public management bodies. Today, initiatives are being considered in the wastewater sector for delegated private management but this is still in its infancy.

Delegated Private Management

In the Delegated Private institutional arrangement, the responsible entity appoints a private company for the management of tasks to be conducted on the basis of a time-bound contract (e.g. a lease or concession contract). In this respect the private entity assumes the role of the service provider.

- The private entity is independent from the responsible entity and acts as a contractor.
- The service provider is autonomous in nominating / appointing / selecting its' managers.
- The service provider is autonomous in hiring and firing of staff.
- The setting of the tariff structure is mostly arranged in the contract.
- The service provider is autonomous in setting its' budgets.
- Funding is arranged according to the type of contract. If it is a lease contract, the responsible entity will need to provide the funding for investment. If it is a concession contract, responsibility for funding is delegated to the private entity.
- The quantity and quality requirements of investments are regulated in the contract.
- The responsible entity retains ownership of the infrastructure. Although again the possibility for minority shareholding of the private sector is possible.
- The regulation is mostly decided in the contract, otherwise mediators and courts will be asked to solve conflicts

Delegated private management is becoming increasingly important in Europe, but only two countries can be dominantly characterised by it: France and Spain. The so-called French model attracts a lot of attention. The franchise bidding regulation is usually referred to as competition for the market; enabling a responsible entity to choose amongst several operators. The idea of competition for the market was first proposed by Chadwick (1859), although it was Demsetz who 're-discovered' Chadwick's work in 1968. In practical terms, competition for the market is established to grant an exclusive right to provide services for a given period of time. Competition for the market (gestion déléguée) is particularly common in France, where municipalities sub-contract their duties to a private company. Capital assets remain public property. If the winner is a private company, a Public-Private-Partnership is established, i.e. partnership between the public sector and private sector for the purpose of delivering a project or a service traditionally provided by

the public sector (European Commission, 2003). The degree of private sector involvement varies, from the operation of assets to financing of new investments. If there is any competition it only occurs at the bidding moment, when several companies compete to win, while during the contracting period natural monopoly exists. The right is mostly assigned by the responsible entity on the basis of minimum cost for the provision of the services required. As a result, theoretically, delegation is made to a more efficient service provider and prices are not monopolistic. Prices tend to average costs if the number of competitors is several.

Major drivers found in Spain and France are pushing towards further extending the degree of separation between the responsible entity and the service provider. The major drivers are targeted primarily at increasing the degree of delegation, not so much towards entering direct private management. There seems to be few drivers and many constraints to also consider direct private management. Most of the constraints have to do with the resistance to place goods of 'public nature', such as water services, completely in the hands of the private sector. Delegation to the private sector softens the financial pressure that the public sector is coping with and the belief is that it enhances efficiency. Successful local and international PPP experiences also trigger others to initiate more PPP arrangements.

Direct private management

The Direct Private institutional arrangement is characterised by the fact that the public authorities take a major step back as responsible entity and limit themselves only to control and regulation. All tasks, responsibilities and ownership are placed in the hands of private parties. The direct private institutional arrangement has the following features:

- The private party assumes full responsibility and is independent from the responsible entity, apart from regulatory issues.
- The service provider is autonomous in nominating / appointing / selecting its' managers.
- The service provider is autonomous in hiring and firing of staff.
- The service provider carries out tariff setting although this is mostly subject to a regulatory regime. In England & Wales the role of the Office of Water Services (Ofwat), being the economic regulator for water and sewerage services, is very strong with regard to the tariff setting
- The service provider is autonomous in setting its' budgets.
- As a private entity, the service provider can access funds as it chooses.
- The service provider is autonomous in deciding upon the quantity and quality requirements of investments.
- The service provider owns the infrastructure.

Direct private management is still only applied in England and Wales, where the private party has acquired the complete ownership and management of the water and wastewater services.

