THEMATIC OVERVIEW PAPER 27

Small town water services

Trends, challenges and models

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Adank, M., 2013. *Small town water services: Trends, challenges and models.* (Thematic Overview Paper 27) [pdf]
The Hague: IRC International Water and Sanitation Centre. Available at: http://www.irc.nl/top27

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Cover Photo: *Left*: Water point in Siddhipur, Nepal (Dick de Jong)
Right: Bekwai small town water system, Ghana (Marieke Adank/ IRC)

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December 2013
IRC International Water and Sanitation Centre

Contents

Figures

Tables

Boxes

Acknowledgements

This Thematic Overview Paper builds on the background paper I wrote for the meeting of the Management and Support Thematic Group (MSTG) of the Rural Water Supply Network, which took place in October 2012 in The Hague. This meeting focused on management and support of piped water supply in rural areas and small towns. Stef Smits, Elizabeth Kleemeier, Ryan Schweitzer and Julia Boulenouar provided useful feedback for the development of this background paper.

The cases and experiences shared by the participants of MSTG meeting were a great inspiration for the further development of this Thematic Overview Paper. In addition, David Schaub-Jones, Erik Harvey and Jim Gibson provided useful insights related to the topic of small town water services.

My colleagues John Butterworth, Christelle Pezon and Jean de la Harpe were instrumental in reviewing and improving the content and structure of this Thematic Overview Paper. The paper was thoroughly edited by Minnie Hildebrand and the nice lay-out was taken care of by Cristina Martinez. Anjani Abella managed the entire publication process, trying to hold me to deadlines, which she did with admirable patience and persistence.

A very big and sincere thanks to all of you!

Marieke Adank
Author

Abbreviations

AESN	*Agence de l'Eau Seine Normandie*
AHJASA	*Asociación Hondureña de Juntas Administradoras de Agua*
ANEPA	*Agence Nationale d'Eau Potable et d'Assainissement*
BDS	Business Development Services
BNWP	Bank Netherlands Water Partnership
BO	Build-operate
BOO	Build-own-operate
BOOT	Build-own-operate-transfer
BOT	Build-operate-transfer
BOTT	Build-operate-train-transfer
BPD	Business Partners for Development
CBM	Community-based management
CBO	Community-based organisation
CIDA	Canadian International Development Agency
CMSP	*Chargé de Mission de Service Public*
CRA	*Conselho de Regulacao do Abastecimento de Agua*
CWSA	Community Water and Sanitation Agency
DAC	Development Assistance Committee
DBL	Design-build-lease agreements
DBO	Design-build-operate
FAUREB	Federation of community based service providers in Burkina Faso
FIPAG	Water Supply Investment and Asset Holding Fund
FRUGAL	Forming Rural Utility Groups and Leases
GWOPA	Global Water Operators' Partnerships Alliance
IIED	International Institute for Environment and Development
INGO	International non-governmental organisation
IWA	International Water Association

JMP	Joint Monitoring Programme for Water Supply and Sanitation (of WHO and UNICEF)
K-Rep	Kenya Rural Enterprise Program
MMDA	Metropolitan, municipal or district assembly
O&M	Operations and maintenance
OBA	Output-based aid
OECD	Organisation for Economic Co-operation and Development
PEGG	*Projet Eau Gorgol Guidimakha*
PO	Private operator
PPIAF	Public-Private Infrastructure Advisory Facility
PPP	Public-Private Partnership
PURC Ghana	Public Utility Regulatory Committee Ghana
PURC	Public Utility Research Centre
RWSN	Rural Water Supply Network
SAR	Systemic Action Research
SISAR	Integrated Systems for Rural Sanitation
SSA	Support Services Agency
STEFI	*Suivi Technique et Financier*
STPP	Small Town Pilot Project
TOPs	Thematic Overview Papers
UNDESA	United Nations Department of Economic and Social Affairs
WA	Water Association
WATSAN	Water and Sanitation
WEDC	Water, Engineering and Development Centre
WOP	Water Operator Partnership
WSDB	Water and Sanitation Development Board
WSP	Water and Sanitation Program of the World Bank

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Executive summary

Since 2007, more people live in urban areas than in rural areas. This is particularly true in developing countries. As this traditional balance has changed, a new and significant category of human settlement is emerging—small towns.

The grey area between “rural” and “urban” is the domain of small towns, with the definition of what constitutes “rural” and “urban” not being straightforward and differing between countries. The main area of ambiguity is in that settlements with populations of a few hundred to 20,000 inhabitants can either be considered as “rural” (large villages) or “urban” (small urban centres).

It is generally believed that in the future, small towns will grow in number, population and importance. Improving understanding on how sustainable water services can be provided in small towns is therefore likely to remain high, or even rise on the water sector agenda in the years to come.

In the water sector, the definition of “small towns” is based on a description of the type of water service delivery model applied, focussed on settlements that are sufficiently large and dense to benefit from the economies of scale offered by piped systems, but too small and dispersed to be efficiently managed by a conventional urban water utility.

Increased urbanisation and economic growth is bringing along an increased demand in higher level of water services. Piped water services are gaining terrain and are likely to continue to do so in future, with governments focussing more and more on this mode of provision.

These small town piped schemes often provide a mix of basic services, through public standpipes, as well as high level services, through household connections. In addition, hand-dug wells and boreholes with handpumps often provide complementary water services in small towns, as do water kiosks.

Challenges related to small town water services are: their relatively high unit costs, while not benefitting from the economies of scale and (cross-) subsidies of large (urban) utilities; their low levels of water use and subsequent revenues; and high management capacity requirements, which are often not met locally in small town settings. Furthermore, small towns are dynamic in nature, being in transition, with often both rural and urban characteristics. Small town contexts vary widely.

Understanding how small towns are demographically, economically and politically linked to the surrounding areas needs to be factored into the design and delivery of small town water services, as these have a clear bearing on the demand for and provision of these services. There is thus a wide variety of models for the provision of small town water services in different contexts. There is no blue print and no universal model.

Small town water services can be provided by national, regional or municipal utilities, community-based organisations, private owner-operators, or households themselves (self-supply). To overcome capacity challenges related especially to municipal and community management, delegated management has been introduced, with roles and responsibilities related to the operations of water supply systems being delegated to the private sector.

Small town service providers require technical, administrative and institutional support. Different arrangements for the provision of these support services include support by local government, by private sector and NGOs, either directly to the service provider or under contract by the service authority, associations and umbrella organisations, or other service providers (for example under a Water Operators Partnership (WOP)).

The conclusions and recommendations note it is clear that there is not one single model for delivering small town water services that fits all. There are many different models for the management of rural and small town piped schemes, with different degrees of involvement of public and private sector institutions. There is a growing role of the private sector, both in providing small town water services, as well as in providing direct support to service providers. Also, gaps are identified in today's institutional and regulatory frameworks and funding models, especially as these relate to the financing of capital maintenance.

1 Introduction

The world is becoming more and more urban. In 2007 the traditional rural/urban balance was tipped, with the urban population exceeding the rural population for the first time in history. A new and significant category of human settlement is emerging, being the "small town" (Cranfield University, AguaConsult and IRC, 2006). Providing water services to this growing small town segment is somewhere between community-managed rural water supplies and water supply by large urban utilities. In the beginning of the millennium, this middle ground was not yet sufficiently documented or understood (WSP, 2002). Ever since, the interest and insight into the provision of small town water services has been on the rise. This Thematic Overview Paper (TOP) sets out to contribute some insights by providing an overview of trends, developments and current thinking related to small town water services, building on existing sector documents and current discourse.

