



018530 - SWITCH

Sustainable Water Management in the City of the Future

Integrated Project

Global Change and Ecosystems

D 6.4.3 Financing of and Cost Recovery in Urban Water and Sanitation

Meine Pieter van Dijk UNESCO-IHE Delft, the Netherlands

Due date of deliverable:

Actual submission date: September 25, 2010

Start date of project: 1 February 2006

Duration: 63 months

Project co-funded by the European Commission within the Sixth Framework Programme (2006-2011)		
Dissemination Level		
PU	Public	x
PP	Restricted to other programme participants (including the Commission Services)	
RE	Restricted to a group specified by the consortium (including the Commission Services)	
CO	Confidential, only for members of the consortium (including the Commission Services)	

SWITCH Deliverable Briefing Note

SWITCH Document 6.4.3 Financing of and cost recovery in, plus the institutional arrangements for water and sanitation. Delft: UNESCO-IHE, 2010, 32 pages ¹
Audience This document was prepared for policymakers, engineers, accountants, state or federal planners, etc. and in particular urban water managers that would like to rethink their approach to urban water management, where in the future systematic efforts will be made to tap other sources of finance and to set up healthy cost recovery systems.
Purpose The purpose of the document is to explore alternative approaches for sustainable urban water management through the method of cost benefit analysis. It aims to show how different sources of finance can be used for viable technological alternatives. The expected results of the research should help decision makers to select the more suitable solutions.
Background The document is a step towards the development of an overall SWITCH approach to integrated urban water management, but does not try to use the experience of Switch cities only.
Potential Impact The research argues that sustainable water projects will also have to be financially sustainable.
Issues <ol style="list-style-type: none">1. How to prepare projects to make them attractive for alternative sources of finance2. Principle for cost recovery and the importance of thinking about recovery from the start
Recommendations Consider alternative sources of finance, but that means preparing your projects for it and suggesting healthy cost recovery systems from the start.

¹ Originally the title of this delivery was: A study of the institutional arrangements in different demo projects and selected cities to obtain finance and to assure cost recovery. Due to a lack of data from the project cities the study is more general on the agreed topics.

Contents

Summary.....	4
1. Introduction.....	5
2 Should we go for private sector involvement in drinking water and sanitation?	8
3 Developments in the field of water and sanitation.....	16
4. Why study financing mechanisms and cost recovery systems?.....	18
5. Financing water and sanitation, what is the problem?	20
6. The need for cost recovery and tariffs?	22
7. Financing instruments available?	23
Conclusions.....	29
References.....	31
Notes	33

Summary

This contribution deals with financing of and cost recovery in urban water and sanitation systems. The problem in developing countries is that not everybody has access to safe sanitary services and the institutions to provide these services may not be in place. Not enough has been invested in the past and because of the cost of complete drinking water and sewer systems other (private and non formal) solutions may be necessary. Finally often no system has been put in place to recover the cost of the investments in water and sanitation. What does this mean for ordinary people in the developing world and what experiences have been gained in different cities with financing and cost recovery and the way this has been organized?

1. Introduction

This delivery deals with financing of and cost recovery in urban water and sanitation systems. Water refers to drinking water and sanitation is defined as safe collection, storage, treatment and disposing in a hygienic way of waste, including human excreta (faeces and urine), household waste water and rubbish at an affordable rate in a sustainable manner. The problem in developing countries is that not everybody has access to drinking water and safe sanitary services and the institutions to provide these services may not be in place. Not enough has been invested in the past and because of the cost of complete drinking water and sewer systems other solutions may be necessary, for example incorporating informal solutions (Van Dijk, 2008c), or involving the private sector more. Often no system has been put in place to recover the cost of the investments in sanitation. What does this mean for ordinary people in the developing world and what experiences have been gained in a number of South cities? It has been said that water is life and because people have no water and no toilets, life is miserable for many people.

Already the Camdessus report in 2003 (Winpenny, 2005) suggested that to achieve the Millennium Development Goals (MDGs), an additional US\$ 32 billion per year would be necessary and if a broader definition of sanitation is used, including treatment of all municipal and industrial wastewater and solid waste, US\$ 100 billion a year would be necessary. Later the Gurria report (Gurria, 2006) also emphasized the need for more financial means for the water and sanitation sector and encouraged developing countries to look at other ways of financing this sector (EC, 1994). We can point to a number of factors making sanitation compared to drinking water supply issues more important to deal with in Third world cities (box 1).

The Millennium Development Goals (MDGs) want to halve by 2015 the proportion of people without sustainable access to safe drinking water. In Johannesburg it has been agreed to halve by 2015 the proportion of people without access to basic sanitation. Financially this translates into a doubling of investment needs from \$15 billion to \$30 billion per year for water supply and sanitation alone (as part of \$180 billion a year for all water related activities). The following box lists the main challenges for the sanitation sector in developing countries; most of them apply for drinking water as well.

Box 1 Factors making water and sanitation issues more important

1. Economic growth, leading to more demand for sanitary services and more pollution of the existing resources
2. Population growth and increased urbanization, leading to more demand for these services and to more pollution
3. Concerns about the health of the people and the environment
4. The trend to increasing the scale of production and to go to wards bigger utilities and more modern equipment
5. Government failure to deal adequately with the issues
6. Market failure: in a number of cases related to water, the private sector has not stepped in to solve the issues
7. Increasing critique on the poor management of utilities concerned
8. The search for achieving economic, environmental and social sustainability
9. Climate change, which may lead to less or more water
10. 10% of the world's food is grown with water from aquifers which are being depleted faster than the rate of recharge and risk to be infected if no proper sewer systems are in place.

Box 2 Main challenges for the water and sanitation sector in developing countries

Main challenges in sanitation sector in developing countries

Institutional challenges <ol style="list-style-type: none">1. No regulation to encourage proper sanitation practices2. Weak institutional framework3. Lack of clarity of institutional roles and responsibilities4. Lack of focus on sanitation and waste water
Technical challenges <ol style="list-style-type: none">1. Water resource pollution2. Deteriorating infrastructure3. Low sanitation coverage
Social challenges <ol style="list-style-type: none">1. Unsustainable project outcomes2. Community resistance3. Low hygiene awareness
Financial challenges <ol style="list-style-type: none">1. Inadequate resources2. Low or non-existent tariffs3. Lack of financial sustainability

Source: ADB (2007) and CD ROM sanitation. Manila: Asian Development Bank

In this report for Switch we will discuss the following questions in seven chapters with this question as their title:

1. Should we go for private sector involvement in the drinking water and sanitation sector?
2. What are relevant recent development in the field of drinking water and sanitation?
3. Financing mechanisms for water and sanitation, what is the problem?
4. Why is financing and cost recovery important for water supply and sanitation?
5. The need for cost recovery and tariffs
6. Which financing instruments available?
7. The need for cost recovery and tariffs?