The market for drinking water and sewerage services

Customers can be conveniently split into three groups: households, non- households and neighbouring utilities. The majority of households are connected to both the public water supply network and the public sewerage system. Non-households encompass a broad range of different customer groups ranging from major manufacturing sites, to commercial sites, to government owned sites. The markets for drinking water and sewerage services really consist of a myriad of specific sub markets, as drainage, foul sewage, trade effluent, potable water supply, non-potable water supply, water for fire-fighting, interruptible or standby water supply, peak or off peak water supply, and connection to network. The service is therefore not that homogenous and this has important implications for any liberalisation policy. These services are supplied to a range of different customers, such as households and non-households, including the manufacturing industry, commercial sites and public buildings. Competition in the market for drinking water and sewerage services occurs when the position of the incumbent service provider is contestable by new entrants or neighbouring service providers. In principle there are four options for introducing competition in the market for drinking water and sewerage services:

1. *Competing networks*. The high costs associated with installing competitive networks prevent to implement this option. For the water industry, duplicability of assets is not feasible. This form of competition in the market may be allowed in the form of inset competition. In this case, competition may occur in the form of competitive bidding to supply new groups of customers. Once these are connected, however, a monopolistic situation is established.

2. *Private supply*. Private supply occurs when one consumer (self-supply) or a group of consumers (co-operative supply) supply themselves rather than rely on an incumbent service provider. In this case the local monopoly is broken by the presence of these self-suppliers. A condition to make this option feasible is that water resources are

accessible to customers, which are implicit in the monopolistic structure. The regular form to dispose wastewater is through the sewerage network although on-site trade effluent treatment facilities are also common across the EU. In some regions manufacturing industries club together to construct and operate joint industrial wastewater collection and treatment systems. For some industrial wastewaters it may be appropriate to tanker it to a neighbouring merchant wastewater treatment facility. This will depend on the nature of the industrial wastewater, the volume produced and the distance between the source of the wastewater and the merchant facility. The ability of manufacturing industry to adopt self-supply is effectively determined by the environmental regulatory agencies that control the right both to abstract water from and discharge wastewater to the water environment. In some Member States it appears that the right to self-supply may potentially be curtailed by the granting of exclusive rights to the service provider. It may also be curtailed by excessive standby/reservation charges levied by incumbent service providers. Hence we can say that self-supply is a potentially important source of competition within manufacturing industry but it is less so for households, commercial and public buildings.

3. *Retail competition.* Retail competition occurs when an entrant takes over the service provision in an area while continuing to purchase bulk water from the incumbent service provider. In this case the new entrant simply exploits a differential price between bulk and retail supply and does not invest in distribution facilities.

4. *Common carriage competition.* Common carriage competition occurs when several water utilities use a single network to supply customers, and customers can choose their water supplier, like in telecommunications. Competition can occur between vertically integrated suppliers sharing access to a single network or between many retailers that share access to a single network and purchase water from competitive bulk suppliers. In order to allow several operators to use the same network a basic issue is the network access problem. This way of introducing competition stated that provision of services over the network is not monopolistic and can be done in a competitive manner. Several suppliers compete for customers using a single network. In this system, the players are the customers; the retail suppliers, who purchase water from bulk supplier and sell it to customers; the network operator, who manages water network, compares retail demand and bulk supply through a water balance market; and the bulk suppliers, who sell water to retail suppliers and communicate supply to water balance market. They abstract and treat raw water. In common carriage, the market serves to equilibrate water demand and supply through an adjustment in tariffs. This system is competitive only if new entrants have the possibility to use incumbent networks. The implementation of this form of competition entails a significant institutional framework to develop an efficient bulk supply and network access regime. Apart from institutional design, problems may arise concerning water quality. Sharing a common network entails mixing different kind of water of different chemical composition, bacteria and other parameters, and consequently contamination risks arise. However, minimum standard obligation, in terms of maximum levels of harmful substances, colour and turbidity, could reduce this risk less likely.

Obviously the voice and opinions of the customers play a role in how the markets for drinking water and sewerage services are shaped, as they are the ones that procure the services. Some consumers may lobby if they feel they will gain from restructuring. Households may lobby against it, if they feel they will loose from any proposed restructuring. In England such can be noticed with large industrial consumers lobbying for more competition while domestic household representative groups are lobbying for a more public character of the water industry. It is of particular interest to focus on the current levels of customer perceptions. Eurobarometer (2002) has undertaken a pan-EU market research exercise for the water supply service in 2000 and 2002. This highlights customers' perceptions of the service that they are receiving rather than an objective assessment of the service that they actually receive. The results from the survey indicate that in a number of Member States there is a high level of dissatisfaction about water pricing levels. Dissatisfaction levels reached up to 50% in France and Eastern Germany. On the other hand, with some notable exceptions, as Italy, Greece, Portugal and Eastern Germany, the perception of the quality of service appears to be relatively good. Generally, the perception of service levels appears to improve as you move northwards. This may reflect a variety of factors as climatic, historic investments, and institutional arrangements. In terms of overall satisfaction levels there are substantial differences between the top and bottom performers. Some of the poor performers as Italy, France and Greece, are currently in the process of changing or modifying their existing institutional arrangements. It is interesting to note that customer dissatisfaction does not always correlate with higher prices. Satisfaction with price levels generally reflects a perception of good 'value for money' and not simply low prices.