1.1 Documents and discourse on small town water services

Since 2000 numerous expert and stakeholder groups have met to discuss water and sanitation service provision in small towns. Some of these meetings and published papers include the following:

- An e-conference on small town water supply in 2000, in which approximately 350 people participated (WEDC and WSP, 2000).
- A conference in Addis Ababa in 2002, bringing together some 200 global practitioners to discuss water service provision through small town and multi-village schemes.
- The Bank Netherlands Water Partnership (BNWP)[1] small town water and sanitation project, which followed the Ethiopia conference and which aimed to identify, document, and develop appropriate management and institutional approaches for town water supply and sanitation services in developing countries.
- An e-conference organised in 2004 under the BNWP Project (Sansom and Fisher, 2005).
- A number of case studies and working papers by different organisations, synthesised in the publication "Principles of town water supply and sanitation, part 1: water supply" by Pilgrim, et al. (2007).
- Working papers and case studies on small town water supply by knowledge-focussed organisations, such as WSP, IRC and WEDC (Moriarty et al., 2002; Njiru and Sansom, 2002; Mugabi and Njiru, 2006; WSP 2002a; WSP 2002b).

Discussions at that time focussed on the criteria required to define small towns in the context of water and sanitation; identification and analysis of different management models for water supply and sanitation in the small town sub-sector; and identification of key challenges and ingredients to successfully supply water and sanitation services in small towns.

This time period of focus on small town water supply in general, was followed by the Water and Sanitation Program (WSP) of the World Bank's focus on the role of the private sector in small town

[1] The BNWP programme seeks to improve delivery of water supply and sanitation services to the poor. The partnership enhances performance of World Bank operations in the water and sanitation supply sector and supports a broad sector reform agenda with a strong poverty focus.

water supply, especially though Public-Private Partnerships (PPPs). In 2010, WSP organised a practitioners' workshop on sustainable management of small-piped water systems in Africa, taking stock of 20 years of efforts in improving water services by delegating management of small piped schemes to private operators or user associations (WSP, 2010a).

Several other organisations renewed their interest in small town water supply around that time, including WaterAid and Business Partners for Development (WaterAid/ BPD, 2010) and SNV (Klinken, Dido and Mwango, 2012). In October 2012, the meeting of the Rural Water Supply Network (RWSN) Thematic Group on Management and Support of Rural Water Supplies, focussed on different models for management and support of piped water supplies for rural areas and small towns[2].

It is generally believed that in the future, small towns will grow in number, population and importance (Collignon, 2002; UN-HABITAT, 2006; Cranfield University, Aguaconsult and IRC, 2006; WSP, 2010; Forster, 2012). Understanding how sustainable water services can be provided in small towns is therefore likely to remain high, or even become more pressing in the water sector's agenda in future.

1.2 Outline of this thematic overview paper

This thematic overview paper gives an overview of different small town service delivery models with their application, advantages and disadvantages. Key concepts and definitions for describing small town service delivery models are presented in chapter 3. These concepts are used to describe small town water supply management models (chapter 4) and direct support arrangements (chapter 5). Chapter 6 discusses emerging issues and remaining questions related to small town water services. Finally, main conclusions and recommendations are presented in chapter 8.

[2] See http://www.rural-water-supply.net/en/resources/details/401

2 In between the urban and rural: Small town characteristics, trends and challenges

This chapter focuses on small town development, small town water services and the main challenges related to small town water services.

2.1 Small town population trends: Increase in number, population and importance

WaterAid and BPD (2010) found that "small town" as a classification, mainly exists in the water and sanitation sector, while classifications based on the functions of small towns—like "market town" or "emerging town"—are more common in other sectors. The Population Division of the Department of Economic and Social Affairs of the United Nations, UNDESA (2012) differentiates between rural areas, urban areas and "small urban centres"—the latter defined as areas classified by the national government as urban, but with fewer than 500,000 inhabitants.

In total, almost two million people reside in small urban centres with a population of 500,000 or less, the majority of which (more than 70%) is found in less developed regions, especially in Asia (UNDESA, 2012). This figure represents more than a quarter of the world's population, and about half of its urban population. Cities with fewer than 100,000 inhabitants account for about 17% of the total population and a third of the urban population (UNDESA, 2010).

The population of small urban centres with less than 500,000 people has been growing considerably in Asia, Africa and Latin America over the last 60 years. Figure 1 shows that in future, approaching the year 2025, the number of people residing in small urban centres in Africa is expected to grow further, while population growth is expected to stabilise in Latin America and, to a lesser extent, in Asia[3].

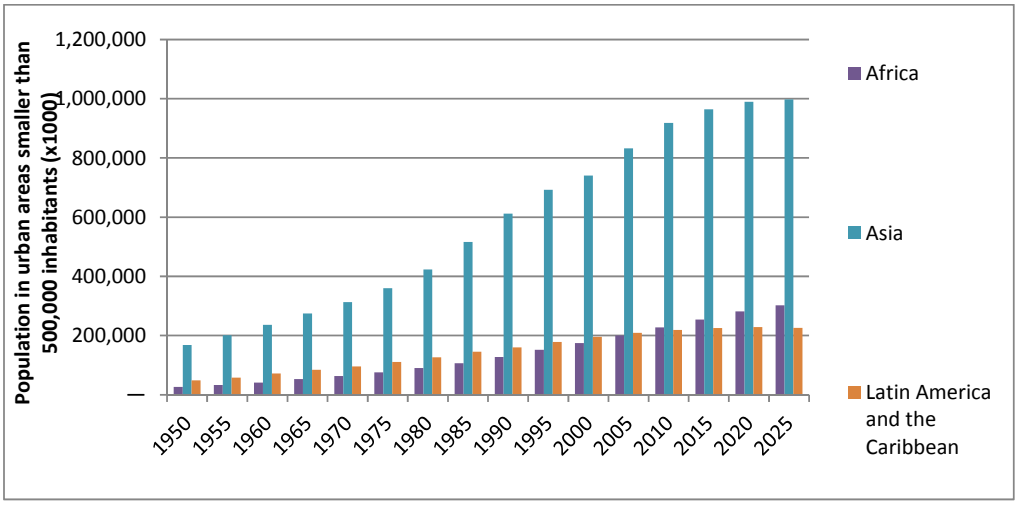


Figure 1: Urban population growth in areas with less than 500,000 inhabitants
Source: UNDESA, 2011.

[3] See also annex 1 for an overview of rural, urban and small urban centre population trends.

UN-HABITAT (2006) expects not only the number, but also the proportion of people living in small urban centres to increase in the next ten to twenty years. In contrast, figures of the World Urbanisation Prospects (UNDESA, 2012) show an expected decrease in the proportion of people living in urban areas with less than 500,000 people in the future, especially in Latin America (see figure 2)[4].

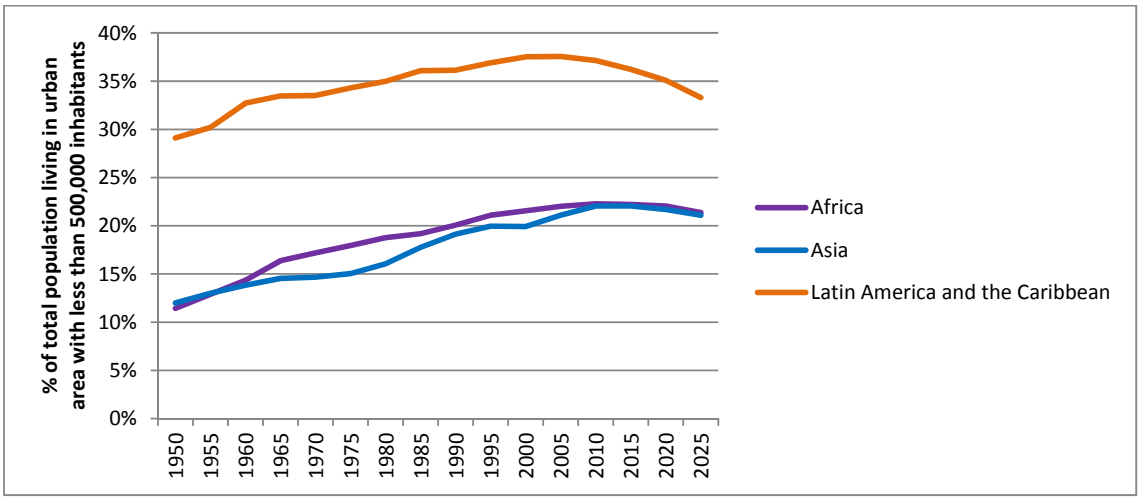


Figure 2: Proportion of people living in urban areas with less than 500,000 inhabitants
Source: UNDESA, 2012.