We intend to give an overview of the issues, mention two innovative examples of innovative financing and cost recovery and dwell briefly on the use of micro finance for water and sanitation. At the end some conclusions will be drawn about the role of small scale providers for drinking water and sanitary services, the optimal scale and technology

of the equipment used and the involvement of the users in it, which is generally considered as more favourable..

This deliverable could serve as the basis of a course on financing and cost recovery in drinking water and sanitation. Box 3 summarizes the learning objectives of such a course.

Box 3 Learning objectives of a course on financing and cost recovery in drinking water and sanitation

At the end of this course:

1. The participant will not only be able to understand the importance of different ways of financing water infrastructure, but also understand the need of cost recovery systems and of fixing tariffs
2. Participants should also be aware of the importance of, and constraints to, the development of local financing mechanisms for sustainable, pro-poor WASH services and
3. Conversant with role of different actors to access local financing mechanisms and
4. Able to identify the elements of an enabling environment required for effective financing mechanisms

2 Should we go for private sector involvement in drinking water and sanitation?

Private sector involvement (PSI) has been the trend in the 1990s, stimulated by the so-called Washington consensus and the Dublin principles (formulated during a UN conference in that city). The Washington consensus was originally a list of ten reforms presented by Williamson (Williamson, 2002) as a summary of what people in Washington thought Latin America ought to be undertaking as of 1989. Liberalization is three times in the list and privatization and deregulation each once. The Dublin principles provide the arguments to consider water an economic as well as a social good. This decision was taken in 1992 during a conference in Dublin. After a decade of experiments and experiences of Private sector involvement in the water sector we can draw up the balance of the impact of Private sector involvement on the water sector. Nijkamp et al. (2002) stress that it is difficult to define an unambiguous balance between the task and competences of the public versus the private sector. To reconcile public and private sector interests new institutional arrangements with the private sector have developed and will be analyzed. There are theoretical and practical arguments used to explain why

private sector involvement is more frequent in sanitation than in drinking water supply (see box 4).

Box 4 Supply of sanitation by private operators

Private supply of sanitation

Current situation:

- Poor coverage, no safe sanitation, no security for women
- Poor maintenance of existing sewer systems
- Poor cost recovery
- Nil treatment
- Negative external effects on health & environment

Arguments for private sector involvement:

- Shortage public funds
- Insufficient institutional capacity to provide sanit.
- Link it to water supply
- Allows introduction betterment tax
- Improves health and environmental conditions
- Stimulate reuse & treatment

Private sector involvement will be defined as the situation between complete private supply of water and complete public water utilities with minimal Private sector involvement. The debate about Private sector involvement in the water and sanitation sector is often very politicized (Castro, 2003; Prasad, 2006 and UNRISD, 2004).ⁱ The last reference emphasizes for example that after nearly a decade of experimentation with commercialization and private sector participation in water systems around the world, the results are disappointing. Others argue that water has become a commodity, while it should be free for all. The Dublin principles emphasize the economic nature of water and even if water is freely available, transporting and cleaning will still cost money.

We want to distinguish different institutional arrangements in the water sector and analyze the momentum private sector investments have provided to the water sector. In this contribution we focus on defining four different ways of private sector investment and provide an overview of the different options. We distinguish four situations, which will be defined more precisely below, where we also introduce the contributions fitting under each of these headings:

A. Completely publicly owned water utilities with very little or no private sector involvement

- B. Private sector involvement (PSI) without participation in the investment risks
- C. Different types of PPPs with participation in the investment risks
- D. Completely private provision of water and sanitation.

Table 1 summarizes the four types of institutional arrangements for private sector involvement (ranging from completely public to completely private). The element of risk sharing in investments has been taken as the defining characteristic to distinguish PPPs from other types of private sector investments (Nijkamp et al., 2002 and Pongsiri, 2002). We indicate for each type where the theoretical framework can be found. We will introduce these four institutional arrangements and mention a country where an example can be found in the water and sanitation sector.

Table 1 Four types of institutional arrangements in the sanitation sector

1. Publicly owned utilities with no Private sector involvement (PSI)	2. PSI without participation in the investment risks	3. PSI with participation in the investment risks (PPP)	4. Completely private provision of sanitation
Mimicking the private sector (Schwartz, 2008)	Theory and different forms discussed in Schouten and Van Dijk (2008).	Theory discussed in Van Dijk (2008a): Why PPPs in basic service delivery	Theory discussed in Van Dijk (2008b) The role of small scale private suppliers
Cases Zambia (NWASCO, 2009)	Cases Ghana (Nyarko, 2008)	Cases India (Van Dijk, 2008b)	Cases West Africa (Van Dijk, 2008c)

A. Completely publicly owned utilities with no private sector involvement

In many countries the usual way of providing water and sanitation is through completely publicly owned utilities with no or very limited private sector involvement. In about 95 percent of the countries in the world the utilities are still owned by the government, and Private sector involvement is very limited. These public providers were often criticized for not being efficient and reforms were suggested at the water sector and the utility level (Van Dijk and Schwartz, 2004).

The challenge is still to improve their functioning by for example introducing elements of the New Public Management (NPM). One of the ways of improving efficiency in completely publicly owned utilities can be mimicking the private sector. Schwartz (2008)

is summarizing the theories behind this institutional arrangement. He discusses critically the NPM theory, which provides the framework that often inspired this type of reforms. This idea of mimicking the private sector is illustrated in a case study of Zambia (NWASCO, 2009), where the NPM reforms have been achieved, and an independent regulator has been created for public sector utilities. The Zambian case shows that an independent regulator (which normally serves to regulate a private operator) can also have impact in a case where there is not much private sector involvement. In Zambia regulation for the public sector has been introduced and seems to be effective. Zambia is also the case where regulation for small private service providers in the water sector has worked in the case of the water trusts (Kariuki and Schwartz, 2005). Schwartz (2008) concludes that the most prominent reform strategy in the water supply and sanitation sector of the past two decades in Zambia has been to introduce institutional arrangements and management practices that previously were only associated with the 'private sector'.

B. PSI without participation in the investment risks

Usually complete public ownership still means that anything between 10 and 50 percent of the activities are outsourced to the private sector, because the public utility doesn't do the billing and collection, operation and maintenance, strategic studies, or studies for new infrastructure developments, etc (EIB, 1995). However, this is not complete private supply (either large scale like in the UK or small scale as in many developing countries), nor Public Private Partnerships (PPP), where private partners participate in the investment risks.

The challenge is to make PPP contracts "pro-poor". An example of an agreement reached between a municipality and a local non-governmental organization, or what could be called a Public-Private-community Partnership (PPcP) concerns young people collecting waste in certain neighbourhoods for a fee. They use donkey carts as an appropriate technology for this purpose. Such a PPcP exists for example in Bamako Mali (www.waste.nl).