The complexity of tariffs can vary – reflecting the extent to which the market for drinking water and sewerage services is a local/regional one, rather than a national one. In the below presented Table 4 different tariff measures are identified as currently present all over Europe.

Table 4: Tariff structures across the EU Member States

	Block Tariffs	*Free block*	*No Fixed fee*	*Unmetered households*	*Regionally Averaged charges*	*Permission for disconnections*	*Social tariff*
Sweden						Yes	
Finland							
Denmark				Yes			
Austria			Yes			Yes	
Germany						Yes	
Switzerland						Yes	
Netherlands					Yes		
UK			Limited	Yes	Yes	Yes	Yes
France	Yes/No					Yes	
Luxembourg	Yes						Yes
Belgium	Yes	Yes			Yes (limited)	Yes	Yes
Spain	Yes				Yes (limited)		Yes
Portugal	Yes						Yes
Italy	Yes				Yes		
Greece	Yes						Yes
Ireland	*No Household Charges Levied in Ireland*					Yes	

The responsible entity always maintains some control over the tariff (re)setting process. Statistics from Eurostat (2004) show that the price to supply water services increased every year during the period of 1993 to 2003, averaging 4 percent per year. It is the nature of this control that needs further investigation. It can be controlled by: an organised competitive bid with formal contractual tariff resetting mechanisms (contract regulation), active regulatory control (rate of return or price regulation), passive regulatory control (investigation only if tariff increases proposed or complaints made by customers), or some form of self regulatory control (municipal rubber stamping of budgets or prices proposed by the service provider). The relationship is further defined by the extent to which the other aspects are controlled by the responsible entity. This will ultimately determine the degree of separation between the responsible and service provider. Indeed it is evident that as control of aspects as investment decisions, financing, senior management appointments and ownership are ceded to the service provider, the responsible entity generally takes a firmer grip on price control.

In England and Wales, for example, each individual market segment has approved charges associated with it. Other Member States may have more or less complicated charging arrangements. Surprisingly the water supply market is probably more varied across the EU than the sanitation market. In a number of EU Member States no distinction is made between household and non-household customers. All customers pay the same unit price for water supply. This can be contrasted with countries as Greece, Italy, Portugal and Spain with increasing block tariffs, or countries as England and Austria that have declining block tariff structures. The degree of complexity of the sanitation market is relatively uniform across the EU. Most Member States appear to make a distinction between foul sewage and drainage services – with the former being charged according to the volume of water consumed and the latter as some form of property tax possibly determined by site area. The majority of service providers also apply trade effluent tariffs where industrial customers are charged according to their pollutant load. The service providers also apply connection charges for sanitation and water supply services and charge for the reception of tankered waste from septic tanks and cesspools. Here the market is effectively characterised by the method of structuring the blocks, typically, but not always, based on the volume consumed. In addition, there may be individual contractual arrangements for large industrial customers, as can be observed in Germany, France, and United Kingdom.

The regulation of the prices can be exercised by many different types of regulatory bodies. In some cases the price control can be exercised by State Departments as in the case of Ofwat in England and Wales and the Ministry of Public Works in parts of Greece. In other countries the control of the prices is in the hands of Regional Government Bodies either directly, such as the Regional Governments of Spain, or appointed, as the Italian ATO authorities or the Dutch water boards. In price monitoring rather than setting, also other governmental departments appear to play an important, if somewhat passive role. For example, the Competition Authorities in Finland, Austria and Germany continuously monitor price-setting regimes in the water supply and sanitation sector, as does the Ministry of Economic Affairs in Belgium and Luxembourg. New central regulatory bodies, with a more supervisory role, have also recently been established in Portugal and Italy. However, as yet, they do not appear to have any price control responsibilities.