In order to get better insight in small town development trends, there is a need to differentiate between towns of different sizes. UN-HABITAT (2006) and Pilgrim, et al. (2007) differentiate between the following categories of small towns:

- small towns: 2,000–20,000 population
- medium size towns: 20,000–50,000 population
- large towns: 50,000 and 200,000 population

In addition, UN-HABITAT (2006) differentiates the following categories:

- urban centres with 200,000-500,000 inhabitants in nations where these are not amongst the largest urban centres; and
- peripheral municipalities within large urban agglomerations.

Pilgrim, et al. (2007) estimate that for every large town (50,000 to 200,000 people) there are ten smaller ones (2,000 to 50,000 people).

Data that gives a better insight into small town population development for different size towns is only available from country-level census studies. Based on an assessment of census data from a large number of countries, Satterthwaite (2006) concludes that many nations have more than 20% of their population living in small urban centres with fewer than 50,000 inhabitants. According to the IIED (2003), in many low-income and some middle-income countries, the population living in

[4] As shown in annex 1, population growth is mainly expected to occur in the larger urban centres with more than 500,000 people.

settlements with populations between 2,000 and 20,000 could be even between a quarter and half of the total population.

However, it should be noted that areas that are considered "urban" in one country, may be considered as "rural" in another. This increases ambiguity in defining small towns, posing challenges to the analysis of small town population trends.

2.2 Small town water services trends

As small towns exist somewhere in the continuum between the truly rural and the truly urban, so are small town water services situated between basic water services—provided through community-managed handpumps, common in rural areas, and high level water services—provided to peoples' doorstep through piped schemes managed by professional utilities, often strived for in urban areas (Mugabi and Njiru, 2006; Pilgrim, et al., 2007; Ryan and Adank, 2010; Pezon, et al, 2013).

In the water and sanitation sector, "small towns" tend to be defined based on the water service delivery model, rather than on population size. In the 2000 e-conference on small town water and sanitation was defined by David and Pilgrim (2000) as follows:

> *Small towns are settlements that are sufficiently large and dense to benefit from the economies of scale offered by piped systems, but too small and dispersed to be efficiently managed by a conventional urban water utility. They require formal management arrangements, a legal basis for ownership and management, and the ability to expand to meet the growing demand for water. Small towns usually have populations between 5,000 and 50,000, but can be larger or smaller.*

Population and economic growth and rising living standards have led to a general trend of increased demand for more and higher levels of water services, with people moving up the ladder from dug wells and handpumps, to piped water supply through standpipes and subsequently to household connections (Collignon, 2002; Valfrey-Visser, 2008; WSP, 2010b; Lockwood and Smits, 2011).

The figures of the World Health Organisation and UNICEF's Joint Monitoring Programme (JMP) show that the proportion of people with access to piped water on premises has increased from 45% in 1990 to 54% in 2010 (see figure 3). The proportion of people accessing public taps increased only slightly between 1990 and 2012 in both urban (from 5% to 6%) as well as in rural (from 6% to 8%) areas.

However, JMP only differentiates between rural and urban, and does not explicitly give water coverage figures for small towns. It is therefore difficult to give a good estimate of global and regional small town coverage figures. Whether small towns are considered part of rural or urban, depends on how countries define "rural" and "urban".

The increase in the proportion of people with access to piped water is bigger in rural areas than in urban areas. In rural areas it increased from 18% in 1990 to 29% in 2010. In urban areas, no significant change was observed; in fact, a slight reduction from 81% to 80% was even recorded. However, the absolute number of people in urban areas with access to piped water supply increased considerably. Efforts in providing water services to urban populations have thus struggled to keep pace with urban population growth.

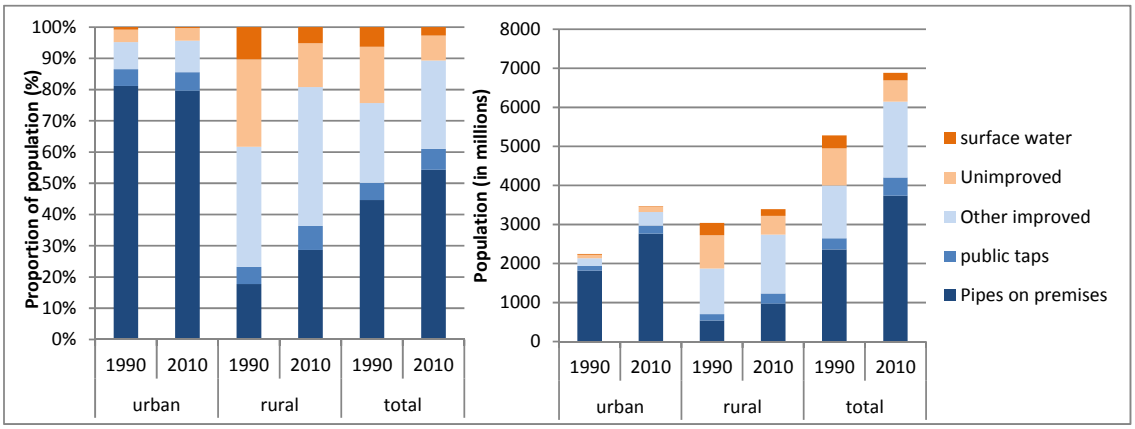


Figure 3: Proportion of population (left) and absolute number of people (right) with access to water services
Source: WHO/ UNICEF, 2012.

Figure 4 shows that an increase in the proportion of people with access to piped water on premises predominantly occurred in rural Eastern and Western Asia and Latin America. In rural South and Southeast Asia, increases over the last 20 years have brought these regions at the level of where Eastern Asia was 20 years ago, before experiencing an explosive growth in rural piped water supply. The percentage of people with access to piped water services on premises continues to be low in Sub-Saharan Africa, and has not grown considerably between 1990 and 2010.