In the 1990s reforms in the water sector started and Private sector involvement was proposed. PPPs may be the best-known category in table 1, but the other forms of Private sector involvement are more important in terms of number of times that they were applied. Fernandez (2005) notes that contracting for services is the most pervasive form of PSI. PSI can take many forms ranging from public utilities with private sector management (Ghana; see the case by Nyarko, 2008), to setting up franchising arrangements (Van Ginniken et al., 2004). We refer in particular to the following forms of out contracting (Hodge, 2000): service contracts, management contracts, leasing (affermage) and franchising, which will now be briefly discussed.

1. Service contracts: Service contracts refer to arrangements whereby a public authority remains responsible for operation and maintenance of the water supply system, but where specific activities are contracted out to private enterprises for a fee. For example, periodic maintenance of electrical equipment, procurement of spare parts, or billing and metering. Service contracts usually last between 6 months and 2 years. It means that the private sector is focused on that activity and tries to be efficient.

2. Management contracts: Through management contracts a private firm takes responsibility for operations and maintenance of a water supply system or parts of the system for a fee. The government retains ownership of assets and investments in the water supply system. The contracts usually last between 1 and 3 years. Private operators can have responsibility for all operations and maintenance in a city, for metering, billing and the collection of water rates. The Private sector involvement is higher than in the supply and service contracts.

3. Leasing (affermage): A lease contract (affermage) links a lessor (the private operator) who rents the facility and a public authority who owns it. The lessor becomes responsible for operating, maintaining and managing the system. The public authority remains responsible for new investments in the system. Private operators will pay a fee for leasing the assets and also bear the commercial risk. These contracts usually last between 8-15 years. The leasing contracts are administratively quite demanding because of the need to set and monitor performance targets. The private contractor is responsible for the provision of the service at its own risk, including operating and maintaining the infrastructure, against the payment of a lease.

4. Franchising: franchising as a way to provide technical assistance to local companies interested to play a more important role in the water and sanitation sector (Van Ginniken et al., 2004).

Of course there are certain risks in these different forms of PSI, which are not investment risks. They are usually largely specified in the contract and distributed between the two contractual parties. If the performance leaves to be desired or the risks are becoming too big the contract can be dissolved. That is not as easy in the case of a PPP, where investments are made and need to be recovered over a longer period.

Different activities within the water and sanitation sector could be chosen for a Private sector involvement. Perrot and Chatelus (eds, 2000) mention as examples in the water and sanitation sector: dams, pumping stations, piping networks, water purification plants, sewer systems and waste water treatment plants. Private sector involvement in the drinking water sector started in the 1990s and the number is still increasing.

The impact of liberalisation on the water sector is traced in the Pinsent Masons (2006). They find increasing private sector involvement in the water sector since 1987, using a

number of variables, i.e. population served by the private sector, frequency of contract awards, and average size of contract awards (separated by type of projects), number of projects with private sector involvement (also distinguished by type). Data throughout the years show that for all of these indicators there is an upward trend; hence it can be rather safely assumed that liberalization has had some impact on the global water sector.

Kettl (1993) found an upsurge in contracting for services at different levels of government during the last 30 years. Research to assess the results of PSI can follow very different approaches and different theoretical frameworks as illustrated below by Braadbaart (2002), Mathews (2003) and Fernandez (2005).ⁱⁱ

Braadbaart (2002) compared a large number of studies, using property rights theory, which would posit that private firms are more efficiently managed than government enterprises. Mathew (2003) works very pragmatically and uses specific benchmarking indicators to compare the performance of publicly managed sanitation utilities in the US and those managed under PPP. He selected operational efficiency and effectiveness criteria (measured by 5 indicators), financial sustainability (measured by the operating ratio), expenditures on community development (only 1 of the 7 utilities studied) and the satisfaction of the customers, measured by the level of the water tariff. Sanitation providers are often confronted with financial problems due to a combination of low tariffs, poor consumer records and inefficient billing and collection practices. If service provision is to be expanded in the coming years in a sustainable manner these problems need to be addressed. Most of the poorly performing utilities are likely to be characterized by a large debt. Without debt-restructuring the utility will not be able to improve its performance. The first step is then to financially stabilize the utility. The burden of debt needs to be addressed by restructuring these debts in order to financially stabilize the utility. The levels of tariffs have historically been a major problem in the water supply and sanitation sector in developing countries. For a utility to become financially autonomous tariff levels should at least cover operation and maintenance costs (and possibly part of the investment costs). Moreover, the real tariff levels should not deteriorate over time (i.e. tariffs should increase at least in line with inflation levels).

Not only the methods and theoretical frameworks used to assess the impact of PSI vary, but also the evidence concerning the positive effects of PSI in the water sector. Mathew (2003) finds no major differences in performance between waste water utilities that are publicly managed and those that are privately managed. However, in his study he finds that:

“over time the privately managed performed better and (the private operator) brought the level of services at the waste water utility to the general performance level within the sector”.

He concludes that the private sector can improve the level of services where the public sector has done poorly in the past. Fernandez (2005) notes that empirical research has focussed too narrowly on efficiency or the quality of service, while neglecting other important outcomes such as responsiveness to government's requirements, legal compliance and customer satisfaction (Hodge, 2000). We can add that increasing the number of connections and paying more attention to the poor are also often neglected in the case of Private sector involvement in a Third world context.

It will be argued that Private sector involvement is the future in the water sector (Schouten and van Dijk, 2008). They compare the reform process in different European countries. Liberalisation is the trend in the global economy. Principles like increase efficiency and step up cost recovery were proposed to increase investments in the water sector. Benefits are expected from deregulation and competition. It will stimulate all four types of private sector involvement distinguished in the table 1. There are all kinds of developments in the market for drink water and sanitation, but they can be considered in a systematic way, as done by the Euromarkets study leading to a number of scenarios, where divestiture (privatization in the most radical sense of selling of all the shares to a private party) does not even figure as an option. The options in the different scenarios were rather: more private sector involvement throughout contracting, or more regulation, or more community management.

The scenarios prepared for the future development of the European water market range from a more explicit role for the government as provider or regulator to a situation where more would be outsourced.ⁱⁱⁱ Secondly, the study points to the existence of at least four water markets, where competition or quasi-competition can be introduced to improve the performance of these markets. After an overview of scenarios for the European water market we continue with a discussion about the reforms concerning the water sector and utilities and what these options mean for PSI in developing countries.

Case studies for Ghana illustrates very well the effects of PSI without participation in the investment risks. Nyarko (2008) case study in Ghana, is interesting because the modernisation of the water sector took place in a context of decentralisation. Ghana PSI are different in the small towns and the large cities. Ghana is an example, where after a long delay, PSI has also started in the large cities. A management contract with a foreign water company should lead to increased performance in urban drinking water as well.