There are targeted social tariffs in a few Member States. In England and Wales households with specified medical conditions or who are on specified benefits with three or more children can opt for a capped tariff. In some municipalities in Greece there are reduced bills for households with three or more children. In the Spanish region Murcia for example pensioners can obtain a reduced bill. In the Belgium region of Flanders retired people, families on minimum income and disabled people are exempt from sanitation charges. The heterogeneity of the water supply and sanitation markets is also influenced by the extent of direct government subsidisation and the extent of cross subsidisation between customers. The types of subsidisation measures along with their presence across the EU are profiled in Table 5.

Table 5: Types of subsidisation measures

	Large (>30%) subsidies	*Reduced VAT*	*Reduced WWT*	*Income support*	*Targeted Assistance*
Sweden				Yes	
Finland				Yes	Yes
Denmark				Yes	
Austria				Yes	
Germany		Yes		Yes	
Switzerland	Yes	Yes		Yes	
Netherlands		Yes	Yes	Yes	
UK		Yes		Yes	Yes
France		Yes		Yes	Yes
Luxembourg				Yes	
Belgium		Yes	Yes	Yes	Yes
Spain	Yes	Yes		Yes	
Portugal	Yes	Yes		Yes	
Italy	Yes	Yes		Yes	
Greece	Yes			Yes	
Ireland	Yes			Yes	

More generally, three Member State groups can be identified according to the extent of tariff measures and subsidisation measures:

Table 6: The extent of tariff and subsidy measures by Member State grouping

Three groups of Member States	*The extent of Tariff structure measures*	*Subsidisation measures*
Austria, Denmark, Finland, Germany, Sweden, Netherlands, Switzerland	Limited	Limited
Luxembourg, France, UK	Extensive	Limited
Belgium, Greece, Portugal, Italy, Ireland, Spain	Extensive	Extensive

Increased competitive activity will tend to unwind cross subsidies and possibly undermine direct subsidies. Competitive activity could result in substantial tariff rebalancing which could undermine public support for any proposed management system change. This may be an important market constraint in those Member States with extensive direct/cross subsidisation. It is also interesting to note that the nature of the institutional arrangement (or more specifically whether it is private or public in nature) does not necessarily correlate to the extent of subsidisation (especially cross subsidisation). For example, Member States with direct private management (e.g. England and Wales) and extensive delegated private management (e.g. France) appear to have important cross subsidies built into the tariff systems. This may be a reflection of the disparity in household incomes and the political desire to protect lower income families from what some experts like to call "water poverty". Another dimension of tarification that indicates of the heterogeneity of the market for drinking water and sewerage services is the element of time. The water supply and sanitation service provision could be considered as being time dependent. In other words the timing of the demand is just as important as the nature of the demand. For example, the service provided in summer is not the same as the water service provided in a non-critical period as the winter. Some Member States apply seasonal tariffs for water supply to reflect the importance of the timing at which customers make their demands for the service.

MARKET DYNAMICS

A myriad of different drivers and constraints (for and against liberalisation) exist across Europe at any given point in time affecting the structures of water supply and sanitation markets. While analysing these forces, a categorisation of driving and resistance forces can be identified according to three tiers (see Figure 6). The first tier of forces is related to the directly involved incumbent service providers and responsible entities. As these entities are either responsible for the service provision or managing the service provision, the influence they exercise is large on possible liberalisation. The second tier is the group of forces related to the more indirectly involved stakeholders, being the consumers, the press, the workers' unions and the private parties. More indirectly this group shapes the propensity and direction of liberalisation. The last tier that influences possible liberalisation of the water and sanitation markets has more the character of an exogenous factor, being the (perceived) experiences with liberalisation, either in other regions in the water sector or in other networking sectors. The influence of failure of success of flagship liberalisation project cannot be underestimated; they shape the perceptions of stakeholders and provide the context for policy making.