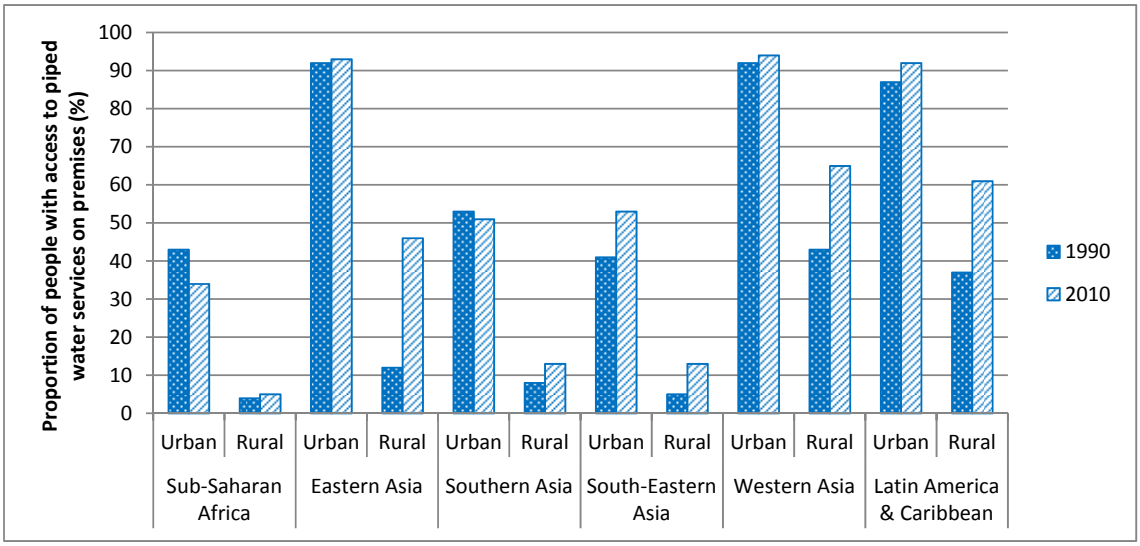


Figure 4: Proportion of population with access to piped water supply on premises in different regions
Source: WHO/ UNICEF, 2012.

Figure 5 presents estimated coverage of piped and well water supply on premises for rural areas and different sized urban areas. It shows a higher percentage of households with access to piped or well water on premise in South and West Asia and Latin America (around 60%), than in Sub-Saharan Africa and Southeast Asia (around 35%). WSP (2010b) estimates that a quarter of the population living in Africa's rural areas and small towns are served through piped water schemes.

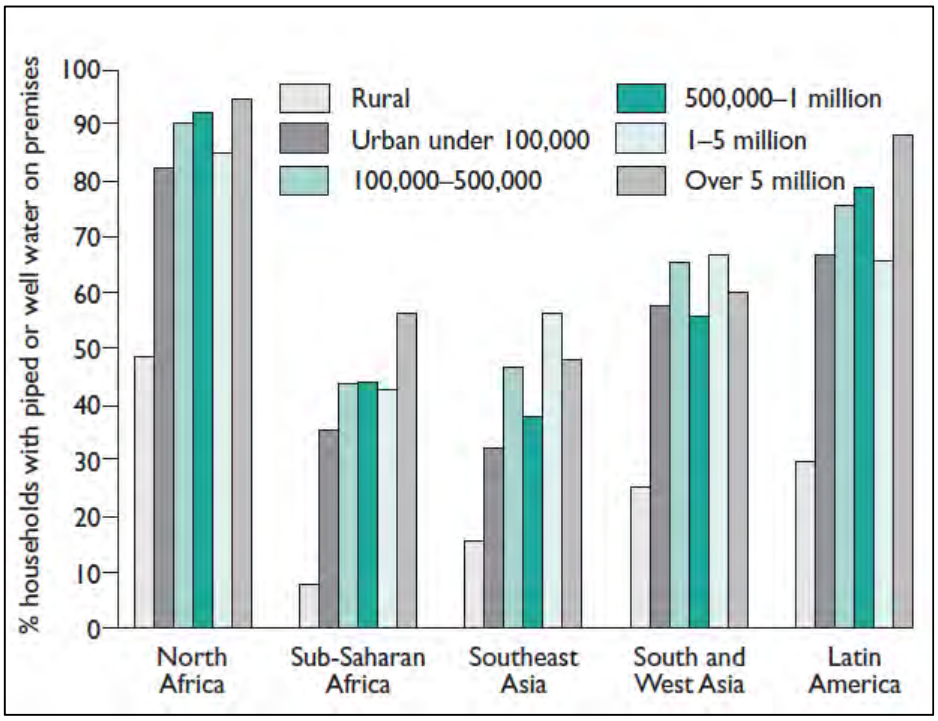


Figure 5: Proportion of households with piped water supply or well on premise
Source: UN-HABITAT, 2006, based on Hewett and Montgomery, 2002.

Historically, sector donors funded either rural or urban programmes, with small towns falling in a grey area (WaterAid and BPD, 2010; UN-HABITAT, 2006). However, as generally no distinction is made between funding of urban, rural and small town water services, it is difficult to provide a good analysis of global trends and developments related to donor budget allocations for small town water services[5].

According to WSP (2010), governments in Africa, triggered by the realisation of the strategic importance of rural growth centres and small towns for economic and social development, have increasingly been building piped water schemes in small growth centres since 2000. In several countries, governments have committed to increasing coverage of piped water supply. The government of Mauritania for example decided in 2006 that the new objective of the sector was to build piped schemes in all settlements of more than 500 inhabitants (Valfrey-Visser, 2008). In the same year, the government of Burkina Faso decided that handpumps should no longer be installed in settlements of more than 3500 inhabitants—but, only piped schemes. In Uganda, the government set targets for private connections to increase from 1,400 in 2002 to 17,100 in 2010 (WSP, 2002a). This target seems to have been met, even exceeding projections: in 2010, private operators served 80 small towns with 35,000 connections. In India, where currently over 80% of the population has access to improved water supply, of which piped water supply accounts for about 30%, the government set the ambitious target of covering 80% of the rural population with piped water by 2022.

[5] According to reports by the Development Assistance Committee (DAC) of the Organisation for Economic Co-operation and Development (OECD) (OECD-DAC, 2012), donor funds allocated to the implementation of water and sanitation schemes have favoured large schemes above small schemes providing basic services (which include small town schemes). However, there has been an increase in projects for basic systems, including small town water supply, from 2003 (13%) to 2010 (31%) (OECD and DAC, 2012).

In addition to piped water schemes, hand-dug wells and boreholes with handpumps often provide (complementary) water services in small towns, as do water kiosks, where water is acquired, treated and made available on the spot. Kiosks have emerged over the last decade, mainly in India, but are also now being piloted in parts of Africa and South East Asia (de Carvalho, et al., 2011).

The table below presents the main categories of small town water supply schemes, based on size and complexity.

Table 1: Overview of small town water supply schemes

Type	Service level and distribution point	Population served per scheme	Length of pipeline (Km)	Production capacity (m^3/day)
Point source (hand-dug well or borehole)	Basic service, through single communal distribution point	150-300	-	
Water treatment kiosk	Basic service, through single communal distribution point	1,500-5,000	-	
Motorised/ mechanised point source	Basic service, through single communal distribution point	500-1,000	< 0.1	5-10
Simple piped scheme	Basic service, through multiple communal distribution points	500-2,000	< 2	5-40
Standard piped scheme	Mix of basic and high level service, through multiple communal distribution points and household connections	2,000-10,000	2-10	20-300
Multiple-village piped scheme	Mix of basic and high level service, through multiple communal distribution points and household connections	5,000-200,000	10-250	100-2,000

Source: Adapted from WSP, 2010b and Kleemeier, 2010.

It is not uncommon to find a mix of schemes providing different levels of water services in a small town, for instance a standard piped scheme, in addition to a number of boreholes with handpumps.

2.3 Small town water service provision challenges

The "in-between" nature of small towns provides challenges when trying to ascertain data on global trends. This also provides challenges related to the provision of sustainable water services. In this section, some of the key small town water service provision challenges are explored.

2.3.1 High costs, low revenues of small town water services

The unit costs of small town water service provision are generally higher than those of rural water services (see box 1), while not benefitting from the economies of scale and (cross-) subsidies of large (urban) utilities.

Box 1: Costs related to small town water supply

Collecting and analysing cost data from Ghana, India and Mozambique, the WASHCost Project found widely varying initial investment costs related to small town water services, ranging from US$ 31 to US$ 197, which was considerably higher than the average per capita investment costs related to rural handpumps, ranging from US$ 19 to US$ 64 (Burr and Fonseca, 2012).