The example of the successful affermage contract in Cartagena in Castro (2008) is also a clear case of PSI, but it is not a PPP, given there is no investment risk. It is one of the successful cases which comes out clearly with the framework used by Castro to analyze his cases.

C. Public Private Partnerships (PPP) with participation in the investment risks

Promotion of PPPs in the developing countries has been tried for some time. More private sector involvement through the Public Private Partnerships is taking place. A PPP concerns a partnership between the public sector and the private sector entity, where by risks and responsibilities are shared for mutual benefits. If this definition is accepted it is very important to be explicit about the risks (Lindfield, 1998). This implies identifying the risks; allocating them and finding out which risks can be insured. Sharing of risk between the public and private sector typical in the water and sanitation sector can happen through concessions, but other formulas (joint venture and BOT) are used as well. Use is made again of contracts (Bakovic et al. 2003). Van Dijk (2008b) presents the expected benefits of PPPs and lists the factors that tend to make them successful.

Nijkamp et al. (2002) distinguish three models for PPPs: the joint venture model, the concession model and the building-claim model. We also identified the Build-Operate-Transfer (BOT) arrangement as a major type of PPP. There are famous cases of failure of PPPs in developed and developing countries. In developed countries the case of the termination of the contract of Atlanta is discussed in Friend et al. (2003). In developing countries the failures in the cases of Buenos Aires, Manila and Cochabamba are also well known.

D. Completely private provision of sanitation

Privatisation in the sense of divestiture has had a limited impact on drinking water supply in Third world countries (UNDP, 2006). Completely private provision of water and sanitation can be by big (often international) water companies or by hundreds of individuals and small firms, which carry or otherwise supply water. Small-Scale Independent Providers (SSIPs) or Non State water providers (NSP) are involved in providing drinking water and sanitation services in a large number of developing countries. Van Dijk (2008c) provides in the role of small scale private suppliers, the framework to explain the success of Small Scale Independent Providers (SSIPs) in the water and sanitation sector. The contribution of the Small-Scale Independent Providers (SSIPs) is probably most important in terms of number of actors involved, in particular in the African and South Asian context. They are called sometimes water free lancers, laying pipes, drilling wells or trucking water to a slum. The challenge is allowing a more important role to small-scale independent providers. The latter are good for 69% of the water supply and 95% of the sanitation solutions in Cotonou, Benin.

The important role of SSIPs in a number of African and Asian countries justifies attention to another type of private sector involvement than divestiture of water companies the way it has happened in Chile, England and Wales. The SSIPs are most active in countries with low coverage levels and ineffective public utilities. Also they are important in remote

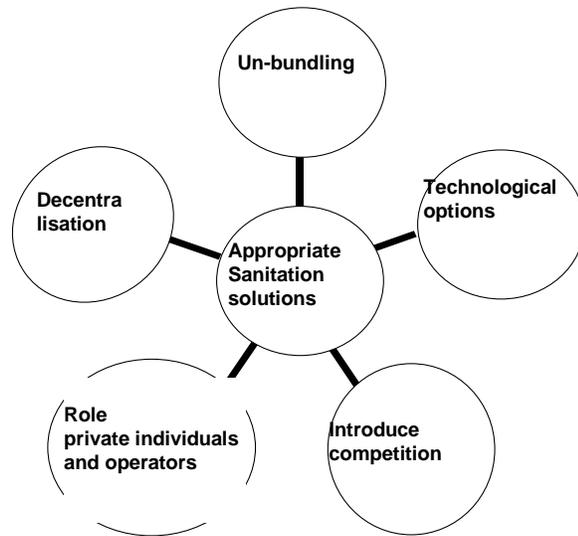
areas. SSIPs are very diverse and often threatened by an extension of the coverage of formal suppliers. The challenge is to consider SSIPs and NSPs as complementary and to incorporate informality when formal supply of water services is not adequate (Van Dijk, 2006).

As an introduction to the last part Van Dijk gives figures for the importance of SSIP (based on Kariuki and Schwartz, 2005). It is important to distinguish different types of SSIP and allow them to make a more important contribution in a situation where many governments can not supply drinking water and sanitary services. Then the issue how to improve efficiency will be raised by looking at the possibility in the case of sanitation to unbundle this activity, to use technological innovations and to bring in more competition. Some dilemmas will be discussed related to the Millennium Development Goals (MDGs), reaching the poor and the role of the private sector in sanitation.

Sanitation is often mentioned the next frontier, and the challenge is to develop a local water and sanitation sector related private sector. Sansom and Bos (2008) argue that Non-State Providers (NSPs, another term for SSIP) play already a very important role and this may have to be recognized! They list positive policies and the possibility of providing incentives for NSP to take up their role as providers of water and sanitation after an analysis why the current public service provision is often substandard. They distinguish different types of NSP and show how the government could engage with these NSP. Sansom and Bos (2008) finish with a number of challenges to reach the poor in this case. The paper also illustrates what this would mean for the drinking water sector in different countries and what its impact on poverty would be.

3 Developments in the field of water and sanitation

Water and sanitation may sound like very practical subjects, but there is also a body of literature which applies. This literature is a combination of the literature on infrastructure, on the role of the government in the economy and the role of competition. In the following figure these elements are linked to what I call ‘appropriate water and sanitation solutions’, which do not need to be the same everywhere. We will define the terms used in the figure.



Elements of an appropriate sanitation solution

Unbundling means: different producers now provide activities that were previously offered as an integrated service. Unbundling is important because it promotes competition. However, it may be more complicated in the drinking water and sanitation sector than for example for electricity or telecommunication.^{iv}

Technological options are looking at different types of water supply and toilets (see below), or looking at drinking water and sanitation as value chains, going from the construction of the infrastructure to the use and re-use of the end product. In the case of sanitation the chain would comprise of:

- Building the toilets, going for individual or collective solutions
- Operation and maintenance of the facilities, which can be outsourced
- Emptying, which can be done by small private operators
- Recycling, which can be done by separate actors

Competition concerns effort to expose parties to market forces. More competition may contribute to more efficiency and probably lower costs and consumer prices in the drinking water and sanitation sector (Van Dijk, 2003).

The **role of private operators** needs to be discussed in each case. It is important to tap private funding for water and sanitation and the loans for that purpose should increasingly comprise local currency alternatives. Otherwise repayment becomes very

difficult in times of financial crises, when the local currency tends to lose some of its value. Also the need for alternative technologies and sources of finance has been stressed, since a full fledged drinking water and sewerage system in every Third world city would also contribute to increased foreign debt in developing countries.

Decentralization can be defined as the transfer of authority to lower levels of government or the private sector. In the framework of decentralization urban managers are not only dealing with social issues (such as urban poverty and inequality), but also responsible for the economic development of their city and for the environmental impact of the development process, including issues like water and sanitation. Decentralized decision making can contribute considerably to achieving sustainable water management.