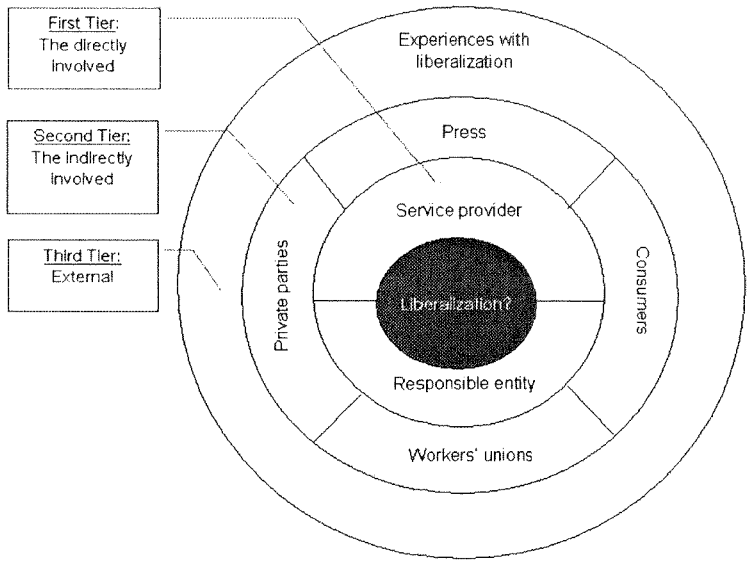

Figure 6: Overview driving and resistance forces towards liberalisation

In any given market, it is the balance between these driving and resistance forces that will determine the *propensity to change* the existing institutional arrangement. Historically, this balancing act has resulted in predominantly direct public management of the European water and sanitation sector. The nature of the driving and resistance forces will influence the *direction of change*. For example, the presence of powerful lobby groups for or against liberalisation may determine if the responsible government prefers to delegate the service provision to a public or a private entity.

The tier of entities that are directly involved

Two main actors shape the service provision, being the service provider that is executing the service provision, and the responsible entity that bears the final responsibility for the service provision to the public.

The service provider

Since it this entity that is currently in charge of executing the service provision, its' influence on any changes on the service provision is quite large. Several characteristics (see figure 8) of this incumbent service provider might trigger or discourage liberalisation. It is interesting to see that in different countries the same characteristics produces an opposite effect:

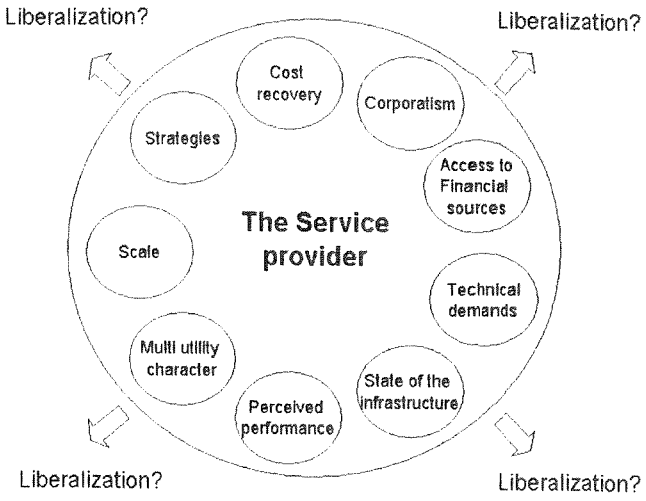

Figure 7: The service provider

- *The scale of the incumbent service provider.* For example in Sweden, Italy, Belgium, Switzerland and in the Netherlands it is believed that large incumbent service providers might be better able to maintain the required expertise themselves and avert interference from international operators. On the other hand, size also attracts private parties (Camdessus, 2003) since a minimum size is required to have a concession contract profitable in view of the transaction costs associated.
- *Corporatism of the service provider.* For example in Belgium, there is a situation where for a long time the service providers were used to work without political interference, except on retail price. The service providers as such do not specifically favour solutions that would increase competition, even if they remain passive to (partial) privatisation processes.
- *The strategies of incumbent service providers towards market expansion.* For example in Greece the ambition of the incumbents to exploit emerging market opportunities in the water sector, triggered partial privatisation of the two main water companies. An opposite effect can be witnessed for example in Scotland were worries about possible market entry by UK water companies that are searching for expansion, triggered a restrain on liberalising its market for abstraction and discharge. Also this can be seen in Northern Ireland where employees of the incumbent service providers are lobbying to maintain the existing distribution of economic rents.
- *The current level of cost recovery of the service provider.* If there are limited opportunities for full cost recovery, the incumbent is a less attractive target in the eyes of private parties, as for example in Northern Ireland.
- *The multi-utility character of the service provider.* An existing integration between energy, gas and water in one service provider might blur the distinctions between the sector characteristics. As such, a multi-utility character makes the influence of the ongoing liberalisation in the other networking sectors stronger (especially the implementation of the EC Directive 96/92 on energy liberalisation) since the perception will be more dominant that what goes for one in-house sector should also go for the other. An example of this driving force can be found in Germany and Switzerland.
- *The present state of the infrastructure of the service provider.* The need to upgrade existing infrastructure, leads to foreseen increased financial pressure. Liberalisation might pave the way for enlarged access to funds. This is at hand in many countries as Greece, Italy, the Republic of Ireland and the Dutch sanitation sector. If there is no real need to upgrade existing infrastructure, such as in Scandinavia, there is also no need to search for other financial sources. Apart from the state of the infrastructure also the readiness of sound information on the infrastructure can be important. For example there is a lot of sound information on the assets of Scandinavian incumbent service providers, which is particularly interesting for private parties since it enables them to make a sound risk assessment.
- *The (perception of) performance of the service providers.* If incumbent service providers are (believed to be) performing well as in Switzerland and the Netherlands, the urge to change might be lacking. While if there is, possibly due to high profile failures as the drought in Greece, a strong desire to improve the operational efficiency of existing public service providers in combination with a perceived efficiency of the private sector, this might trigger liberalisation.