The operation and minor maintenance costs were found to be considerably higher for piped schemes than for point sources. Reviewing the operational expenditure (OpEx) of piped schemes in Ghana for example, showed an average per capita OpEx of US$ 1.4 and US$ 4.1 per person per year,

which is considerably higher than the average of US$ 0.13 per capita per year[6] for a handpump OpEx (Burr and Fonseca, 2012).

However, Pezon, et al (2013) found that when direct support costs are quantified and considered as part of recurrent costs, the per capita costs of handpump water services become much higher than those of piped water services. This is because costs of support to service providers is directly related to the number of service providers served in a certain area, which is higher for handpump water services than for piped water services. However, most often than not, these direct support costs are generally not included in handpump tariffs, while they are in piped scheme tariffs. Such results in higher tariffs for piped water service than for handpump water services (Pezon, et al, 2013).

Source: Burr and Fonseca, 2012; Pezon, et al, 2013.

Actual water use in small towns is generally low (see box 2), often lower than the design capacity, resulting in low revenues. Unlike in urban areas, where national or regional utility water services are the main, if not only source of water, small town dwellers often also have access to alternative sources of water, such as communal handpumps and household level water sources (WSP, 2002a). These alternative sources often supply water services at lower prices than piped schemes, but tend to provide less reliable services, especially in the dry season. Demand for services from the small piped schemes is thus lower and often more seasonal than demand of services from larger urban schemes.

Box 2: Low water use in small towns

From an assessment undertaken in seven countries (Benin, Burkina Faso, Mali, Mauritania, Niger, Rwanda and Senegal), WSP (2010b) found actual per person water consumption from piped schemes ranging from 25 to as low as three litres per person per day. The amount of water used per person per day from public standpipes tends to be especially low.

In the Hitosa and Gonde Iteya water supply schemes in Ethiopia, water use was for example found to be eight to nine litres per person per day (WSP, 2002b).

In six small towns in Burkina Faso, majority of the users of piped schemes were found to consume 10 to 20 litres per person per day, comparable to the water consumption per person from handpumps (Pezon et al, 2013)."

In four small towns in Ghana, about a third of the users were found to use less than the design amount of 20 litres per person per day (WASHCost, 2011). Case studies from other towns in Ghana also showed average levels of water use, which were considerably below the design use (Adank and Tuffuor, forthcoming), as illustrated in the figure below. The design capacity, as presented in the graph below, is based on a design use of 20 litres per person per day for standpipes and 60 litres per person per day for household connections. Figures are stipulated by the government agency responsible for rural and small town water supply in Ghana—Community Water and Sanitation Agency (CWSA).

[6] Which seems to be in line with the annual maintenance costs of US$ 0.50 – US$ 0.70 per household, or US$ 0.10 – US$ 0.14 per capita estimated by Foster (2012).

The design capacity depends on the balance between the number of household connections and standpipes, which is prescribed by the CWSA. The figure presents actual average water use, as well as average use from standpipe and household connections. It shows that water use from household connections is higher than that from standpipes, but is far below the design use of 60 litres per person per day for household connections.

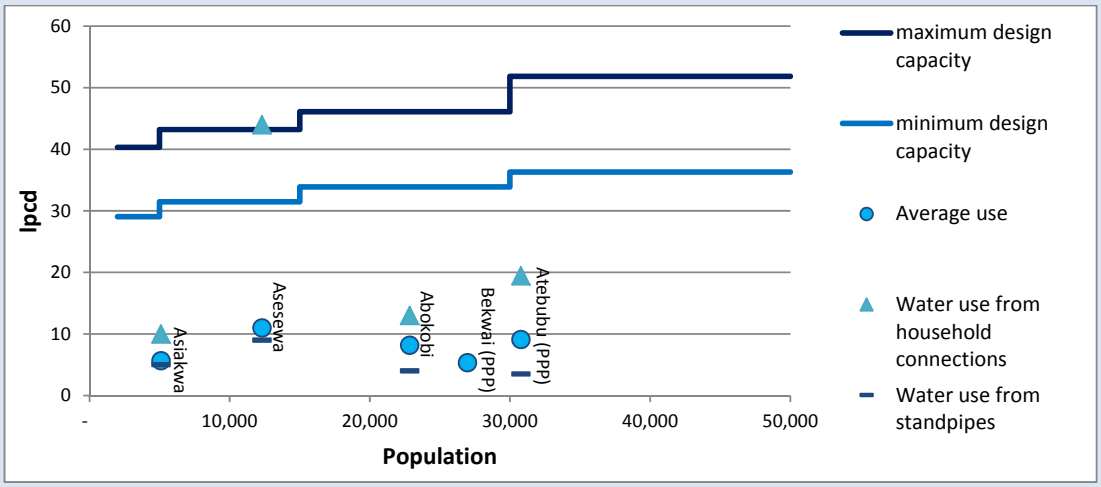


Figure 6: Design and actual water use from selected small town piped schemes in Ghana
Source: Adapted from Adank and Tuffuor, forthcoming.

The amount of water used from kiosks is generally very low, at around three to four litres per person per day (de Carvalho, et al., 2011).

2.3.2 Technical capacity for the provision of small town water services

The technical and managerial complexity of providing small town water services is somewhere between more simple rural water services, and more complex urban water services. However, where in urban areas it is often not a big challenge to attract and maintain staff with the required capacity for effective, efficient and sustainable water service provision, this is a struggle in small town settings. Technical staff responsible for the management of small town water schemes often does not have access to vocational training and they tend to lack core skills, which prevents them from managing small piped schemes in an effective, efficient and sustainable way.

2.3.3 Dealing with small town dynamics and diversity

As mentioned by WaterAid/ BPD (2010), defining small towns based on their population size only, fails to adequately capture their dynamism and diversity. Moriarty, et al., (2002), Pilgrim, et al., (2007) and Mugabi and Njiru (2006) note that the transitional nature—defined by dynamics of change and rapid growth—is an important characteristic of small towns and rural growth centres. Another important characteristic of small towns is the mix of rural and urban livelihoods, with salaried professionals living in modern houses, with demands for service levels comparable to those provided in cities and people living on the periphery of small towns who may require water for agricultural or other productive uses.

According to WaterAid/ BPD (2010), differences in demographic characteristics (including settlement patterns), the transitional nature of settlements, the mix of economic livelihoods, and the governance and political context of small towns, mean that there is not one single model for

delivering small town water services that fits all. They argue that understanding how small towns are demographically, economically and politically linked to the surrounding areas, needs to be factored more coherently into the design and delivery of small town water (and sanitation) services, as these have a clear bearing on the demand for and supply of these services.

Where there is generally one model for (formal) water service delivery in urban areas (the utility-managed piped scheme model) and one for rural areas (the community-managed handpump model), a wide variety of service delivery models can be found for the provision of water services in small towns. There is no blueprint and no universal model for providing sustainable water services in small towns and different service delivery models are applied to provide small town water services in different contexts. The most appropriate service delivery model should depend on the context of the town. In reality however, it is not uncommon to have different water services delivery models in towns with a similar context, and sometimes even in a single town.

Different small town management models are described in chapter 4, while chapter 5 focuses on the direct support arrangements related to these models. But first, key concepts and definitions that can be applied to describe such models and support arrangements are explored in chapter 3.

3 Key concepts and definitions for describing small town service delivery models

Service delivery models describe the hardware, software (management model) and level of service provided. **Management models** describe roles and responsibilities of different stakeholders related to water service provision, including service provision functions, service authority functions and functions related to the creation of an enabling environment.