The conclusion is that technological developments and innovations have created more competition, for example in power generation and telecommunication, where mobile telephones became an alternative for the normal network. Contrary to for example the energy and telecommunication sector, the water and sanitation sector has not yet benefited from similar spectacular technological developments. Drinking water companies in the Netherlands don't have the incentives or money for innovation and may even have less means in the future, given the falling demand for water since 1989.

However, there are very different sanitation technologies, which implies different costs and different ways of organizing access to toilets and setting up cost recovery systems:

- Ordinary or unimproved pit latrine
- Ventilated pit latrine
- Composting toilets
- Pour flush toilets
- Composting/urine diversion toilets
- The traditional piped and water based toilets
- Simplified toilets (Duncan)

4. Why study financing mechanisms and cost recovery systems?

There are good arguments to provide more people with access to sanitary services. Some were listed in box 1, but economists would normally consider the value of service supplied to be reflected in its price. In the case of sanitation and drinking water supply there are also positive (and some negative) effects which are not captured by the price. They are called external effects and are summarized in the following table. The existence of

external effects is in the economic literature often used as an argument for the government to be involved.

Table 2:

Positive and negative external effects of drinking water and sanitation

Externality	Water	Sanitation
<p>Positive, if piped systems producing good quality are in place</p> <p>Negative: if system is in place</p>	<p>Better health Higher labour productivity</p> <p>Chemicals in the environment</p>	<p>Improved health More dignity and security</p> <p>Such services require space and may smell</p>
<p>Negative, if no piped system in place</p>	<p>May spread diseases Much time lost, often by women</p>	<p>Diseases can spread easily No dignity and security problems for women</p>

Table 3 uses the dimensions ‘government provided toilets’ versus ‘private solutions’, while at the same time a distinction is made between on plot and not on plot solutions, which are also important options. In particular for women and girls it is often inconvenient to leave the plot during the evening or the night. It is clear that all these options have a price tag and require an institutional arrangement. This would typically be the contribution of the social scientists to the work of the engineers, who develop the technical options.

Table 3:

Private versus public on site and collective solutions

	Arrangement	Water	Sanitation
Solutions on the plot	Public	Piped connection	Sewerage network
	Private	Well or bore hole Home delivery	Not connected latrines
Not on site solutions	Public	Standpipes Public wells Uncontrolled sources	Government supported community toilets
	Private	Autonomous water kiosks	Private commun. or paying toilets Uncontrolled

5. Financing water and sanitation, what is the problem?

There is a need better understand how funding of sanitation works. What needs to be financed? What are the main sources of financing? What is meant by private finance, by public finance and by subsidy? It is suggested to take as a starting point the principle that the most efficient use of public funds is to maximize public benefits (those that are shared by everyone), and that public funds should not be used to finance essentially private elements (such as soap, individual latrines, etc.) for which people are willing and able to pay and when private and market-based funds are available.

There are several reasons why large scale network sewerage solutions may not work (box 5) and hence small scale decentralized solutions need to be explored.

In the literature many arguments are mentioned to study new possibilities to finance water and sanitation and to recover the cost because of pervasive under-pricing and mismanagement of water and sanitation services. In many parts of the world, access to water distinguishes the poor from the non-poor.

The Global Water Initiative (GWI) concludes in its March 2005 issue (www.globalwaterintel.com) that to date limited progress has been made towards the achievement of financing the MDGs. Only the Eastern Asian countries are ahead of the

targets set in 2000, while Sub-Saharan Africa is falling far behind.^v Local finance mechanisms in the water sector are promoted to ensure:

- Sufficient revenue to deliver services in long-term
- Sufficient revenue to support improved quality of services
- Sufficient revenue to extend service coverage, particularly to low-income consumers
- Better use of scarce water resources and management of waste water disposal to conserve the natural environment

However, what stands out in particular is the need for cost recovery and introducing realistic tariffs.

Box 5 Why large scale network sewerage solutions may be too expensive

1. Long term investments (50 to 100 years) are difficult to finance
2. It is more difficult to recover the cost in the case of sanitation than in the case of drinking water
3. Necessary steel and concrete needs to be imported requiring foreign exchange and risking huge debts in foreign currency
4. Use need to be made of expensive consultants to design the system
5. Technicians tend to overdo the dimensions of the system to be able to deal with future extension and one time disasters
6. There is sometimes no sewerage system in place, or repairing the existing system would be very expensive because built under the ground fifty years ago.
7. Network sewerage solutions need a lot of maintenance, which is often not budgeted for
8. No institutional structure in place to manage sewer systems

9. The tendering system may not always be competitive and transparent
10. International contractors may be required given scale of the projects

6. The need for cost recovery and tariffs?

6.1 What is meant by cost recovery?

Cost recovery means using economic or financial instruments to recover all costs associated with a water system, programme or service. We make the effort to ensure long-term (economic, financial, environmental, institutional, etc.) sustainability. A system is only financially sustainable if a real cash flow is generated and the investments for expanding services can be attracted and paid for through the returns. In practice there are only few choices to finance investments:

1. Tariffs (consumers) or Taxes (tax payers)
2. Private sector involvement
3. Bilateral and multilateral aid, but only a limited extent
4. Transfers, grants or subsidies

Most cities have to move to full cost-recovery but at a realistic pace. Introducing eco-san with NGOs and donors may help to keep the cost low. However, cost recovery is more than money for capital costs (full service cost) and O&M. It also raises the issue of the importance of institutions and processes. Then one needs to consider the costs to maintain these institutions as well and to support activities to make service sustainable and to increase coverage over time and space (what is called scaling up). However, we need institutional arrangements, development of capacities and to put into practice service supply strategies adapted to the needs of the poorest. By using private construction firms, and local small enterprises for building, O&M and for emptying and finally for recycling the liquid waste products the local employment effects could be maximized.