- *The present access to financial sources of the service provider.* If the public incumbents currently have the possibility to access cheap government loans, as in the Netherlands, this might hinder liberalisation since a private party would not have access to these cheap government loans as it has increased costs of finance.
- *Technical demands on the service provider.* If there is a situation of increasing complexity of water and wastewater technology as for example in Greece, Italy, France and Germany due to environmental requirements on ground water abstraction and surface water discharge, there might be a need to involve private sector expertise and finance. Also for example the implementation of the European Directives affected in many countries, for example in Belgium, Portugal and the Netherlands, the required technical complexity and created subsequently a demand for private sector expertise and involvement.

The responsible entity

The responsible entity that is currently in place is another major factor that needs be acknowledged. Several drivers and constraints (see Figure 8) are identified related to its' position, set up and abilities.

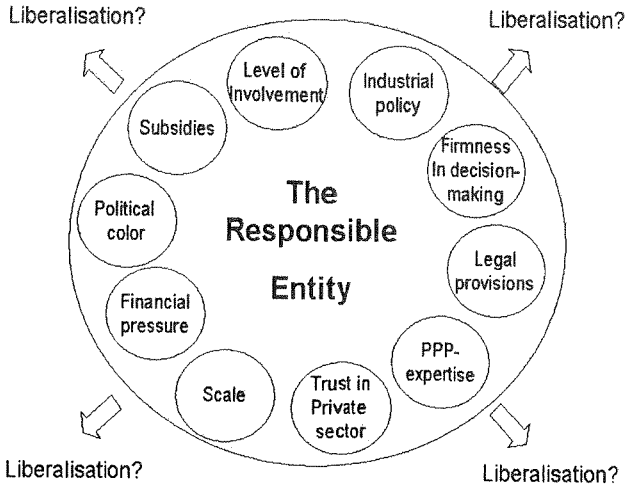

Figure 8: The responsible entity

- *The current level of influence of the responsible entity on the service provision.* If the incumbent service provider is highly dependent on government vagaries, this might seed the urge from the service provider to reduce the political vagaries in service provision by searching for alternative institutional arrangements. For example in the Scandinavian countries, the incumbent service providers are quite independent from government vagaries, and as such do not feel the urge to change. In other countries you see the opposite effect, such as in Northern Ireland and the Republic of Ireland, where the strong involvement of the central government, either as a direct service provider or a major source of finance, prevents private sector involvement.
- *The current level of subsidies the responsible entity provides to the service provider.* If subsidies are in place, as for example in Austria, the government might be more inclined to liberalise the sector trying to relieve the financial burden of subsidizing.
- *The current political colour of the responsible entity.* In general one could say that a reigning liberal or right wing national/local political majority tends more towards adopting a pro-Liberalisation approach, while a reigning social democratic or more left wing national/local political majority is more resistant towards liberalising public services. Although one could say that political parties are acting within the national political dogmas. For example in Sweden and Belgium liberalisation is neither by right wing nor left wing politicians advocated, while in Greece both political sides choose liberalisation.
- *The current financial pressure on the responsible entity.* For example, conforming and/or joining the Economic and Monetary Union and the stability pact criteria pressured the Greek, Spanish and Belgium governments to reduce public debt and triggered the partial privatisation of water companies to generate additional financial resources. Other examples are the Republic of Ireland and Portugal, in which a decline in EC Regional Funds led to a search for alternative sources of finance. Also in Swedish and German municipal governments, the desire to reduce the financial burden on the public budget triggered the involvement of private parties.