Lockwood and Smits (2011) define **service provision functions** as those functions related to the actual day-to-day provision of water services to users. These include tasks such as operation, maintenance, revenue collection and administration of the water scheme. Pilgrim, et al., (2007) consider service provision to be a combination of the corporate oversight and operation roles, with **corporate oversight** vested with the body responsible for decision-making regarding the management of the water scheme. It involves activities such as preparing (with the help of the operator) and approving budgets and business plans. A corporate oversight body is typically responsible for managing the operator who is responsible for **operations**, including day-to-day management of the water supply hardware, collection of user fees, preparation of business plans, etc.

Service authority functions, as defined by Lockwood and Smits (2011), include planning, coordination, regulation and oversight, but also technical assistance (direct support) to service providers. In their study of water service provision in 13 countries, Lockwood and Smits (2011) concluded that these functions are generally provided at the level between the community and the national level (for instance district, municipality, region, province, etc. depending on the country context).

The provision of **direct support** refers to the structured support activities directed at service providers and users or user groups (Fonseca, et al., 2011). Support directed at service authorities within a certain service area, can also be considered direct support. Whittington, et al. (2009), Lockwood and Smits (2010), Fonseca, et al. (2011), and Smits, et al. (2011) consider the following activities to be part of direct support: monitoring; technical advice; administrative support; organisational support; conflict resolution; training and refresher courses; provision of information; and resource mobilisation. Pilgrim, et al. (2007) refer to a similar set of activities as “professional” support, while WSP (2010a) refers to similar support functions as “Business Development Services” (BDS).

The **enabling environment** requires for the **setting of service coverage targets, policies**, and the provision of **support** to the service authority level (Lockwood and Smits, 2011). These functions are generally executed at national level. The provision of support to service authorities can be the responsibility of national or sub-national government bodies, or can be outsourced to support agents. These support agents often both assist service authorities in supporting, supervising and regulating service provision and support service providers (direct support).

According to Trémolet (2013), **regulation** can be seen as a set of functions, which can be allocated between different levels. Generally, a differentiation is made between central regulation, which take

place as national level, and local regulatory functions, which commonly lies at service authority level (Pilgrim, et al., 2001; WSP, 2010).

Regulations at the national level provide detailed guidelines concerning the implementation of policies. They also set technical and financial standards for the operations of the sector, including reporting requirements that provide the government with the information necessary to monitor the performance of service providers, and to judge whether standards are being met. To be effective, regulations should also provide protocols for remedial measures in cases where standards are not being met (Pilgrim, et al., 2007).

Local regulatory functions, referred to as **performance regulatory functions** by Pilgrim, et al. (2007), revolve around monitoring the technical and financial performance of the service providers, and ensuring that the agreed level of services are provided. In addition, regulatory functions can include the approval of tariffs, fees, and business plans, and working with national or state government to ensure that conditions for public health and the environment are met. Different regulatory models include:

- **Self-regulation:** No agency or contracting authority regulates the service provider. The service provider regulates itself, possibly against set benchmarks, with benchmarking information made publicly available (so called “sunshine” regulation). In case of private service provider, shareholders can have a regulatory role.
- **Contractual regulation:** The contracting authority regulates the service provider through a contract with clearly defined roles, responsibilities, procedures and penalties.
- **Agency regulation:** The service provider is regulated by a regulatory agency, dedicated to regulating service providers (Trémolet, 2013; Canneva, 2013).

The figure below gives an overview of the main functions at different levels related to water supply.

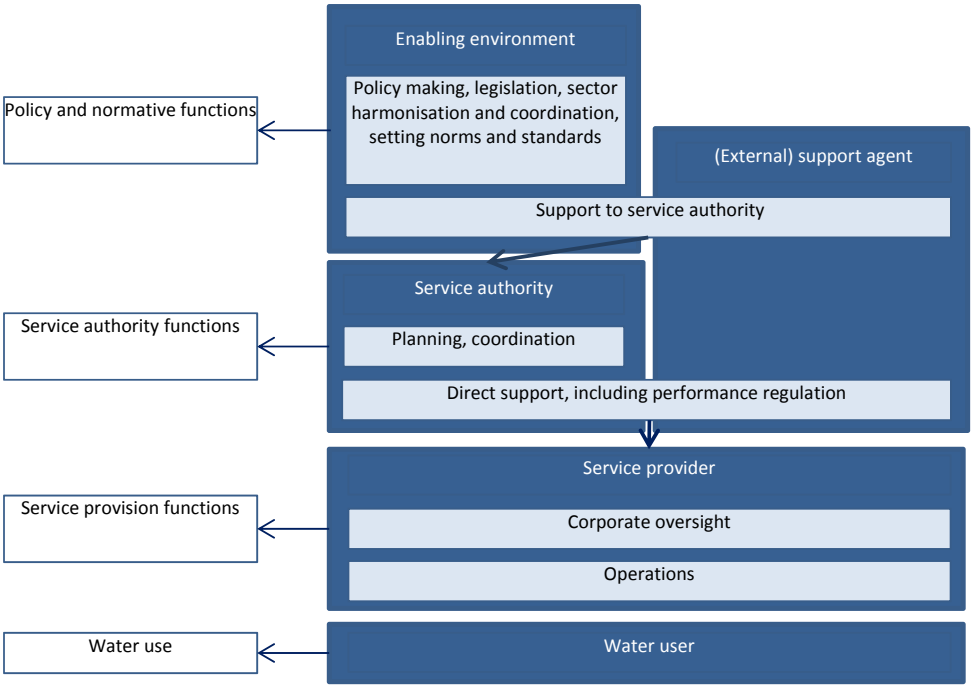


Figure 7: Water service functions

4 Small town management models

This chapter explores the main management models related to water service provision in small towns and describes their main areas of application, challenges and opportunities.

4.1 Overview of small town management models

Under the BNWP-funded project investigating the challenges of providing water and sanitation services in small towns, several management models for small town water supply were documented and studied. This resulted in the classification of small town (piped scheme) management models as described by Pilgrim, et al. (2007), differentiating between water committees, water boards (both forms of community-based management), municipal departments, small-scale private water supply companies and national/ regional utilities.

Under the "community management", "municipal management" and "utility management" models, operations can be delegated to the private sector and then be considered as a separate model. In addition, self-supply is identified as a model for development and provision of water services in small town, often to complement unreliable water service provision under other models. Table 2 gives an overview of the main management models and the roles and responsibilities of main stakeholders involved in service provision under each model.

Table 2: Overview of management models

Principal small-piped scheme service delivery model	National or regional utility	Direct municipal management	Community management	Delegated management	Private ownership and management	Self -supply
Ownership of assets	State/ local government	Local government	Community/ local government	Community/ local government	Small private company	Household
Corporate oversight	Board of Directors	Town council water committee	Executive committee of association or water board	Association/ water boar / municipality	Owner-manager	Household
Operations	Managing Director and utility staff	Municipal water department	Scheme manager and staff	Private operator	Company staff	Household

Source: Adapted from Pilgrim, et al., 2007 and Lockwood and Smits, 2010.

Below, these different models are discussed in more detail. A description of the roles and responsibilities of different stakeholders under each model, their main advantages and disadvantages and the areas where each model is mainly applied are described. For each management model, a case example is presented.

4.2 National/ regional utility management

National/ regional utility management is the common management model for urban water supply. However, in several countries, such utilities also provide water services to small towns. Small towns served by national utilities are mostly common in Francophone West Africa. Utilities providing services to small towns include SONES (*Société Nationale des Eaux du Sénégal*) in Senegal, SODECI (*Societe de Distribution d'eau de la Cote d'ivoire*) in Côte d'Ivoire, SEEG (*Société d'Electricité et d'Eaux du Gabon*) in Gabon, water boards (regional water utilities) in South Africa, and ONEA (*Office National de l'Eau et de l'Assainissement*) in Burkina Faso (see box 3).