6.2 Principles for cost recovery

A study of cost recovery opportunities always results in the introduction of tariffs and in considering other financing options than expecting the money to come from higher levels of government. This is because building sanitary systems often implies a subsidy from the government and the question is what are the principles for the allocation of public

funds? One important principle for cost recovery is that every citizen should enjoy the same level of services provision. That requires cost recovery, to generate a cash flow allowing to repay loans or to service bonds (FIRE, 1996). Projects need to be powered by sustained cash flows instead of taxes. Generating a sustainable cash flow is necessary to be able to repeat the necessary investment, which is possible through:

- Contributions from the people benefiting from the system, possibly in kind
- Linking the payment for sanitation to drinking water and charging one tariff
- Asking small contributions to necessary investment
- Charging for connection fees, eventually linked to micro savings and micro credit
- Charging a realistic tariff for drinking water and sanitation services

6.3 The process of tariff setting

Financial and administrative steps are required for establishment of equitable, financially viable and sustainable water services. Tariff setting is part of the process of assessing, planning, implementing, monitoring and adjusting services delivery. This implies the following steps need to be taken:

- Setting cost recovery targets
- Analysing ability and willingness to pay
- Calculating affordability
- Setting service objectives
- Calculating the basis for charging
- Then tariff setting is possible, taking all this information into account
- Billing and collection
- Book keeping
- Financial control and monitoring, which requires indicators (Van Dijk, 2003)

7. Financing instruments available?

GWP (2000) suggests different ways to finance drinking water and sanitation services:

1. Encourage new investments from the international private sector

2. Develop pricing and charging schemes that will ensure the financial sustainability of the investments
3. Facilitate poor countries' access to water and sanitation funds and develop micro credit mechanisms
4. Encourage local development banks to invest in water

One way of improving water efficiency is by investing in and improving infrastructure. This may also lead to more attention to operations and maintenance (O&M) and to a reduction of losses in the system. However, any investment made must be rational and weigh the resources necessary (capital, labour, raw material, etc.) to assure the optimal use of such resources. Tools developed for this purpose are cost benefit analysis, life cycle costing and multi criteria analysis. Possible sources for finance are put in table 4 and will be discussed briefly

Table 4 Instruments for water and sanitation finance

More traditional finance: government sources	To more alternative finance: tapping the private sector
1. Higher levels of government financed out of general or specific tax revenues	7. Loans 8 Bonds
2. Subsidies, for example connection subsidies	9. Microcredit to finance water connections, sometimes building on
3. Municipal Infrastructure Development Funds, for example	Rotating savings and credit associations (ROSCAs) to link traditional savings with credit
• Investment/capital funds	
• Trust or Endowment funds	10. Private sector involvement
• Pooled Finance Development Fund	11. Project finance
4. National or State Level Finance (lending) Institutions	12. Advanced instruments for risk mitigation: hedging (futures/options) to cover risks
5. Official Development Aid (ODA)	
6 Bi- or Multilateral Finance (for example from the World Bank)	13. Export Credit Agencies (ECAs)
	14. Community initiatives and initiatives by service oriented NGOs

Source: Van Dijk (2006)

We will now discuss each of these in turn:

1. Higher levels of government financed out of general or specific tax revenues

This used to be the way to finance water and sanitation projects, but often governments do not have the money to provide small subsidies (2), or to direct local governments to infrastructure funds (3) or to specific lending institutions (4)

2. Subsidies, the challenge is to target subsidies to the most needed. No government can afford giving subsidies for a longer period of time. Hence in the water and sanitation sector subsidies for connections make a lot of sense, since poor people will find it difficult to pay a large amount in one instalment.

3. Municipal Infrastructure Development Funds, for example

- Investment/capital funds
- Trust fund
- Endowment fund

The formula is to make available an amount of money for a specific purpose, but to see to it that the money would eventually come back to allow other cities or local governments to benefit from it as well.

4. National or State Level Finance (lending) Institutions

State Level Financial Institutions (SLFIs) currently function as an intermediary between the local governments and the capital market in different Indian states (van Dijk, 2004). They can act on behalf of the state or local government or utilities and could issue bonds for example, or borrow money from Development banks

5. Official Development Aid (ODA) is attractive because it is often grant money. However, ODA funds for the water sector have been declining in recent years partly because the general decline of aid, partly because of the sharp drop in aid for large dams and water storage schemes.

6. Multilateral Finance Institutions (World Bank, or a regional development bank). This source of finance is great because the lending is usually provided as a soft loan, but these institutions have limited amounts for different countries and sectors and may put up a number of conditionalities. They may require reforms in the water and sanitation sector and usually insist on charging realistic tariffs. Reforms in general and in the water and sanitation sector in particular are often needed. Reforms at the utility level concern the improvement of the planning capacity at utility level. Furthermore, the population needs to be consulted and involved. Box 6 gives an overview of the necessary reforms at the local government or utility level.

7. Loans, from local banks, or •international Commercial lending. Normally two types of lending can be distinguished:

- Recourse lending; to companies or corporations which then choose to invest in projects.
- Non recourse lending (project finance); to a special purpose vehicle with no or limited recourse to the parent company which may be the sponsor or shareholder of the vehicle.

8 Bonds: a bond is a standardized loan that can be bought and sold. More formally it is a financial asset that promises a stream of known payments (the interest) over a specified period of time. In most countries municipalities are not allowed to issue bonds, but most state level financial institutions can do so on their behalf and lend the money on to local governments.

9. Microcredit to finance water connections, sometimes building on Rotating savings and credit associations (ROSCAs) to link traditional savings with credit. As Winpenny (2006) notes Microfinance is becoming increasingly important in financing infrastructure and facilities in smaller communities, particularly where the work is implemented by householders themselves, and involves local small scale artisans or the informal sector. A typical loan is well below \$1000 (see box 5).

Box 6 An overview of the necessary reforms at the local government or utility level

- Improvement of the project preparation and appraisal capacity at the utility level, or outsource
- Setting up a monitoring and evaluation system
- Improved personnel management and HRM in utilities
- Clear delineation of tasks and responsibilities between different layers of government
- A plan for operation and maintenance activities
- Introducing transparent lending procedures
- Installing autonomy & accountability at the utility level

Another suggestion is trying to incorporate the informality of SSIPs into the fabric of the city is very important (Fransen et al., eds., 2010). Formal institutes are often not able to offer the services and products that informal businesses offer: building, maintaining & emptying the toilet and reuse of all the products involved. We also argue in favour of improvements of financial systems, budgeting and accounting system at the level of the utility, to give all the water and sanitation companies a better chance to succeed.

Box 7 Micro finance used for improving water and sanitation

The Grameen Bank in Bangladesh is the best known microfinance agency, but many large commercial banks are now expanding their microfinance windows. Microfinance agencies have a role in mobilizing local savings for on-lending in small amounts on terms attractive to local borrowers. They are involved in some water development programs though in global terms their exposure to infrastructure is minor. Micro savings and credit can be used for initially saving and then paying for the connection fees for water and sanitation connections. These connections for water and sewer systems often involve spending several hundred dollars, which would otherwise be too expensive for poor people

10. Project finance Project finance is defined as financing for a project, where the lenders' security and return on capital are provided solely by the project itself. There is a trend to push project financing to avoid government guarantees for each and every investment made in the public sector. The best known example in the field of infrastructure is in Europe is the so-called Channel (between France and the UK), which has put a considerable risk in the private sector instead of burdening the respective governments with larger budget deficits. The challenge is to come to an appropriate allocation of risks between the parties involved.