- *The current scale of responsible entity.* A large number of small municipalities acting as responsible entities may encourage associations, which may then be attractive to PPP. For example in France, Belgium, Portugal and the Republic of Ireland, PPP is used to create multi-municipal structures and hence gain economies of scale.
- *The current level of trust the responsible entity has in the private sector.* For example, the long history of interaction and hence trust between private and public sectors in France provides a good basis for partnerships, while for example in the Republic of Ireland there is only little confidence and trust in the private sector possibly due to a lack of historical relations.
- *The current level of PPP-expertise of the responsible entity.* If regulatory expertise or general expertise about PPP is lacking, such as for example in Sweden, this attributes to the hesitance of introducing private sector involvement, while if it is available or readily obtained from neighbours, such as in Scotland at least this element does not form a constraint to a future liberalisation.
- *The firmness of the responsible entity in decision-making.* If politicians are unable or unwilling to take the blame for an increase of tariffs they might be inclined to use the private sector as an instrument to undertake a politically difficult task. While if politicians are firm in their decision-making, such as in Scandinavia, Denmark and Luxembourg, where politicians are willing and able to introduce tariff increases and undertake considerable efforts to comply with the Water Framework Directive.
- *The current legal provisions in place that encourage PPP.* For example in the Republic of Ireland, Spain and some German Länder, private sector involvement in the water and sanitation sector is already currently arranged for, while in other countries, such as the Netherlands, Italy and Sweden, there still are major legal constraints to PPP. On the other hand the current "pipeline developments" at EU level indicate that the European Commission is looking for ways to heighten the exposure of the European water sector to competitive forces. If these developments would materialise in legislation it would definitely trigger liberalisation processes.
- *The industrial policy of the responsible entity.* For example in Belgium, the industrial policy of the government triggered an up scaling of regional companies to allow them to develop activities abroad. Politicians hope that the current investment in the wastewater sector will benefit to regional construction companies and will contribute to a regional capacity building in the WSS sector. Also the German Bundestag initiated a so-called "Sustainable water management policy" (BT-Drs. 14-7177 of 21 March 2002) that targets at reaching optimisation and the efficiency gains through modernisation of the present system. The constituent policy elements will affect the organisation of the sector and may lead to shifts in the present structure as well as to increased competition and private involvement. In contrast, Spanish politicians use the argument of public responsibility for sustainable aquatic ecosystems to enhance the need for public management responsibilities in the water sector.

The indirect involved stakeholders

The second tier of forces affecting liberalisation is the influence that stakeholders and pressure groups are able to exercise. The following main groups can be identified:

- *Consumers*: If the consumers pay a relatively low price for water and sanitation services, as in Switzerland or Northern Ireland, or if they feel they might loose from any proposed restructuring, as in the Netherlands and England and Wales, the consumers might be inclined to block changes through public consultations. A specific group of consumers that exercises influence are the large industrial consumers, they might be able to install a lobby if they feel they will gain from restructuring, such as in hand in the Netherlands and England and Wales with regard to expanding competition.
- *Workers' unions.* The fear of job losses due to private sector involvement in the water and sanitation sector might trigger them to lobby against liberalising the sector, such as happened in Northern Ireland.
- *Press.* If the press is extensively involved, such as in Sweden, this obstructs the liberalisation process since some politicians might be inclined to play the public sentiment on this controversial topic. If the media does not feature the liberalisation, such as in Greece, implementing private sector involvement might turn out easier.
- *The private sector.* Lobbying by private companies who want access to economic rents might be a driving force for liberalising the sector, such as at hand in France and Spain. Also for the Belgium situation, an unpredictable element in the transformation process of the water sector is the interest that private parties, as Suez and Veolia, might have in their regional operators.