Box 3: Successful utility management of small towns in Burkina Faso

ONEA (*Office National de l'Eau et de l'Assainissement*) is a utility, providing water services to 42 cities and small towns with populations over 10,000 in Burkina Faso. It is considered as one of the most successful and efficient water companies in Sub-Saharan Africa and in December 2008, was the first public water utility in Sub-Saharan Africa to be ISO 9001-certified.

In the early 1990s, the government initiated a process of restructuring and strengthening the organisation, while investing heavily in expanding access, with the assistance of foreign aid. Tariffs were increased, non-revenue water declined, labour productivity was increased, business procedures were modernised through a computerised customer billing system, customer relations were improved, an internal control system to fight corruption was introduced and a laboratory was established. The mutual responsibilities of the public company and the government were laid out in the form of a "Contract Plan" setting quantitative targets over a number of years.

In the 1990s, the International Monetary Fund (IMF) and the World Bank assisted in establishing a public-private partnership for water supply in Burkina Faso, which resulted in a five-year service contract with the French private operator Veolia. Operations started in January 2001. Though this contract, the management of customer service and bill collections was done by Veolia on behalf of ONEA, but technical operation and supervision of the contract remained in the hands of ONEA.

Source: Marin, et al., 2010.

Corporate oversight of public water utilities lies with a Board of Directors, often appointed at a higher political level. Operational tasks may be carried out by salaried government employees or may be contracted out to local staff (Pilgrim, et al., 2007).

The role of local government and the relation between local government and regional or national utilities is not always clear. Service authority functions generally lie with regional or national government, rather than with local government.

National and regional utilities that provide small towns water services can be regulated through self-regulation (as is the case in The Netherlands), by local or central government through contractual arrangements (for instance in Burkina Faso, where the mutual responsibilities of ONEA and the government are laid out in three-year performance contracts), or by a specialised agency (such as OFWAT in the UK, *Conselho de Regulacao do Abastecimento de Agua* (CRA) in Mozambique and the Public Utility Regulatory Committee (PURC) in Ghana).

An advantage of this model is that in theory, it ensures high-level service provision by a professional service provider. However, providing relatively large quantities of high quality water on demand to people's doorsteps is not necessarily the most realistic model for rural areas and small towns. And with their limited number of potential clients and low levels of water use, small towns are often not (economically) attractive for national or regional utilities, and often require substantial (cross-) subsidies.

When uniform tariffs are set for the provision of water services for a service area covering multiple schemes, tariffs can be used to cross subsidise less economically viable schemes with the use of revenues from more economically viable schemes. This is common practice under national or regional utility management. Generally a uniform tariff is set for both urban areas and small towns in a service area. An example of this can be found in Burkina Faso, where people in small towns served by ONEA enjoy the same tariffs as in the capital Ouagadougou. In this way, urban water users cross-subsidise water users in small towns.

4.3 Direct municipal management

In the case of direct municipal management, the municipality[7] is both the owner of the assets as well as the water service provider. It is responsible for the management of the water supply scheme, typically through a Municipal Water Department. The Municipal Water Department falls either directly under the Mayor or the Municipal Council, as is the case in smaller municipalities, or under a Public Works Department as is common in larger municipalities[8]. Municipal staff carries out all operations and maintenance (O&M) tasks. Water departments may have their assets and finances ring-fenced, or they may be part of a wider set of municipal services (Pilgrim, et al., 2007).

The main advantage of direct municipal management models is the relative simplicity of the model. There is no need for complicated contractual arrangements between asset holder and operator, as both are part of the municipality (Collignon, 2002). Disadvantages of this management model include the following:

- Difficulty in retaining good professional staff in the municipal departments.
- Little autonomy of the municipal water department under the municipal council that created it, which can lead to challenges in ring-fencing the revenue from interference of any kind.
- Difficulty in creating incentives for the municipality to expand services and finance new facilities, when the municipal/ district investment budget is already under a lot of stress from the demands of other issues.
- High level of bureaucracy and bureaucratic regulations.
- Lack of regulation and accountability: Accountability is often not based on business plans with agreed-upon performance targets and there generally is a lack of independent control and regulation. The municipality is essentially accountable to itself and is therefore only really accountable to its constituents through elections (Collignon, 2002; Njiru and Sansom, 2002; Ringskog, 2003; Pilgrim, et al., 2007 and Valfrey-Visser, 2008).

[7] "Municipality" refers to an administrative area such as a district, which can include one or more towns. "Town" refers to a single settlement.
[8] Although, as mentioned by Moriarty, et al. (2002), municipal management trends to occurs only in larger towns.

This model is mostly applied in countries with a strong municipal tradition, like most countries in Latin America, Vietnam and Cabo Verde (Collignon, 2002). Box 4 presents an example of municipal management of small town water supply in Peru.

Box 4: Municipal management in small towns in Peru

In 2003, Peru had about 650 small towns, with a population of 2,001 to 30,000 inhabitants. Representing 15% of the country's total population, all 650 small towns have a combined total of 4.1 million inhabitants. Water services were provided by municipal water and sewage-regulated enterprises in about 150 small towns, while 450 small towns were provided with water services through schemes managed directly by municipalities (McGregor, 2008).

The bigger municipalities have established a municipal service provider (EPS), while in smaller municipalities—the municipal department took charge of water supply.

Challenges with this management model include problems such as lack of capacity, lack of funding and lack of regulation. Also, there was found to be high turn-over of key staff: In 1999 it was estimated that on average, the EPS changed general managers every 17 months (WHO/ PAHO, 2000).

4.4 Community-based management

The community-based management (CBM) approach has its roots in the International Decade for Drinking Water and Sanitation (1980-1989)—a time when a new wave of programmes to increase water service coverage emerged. This was largely done through bypassing government structures in favour of communities and grassroots organisations (Lockwood and Smits, 2011). Since then, CBM has served as the predominant model for the management of (rural) point sources, but has also been applied for the management of piped schemes in towns not covered by national, regional or municipal utilities. For example, with the introduction of small-piped schemes in seven francophone West African countries in the 1980s, village management committees primarily took the task to managing schemes, based on experiences with community-managed point sources. However, these committees were not legally recognised and often did not have the capacity to operate and maintain piped schemes in a sustainable way. To address this, the following were taken up: legalisation and strengthening of community-based service providers and introduction of mechanisms to ensure sustainability, like volumetric water sales and establishment of replacement funds (WSP, 2010b).

Nowadays, CBM is considered a common small town management model, applied especially in smaller towns with less complex schemes in Africa, Latin America and Asia; but also in Europe, such as in Ukraine (Sorokovskyi and Olschewski, 2011), Switzerland (Saladin, n.d.) and in the United States of America (Gasteyer, 2005).

Under community management, water service provision is considered the responsibility of either a water committee or association, consisting of community members, or a "water board", which can include representatives from local government, private sector or local professionals, in addition to representatives from the user community (Pilgrim, et al., 2007). Decision-making is found in the hands of the elected executive committee of the water association or board—the group that fulfils corporate oversight role. Operating staff may be employed locally, or may be contracted to a private operator. Ownership of assets can either be with central or local government, or is transferred to

the water association or water board itself (Pilgrim, et al., 2007). However, in their synthesis of 13 country case studies, Lockwood and Smits (2011) found that only in the USA did community-based water service providers enjoy legal ownership of assets.

The advantage of community management is that water users are, at least in theory, more involved in decision making related to water service provision; including the level of services provided, the tariffs charged, etc. than those under utility and municipal management.