11. Advanced instruments for risk mitigation: hedging (futures/options) to cover risks. Smooth cooperation, for example in a PPP, requires the definition of the roles of the private and public sector and an agreement on sharing the cost and on the allocation of the risks between them. The cross cutting theme of risk assessment is very important in this research (Lindfield, 1998). Certain risks can be insured, however, and hedging would be one way of doing that. There are for example partial risk and partial credit guarantees in the case of IFC loan and guarantees against political risks can be obtained from the

Multilateral Investment Guarantee Agreement (MIGA) administered by the World Bank in Washington.

12. Export Credit Agencies (ECAs): export credit agencies of OECD countries have collectively provided about US\$ 70 billion annually of long term credit to developing countries (both public and private sectors) for purchasing goods and services in OECD countries. Probably less than 1% of this amount has been for water and renewable energy projects.

13. Community initiatives and initiatives by service oriented NGOs: these initiatives are also very important in the water and sanitation sector and may lead to additional finance being available.

A distinction should be made between legal forms and the sources of finance just discussed. Examples of legal forms or constructions that are used in the case of infrastructure projects are:

1. Contracts, which can have a variety of forms such as performance contracts, customer charters, loan agreements, etc. For example a contract to engage in a Public-private partnerships (PPPs, see below)
2. Special Purpose Vehicle (SPV) for Build-Operate and Transfer (BOT), (Build Operate Own (BOO), (Build Operate and Lease (BOL), Design, Finance, Build and Operate (DFBO) and ROT (Rehabilitation Operate Transfer) arrangements
3. Joint ownership, for example joint ventures
4. Concession: a contract to a private firm or a user cooperative to run a facility over a longer period of time
5. Service & management contract: different ways to increase private sector involvement without changing the ownership
6. Partnership: partnerships between various levels of government, business/industry, non governmental organizations (NGO) and communities have become a key strategy for economic development and to improve results for the environment and communities.
7. Divestiture: the sales of shares of a previously government owned utility

Part of the investment decision is identifying the sources of finance. Among the costs to be added up are the costs of capital. They may be zero in case of a grant, low in case of a soft loan, but high if a commercial loan is necessary. The blending of different types of financial resources is an important way to bring down the cost of an investment project. The choice of financing mechanism depends on the type of sanitation system that is being put in place. For example, the options for financing a program for building and operating rural pit latrines differ from the options available for the construction and maintenance of a complete piped urban sewerage system.

To conclude, there are many sources of finance for the water sector. However, different levels of government, just like individuals, NGOs and micro-enterprises, may find it difficult to gain access to the existing formal finance system. A lot depends how well the capital market in a country is developed. Can municipalities issue bonds? Are loans available for feasible water projects and are micro finance institutions in place to organize micro savings and to provide micro loans? What are the legal forms used for these different financial instruments? We can learn a lot from experiences elsewhere with the use of capital markets, gained by Governments, NGOs and small enterprises and often documented in series of case studies. For donor organizations financing micro-infrastructure advisory facilities may help. They would focus on water supply and sanitation but opt for small-scale projects and appropriate technologies. Attention to project development is necessary. It includes the analysis of appropriate use of different financing mechanisms (grants or debt) to ensure stimulation of innovative ideas at a very small scale for and with the people concerned. Once it is agreed to finance the sanitary facilities with the private sector it will also be necessary to think about sources of revenue, it could be through a contribution in kind or by applying the cost recovery principle. Paying for sanitation can be linked it to the supply of drinking water. Other options are using connection fees and asking a small contribution to the necessary investment. Finally alternative sources of finance can be used, or one could go for private construction, private O&M, private emptying and recycling, developing the whole water and sanitation value chain in a labor-intensive way.

There are certain necessary conditions for the success of alternative sources of finance. It starts with choosing the right technology and the right scale of the project and adequate repayment mechanisms. The challenge for sanitation project in developing countries is to mobilize a balanced mix of public and private funding sources. It is often a question of making a more innovative use of public funds and subsidies. The mix results in hybrid models, mixing public and private finance and management options. They offer a pragmatic approach in an environment of increased perceived risks, like at the moment during the international financial crises.

Conclusions

WSSC (2009) argues that a stronger focus on software aspects of water and sanitation, such as hygiene promotion and the enabling environment for the utility. Sanitation has the potential to encourage a large increase in both market-based and household/community spending, as illustrated by approaches such as community-led total sanitation (CLTS) and sanitation marketing. Alternative financing and building in cost recovery in sanitation projects is crucial for the success of these projects. The government should promote the use of different financial instruments for sanitation and consider which legal forms may be appropriate. In the same way we can search for different ways of private sector involvement in sanitation. The use of small local entrepreneurs in the

sanitation value chain is only the beginning. They can build the toilets, maintain them, empty them and play an important role in the transport of liquid waste and the processing to gain biogas or produce compost.

There is no single ‘right’ answer to the design of financing arrangements for sanitation. The argument put forward is that the design of financing arrangements (including subsidies in all their forms) should be based on sound empirical evidence and clear policy objectives. Investing in informed policy debate up front may result in a much more efficient use of scarce public funds and, ultimately, to better access to sanitation for all.

Efficiency in water and sanitation sector can be raised by unbundling water and sanitation supply, by technological innovations and by bringing in more competition. We have stressed the need for alternative technologies, since a full fledged water and sewerage system in every Third world city may mean a substantial increase of their foreign debt. For each system appropriate repayments systems need to be in place.

Often people in slums have developed private solutions for their sanitary problems. These should be publicly enabled, which requires healthy financing and local governments that stimulate the perfection of these private solutions. We argued that SSIP could make a more important contribution in the water and sanitation sector.

Governments can enable a different approach of sanitation in different ways. For example by promoting incorporating informality (accepting these private solutions and informal sector entrepreneurs in the sanitation value chain) in the sanitation sector. It can also promote the use of appropriate technological solutions. The government should recognize the importance of these private solutions and enable them through recognition, supplying prototypes and alternative sources of finance.