Perceived liberalisation experiences

Apart from the direct and indirect incumbent parties within the water and sanitation sector, an import factor that influences possible liberalisation is the experience with liberalisation elsewhere, either in other parts of the country,

other countries or other sectors. Even before liberalisation is on the agenda, one of the first things one will look for is to assess the success or failure elsewhere, and to use these learning experiences for their own situation. Local evidence that PPP in neighbouring utilities in the water sector is working well might convince other to also enter a PPP process, as in Sweden or the pioneering Dutch DBFO contract in Delfland. Also the experiences abroad of private parties successfully executing the water services provision might convince. For example in Scotland, the efficiency of English water companies is shown as a success and something to aim for. Interesting enough, the experiences in England and Wales with involving private parties are used, by for example the Swedish media, as a negative experience of private sector involvement in the water sector. Also in international benchmarking the Swedish water sector comes out positively. On the other side if international benchmarking surfaces a poor performance, such as for the Greek public sector, this might trigger private sector involvement. Also liberalisation experiences in other sectors might provide either a driving force or a resistance force towards liberalising the water and sanitation sector. Local evidence that PPP works well in others sectors, as in Scotland, definitely triggers PPP in the water and sanitation sector. On the other hand when liberalisation in other sectors turns out negatively, as for example the privatisation of electricity in Northern Ireland, of the railways in the Netherlands, opponents use these disappointments as arguments against liberalisation of the water sector. Another influence on the perception on possibly policy development with regard to liberalisation is shaped by examples of corruption related to private sector involvement experiences (for example Grenoble and Milan).

CONCLUSION

The European water supply and sanitation markets are both complex and multi-faceted. In practice it consists of four closely interrelated markets – the market for drinking water and sewerage services, the market for suppliers, the market for abstraction and discharge, and the market for delegated contracts. It can be concluded that some of the identified markets are more open to competition than others. Hence, it is important not simply view the water supply and sanitation market as one amorphous whole but as a set of services with associated transactions that require detailed consideration on a case by case basis. The potential for competition *in* the market appears to be restricted to a relatively small part of the infrastructure system, being those parts that do not exhibit the potential for major market failure. It appears that the majority of transportation/storage network is monopolistic in character. Competitors in the potentially competitive parts of the market will therefore require access to these assets via unpractical common carriage arrangements. The potential for common carriage is also hindered by the need for unbundling and the high regulatory costs associated with the need to minimise information asymmetries and the need to maintain coordination following possible deverticalisation. Adequate regulatory procedures also need to be introduced to deal with the management of the health and environmental externalities. Access pricing methodologies will also need to be developed to deal with the subsidies that are inherent in the water supply and sanitation market. All of the above regulatory activity to control potential market failures will be very costly to implement with unproven market efficiency rewards. Potential market failures are not insurmountable but remedies do involve potentially substantial transaction costs. The underlying question is whether these costs are outweighed by the potential economic benefits of this form of liberalisation.

Public management still predominates in the EU water and sanitation market, although there has been some change in the nature of this public management. For example, there has been a shift from direct public management to delegated public management in Belgium, Switzerland, the Netherlands and Germany. It is evident that there has generally been no large-scale move toward direct or delegated private management in most Northern Member States. This is in contrast to a number of Southern Member States, as Spain, Greece, Portugal and Italy, where private sector participation has gradually increased over the past decade. The increase in private sector participation in the Southern Member States is mirrored in the sanitation sector. Interestingly, and in contrast to *water supply*, in a number of more Northern Member States, as the Netherlands, Belgium, Austria, Ireland and Scotland, there also appears to be increasing interest in private sector participation within the *sanitation* sector. In the two Member States with the highest level of private sector participation, France and the UK, there have been limited moves to increase the competitive pressures on the incumbents.

In determining the extent and limitations of competition in the water supply and sanitation markets, the key issue appears to be the assessment of possible economic benefits of liberalisation when compared to the transaction costs associated with the need to control various possible market/regulatory failures. This assessment of costs and benefits can only be undertaken on a case-by-case basis, as it will be determined by the conditions that exist prior to any proposed change. Essentially the optimal liberalisation path (if there is one) will be different for each local or national context. It is evident from our analysis that liberalisation is either:

- Very difficult in the case of competition *in* large parts of the market as a result of the potential for severe market failure, and the associated large transaction costs; or
- Particularly intensive and possibly costly, from a regulatory perspective, in the case of competition *for* the market, or comparative competition to remedy the more minor market-regulatory failures.

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