References

- ADB (2007). Asian development, Annual report of the Asian Development Bank. Manilla: ADB.
- Bakovic, T., B. Tenebaum and F. Woolf (2003): Regulation by contract, A new way to privatize electricity distribution. Washington: IBRD.
- Braadbaart, O. (2002): Private versus public provision of water services: does ownership matter for utility efficiency? In: Journal of Water supply, research and technology-AQA/51.7, pp. 375-388.
- Castro, J. (2003): Poverty and citizenship, sociological perspectives on water services and PPP. In: Geoforum, Vol. 38, No. , pp. 756-771.
- Castro, J. P. (2008). Water services in Latin America, experiences with public-private partnerships.
- Dijk, M.P. van (2003). Liberalization of drinking water in Europe and developing countries. Delft: UNESCO-IHE.
- Dijk, M.P. van (2004). The role of financial institutions and markets in urban development in India, with examples from Karnataka and Gujarat. In: Gupta (ed., 2004).
- Dijk, M.P. van (2006). Managing cities in developing countries. Cheltenham: Edward Elgar.
- Dijk, M.P. van (2008a). Private sector involvement in the drinking water sector, different institutional arrangements in developing countries. International Journal of Water Vol. 4, No. 3/4, 2008, pp. 149-159.
- Dijk, M.P. van (2008b). Public-private partnerships in basic service delivery: impact on the poor, examples from the water sector in India. International Journal of Water Vol. 4, No. 3/4, 2008, pp. 216-235.
- Dijk, M.P. van (2008c). Role of small scale private suppliers in the water supply and sanitation sector. International Journal of Water Vol. 4, No. 3/4, 2008, pp. 275-290.
- Dijk, M.P., van and K. Schwartz (2004): Modes of engagements, Report on Public Modes of Engagement Research for the World Bank, Washington: IBRD, 70 pages.
- EC (1994): The use of financial instruments within Phare. Brussels: EC DG I.
- EIB (1995): The provision of infrastructure, the role of the private sector. Proceedings Luxemburg: European Investment Bank.
- FIRE (1996): Municipal bond market for urban infrastructure. New Delhi: FIRE project, pp. 1-23.
- Fernandez, S. (2005): Accounting for performance in contracting for services: are successful contractual relationships controlled or managed? Los Angeles: Conference at the School of Planning and Development USC.
- J. Fransen, M.P. van Dijk and S. Kassahun (eds., 2010): Formalization and informalization processes in urban Ethiopia: incorporating informality. Maastricht: Shaker, 219 pages.
- Friend, D., M. Ding and G. Briggs (2006) Privatisation, PPPs and related issues. Sydney: Sydney Water.
- Ginniken, M. van, Tyler, R. and Tagg, D. (2004): Can the principles of franchising be used to improve the water supply and sanitation services. Washington: World Bank.
- Gurria,(2006). Task Force on Financing Water for All (Van Hofwegen, P. (2006).
- GWP (2000). Global Water partnership.

- Hodge, G.A. (2000): *Privatisation an international review of the experiences*. Boulder: Westview.
- Gupta, K.R. (ed., 2004). *Urban development in the new millennium*. New Delhi: Atlantic.
- Kariuki, M. and J. Schwartz (2005): *Small-scale private service providers of water supply and electricity*. Washington: World Bank.
- Kettl, D.F. (1993): *The global public management revolution*. Washington: Brookings.
- Lindfield, M. (1998): *Preparing markets for private financing of urban infrastructure*. Rotterdam: Erasmus University, Ph.D.
- Mathews, J. (2003): *PPPs in waste water treatment in the US*. Delft: UNESCO-IHE, MSc thesis.
- Nyarko, K.B. (2008). Private sector involvement in drinking water supply in Ghana. *International Journal of Water* Vol. 4, No. 3/4, 2008, pp. 197-216.
- Nijkamp, P., M. van der Burch and G. Vindigni: A comparative institutional evaluation of PPP in Dutch urban land use and revitalisation projects. In: *Urban Studies* Vol. 39, No. 10, pp. 1865-1888.
- Nwasco (2009). Annual report. Lusaka: National regulator, also on their website.
- Perrot, J.-Y. and G. Chatelus (eds, 2000): *Financing of major infrastructure and public service projects*. Paris: Ponts et Chaussees.
- Pinsent Masons (2006): *Pinsent Masons Water Yearbook 2006-2007*. Published by Pinsent Masons, London.
- Pongsiri, N. (2002): Regulation and public private partnerships. In: *The International Journal of Public Sector Management*, Vol. 15, No. 6, pp. 487-95.
- Prasad, N. (2006): Privatization results: PSP in water services after 15 years. In: *Development policy review*, Vol. 24, No. 6, pp. 669-692.
- Sansom, K. and A. Bos (2008). Utility and Non-state water service provision for the urban poor. *International Journal of Water* Vol. 4, No. 3/4, 2008, pp. 290-304.
- Schouten, M.A.C. and M.P. van Dijk (2008). Private sector involvement according to European water liberalization scenarios. *International Journal of Water* Vol. 4, No. 3/4, 2008, pp. 180-196.
- Schwartz K. (2008). Mimicking the private sector: NPM in the water supply and sanitation sector. *International Journal of Water* Vol. 4, No. 3/4, 2008, pp. 159-180.
- UNDP (2006): *Human development report*. New York: Oxford.
- UNRISD (2004): New UNRISD research on commercialization, privatization and universal access to water. In: *UNRISD News*, No. 20, Spring/Summer, pp. 17-18.
- Van Hofwegen, P. (2006): *Enhancing access to finance for local governments & financing water for agriculture*. Report no 1 of the Gurria Task Force on Financing Water for All. GWP.
- Viscusi, W.K., J.M. Vernon and J.E. Harrington (2000): *Economics of regulation and antitrust*. Cambridge (US): MIT Press.
- Williamson, J. (2002): *Did the Washington consensus fail? Outline of a speech*. <http://www.petersoninstitute.org>, download July 2007.
- Winpenny, J. (2005) *Guaranteeing development? The impact of financial guarantees*. OECD.
- World Bank (1994): *Infrastructure for development, World development report*, New York: Oxford.

WSP (2004): Condominial water and sewerage systems, Costs of implementation of the model. Lima: Water and sanitation program.

WSSC (2009): 'Public Funding for Sanitation' A primer. Geneva: Water Supply and Sanitation Council.

Notes

ⁱ Castro (2008) takes up the difficult task to review two of the most famous cases of failed PPP projects in the drinking water sector in Latin America and a third one which is successful. In terms of the classification of this contribution these two are real PPPs, but both failed: the project in Buenos Aires, the capital of Argentina and the one in Cochabamba (Bolivia), which was a failure from the beginning. His last case is clearly a case of divestiture and success (Chile). Castro notes the importance of history, institutional factors and other factors. The judgment whether PSI was a success or a failure requires a lot of nuances as some of his Latin American cases show.

ⁱⁱ Fernandez (2005) looks at success in the contracting for services using a principal agent framework and the theory of competitive markets. He estimates regression equation using about 19 exploratory variables to explain contracting performance. The latter is measured on the basis of a factor analysis of eight indicators of contracting performance.

ⁱⁱⁱ Regulation establishes a relation with institutional economics (regulation can be considered as an institution) and with regulatory economics (studying the economic impact of regulation or deregulation; see Viscusi et al., 2000).

^{iv} Chances to unbundle in the Netherlands (for example in the case of the water intake from the lake IJssel) have been missed and competition is often feared rather than welcomed by many operators in the Netherlands drinking water sector.

^v Several programs are active to help African countries to achieve these MDGs. For example the Water and Sanitation Program (WSP, based in Nairobi) with support from the Netherlands and other donors has studied in a number of African countries where they are and what still needs to be done (WSP, 2004).