Limitations of CBM of small town water supply include:

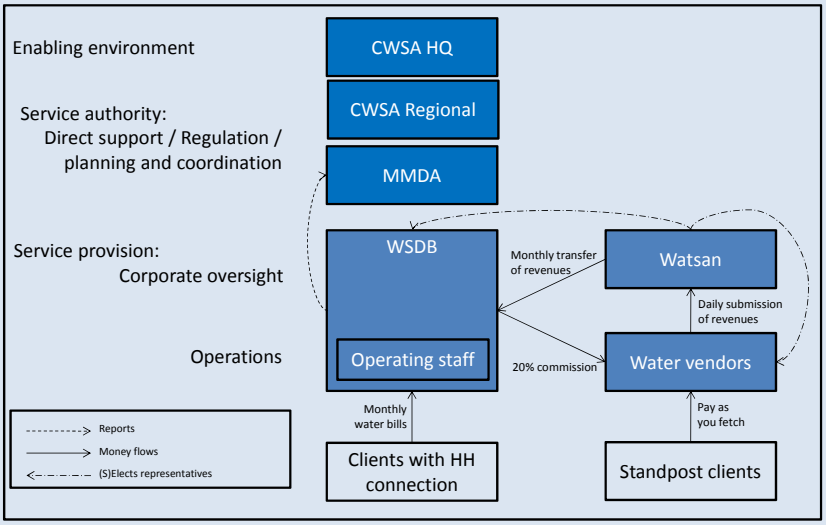
- Lack of capital for (re)investment and network expansion.
- Lack of technical and managerial skills to manage complex schemes.
- Problems with transparency and accountability.
- Challenges with cost recovery (Valfrey-Visser, 2008; WSP, 2010b).

According to Lockwood (2002) and Schouten and Moriarty (2002), CBM needs strong institutional support and funding from government, NGOs or both. This kind of direct support is discussed in more detail in chapter 5.

Central regulatory bodies regulating utility water supply are generally not responsible for regulating small town water services provided by community-based organisations. And, as there often are no contracts involved between the service providers and a contracting authority (such as local government), regulation through contracts is not common under this model. As community members elect members of the association, committee or board, at least part of the regulatory functions lay with community members themselves. In addition, the owner of the assets—which is generally the local government—can play a role in regulating community-managed small town water services, for instance through approving tariffs, monitoring the community-based service providers, etc.

Box 5: Direct Water and Sanitation Development Board Management in Ghana

Most small town piped schemes in Ghana are managed directly by a Water and Sanitation Development Board (WSDB), consisting of ten to fifteen members, elected from different groups within the community. At least a third is represented by women and another third, by local government. It employs permanent staff responsible for the operations and maintenance (O&M) of the water scheme. This includes a system manager, who, on behalf of the WSDB, oversees the management of the scheme. The WSDBs employ technical persons who work directly under them. A WSDB takes its legal authority from local government (metropolitan, municipal or district assembly (MMDA)). The figure below gives a schematic overview of the roles and responsibilities of different stakeholders within this model.



Note: HQ (Headquarters); HH (households); Watsan (Water and Sanitation)

Users pay for water services through tariffs: those with household connections are presented with monthly bills, while people using standpipe connections pay as they fetch water, usually per bucket. Depending on the size and complexity of the scheme, the WSDB may directly employ vendors to operate tap stands, for which vendors receive a commission of 20% of the revenues at the standpipe, or may delegate water and sanitation (WATSANs) committees to manage one or several standpipes serving a community on their behalf (CWSA, 2004a).

WATSANs are in-charge of the selection of vendors to manage the standpipes in the area, and of monitoring their activities. The vendors collect revenues from the standpipe on a pay-as-you-fetch basis.

The WSDB is responsible for undertaking service provider functions, including collecting technical data on the management of the water supply scheme and checking financial records on a monthly basis; preparing financial records for operation and maintenance and providing these records to MMDA and the Community Water and Sanitation Agency (CWSA) for inspection; and reading out technical, administrative and financial reports to the community at least once every six months.

MMDAs monitor and provide support to the WSDBs and are in turn supported by the regional offices of CWSA.

Both best as well as worst-case examples of water supply under this model can be identified. In general, cost recovery under this model has been relatively successful, with most WSDBs easily recovering their operation and minor maintenance costs. Major challenges include:

- Lack of clarity on corporate oversight leads to conflict and tension.
- Low capacity and lack of leadership in communities.
- Lack of support from local government results in challenges with transparency and accountability.

Source: Adank and Tuffuor, forthcoming.

4.5 Delegated management

Delegated management has emerged as a response to the challenges and limitations of municipal and community-based management. The number of schemes managed under delegated management has been growing rapidly since 2000 (WSP, 2010a; WSP, 2010b). Delegated management is prevalent in francophone African countries[9], while the model is applied less frequently in India and Latin America (Foster, 2012). In countries such as Peru, Paraguay, Colombia, Haiti, Columbia, Vietnam, Cambodia and Bangladesh—the model is often applied on a small-scale basis, as part of pilot projects. In addition, delegated management is a common model applied in small (and larger) towns in a variety of European countries, including France, Spain, Italy, Austria and Portugal.

Under delegated management, a contractual relationship is forged between a "contracting authority" and a professional operator (WSP, 2010a). The contracting authority is responsible for contracting an operator—which is responsible for the day-to-day tasks related to water service provision, as well as other tasks related to asset development and renewal, as stipulated in the contract. The contracting authority can be the central government, a municipality, a national or regional utility or a community-based organisation.

The most common delegated management model is the public-private partnership (PPP) model, under which (local) government delegates operations to a private (or in some cases, a community-based) operator. This model emerged from the privatisation drive in the 1980s and 1990s, as a response to wide resistance to full privatisation and the lack of interest of private sector to take full responsibility over providing water services, especially in less economically viable smaller towns. Also, full privatisation, with ownership of public assets being handed over to private sector, was not an option under the existing legal framework of many countries. PPPs, in which the public sector remains asset owner and regains final responsibility of service delivery, was therefore perceived as a more acceptable model than full privatisation.

The public partner generally is local government, but can also be central government, as has been the case in Mauritania, described in box 6.

Box 6: Public-private partnerships for management of small piped schemes in Mauritania

In Mauretania, municipalities ("communes") used to be responsible for managing small town systems directly. However, by 1994, this model had largely proved a failure. A new management model was put in place by the Mauritanian government, which encouraged management by local private independent operators. This was done within the wider framework of job creation. Under this model, central government signs contracts with individuals and companies for the management of small town systems. Three types of operators can be found:

- **Respected local individual:** One part-time multi-tasker, with elementary or secondary school education, appointed by community-based organisations. Respected local individuals are the most common operators found in villages.

[9] At least 25% of small-piped systems in the 10 countries represented at the practitioners' workshop on Sustainable Management of Small Piped Water Systems in Africa held in Maputo, Mozambique last 6-8 October 2010 were found to be under delegated management, as of 2010 (WSP, 2010a).

- **Professionals**: A small technical staff (plumber, pump attendant, clerk), with previous management experience; selected by community amongst different candidates. These operators commonly manage water supply in small centres.
- **Specialised entrepreneurs**: Between three and ten full-time employees (technical and commercial), consisting of individuals with previous experience or with an engineering degree (or equivalent), selected through a competitive selection process based on skills. Specialised entrepreneurs are mostly found in somewhat bigger small towns.

Contracts are awarded by *Agence Nationale d'Eau Potable et d'Assainissement* (ANEPA), a private non-profit association, which remains under government control. Management contracts are signed for one year, and are renewable.

ANEPA is responsible for major repairs and maintenance (CapManEx), in exchange for a fee paid by the operator, based on the volume of water sold. However, in many cases, operators have invested themselves in major repairs and extension of the network and provide high-level services, focusing on household connections. In this way, operators managed to install some 35,000 individual connections over the last ten years, far surpassing the number of connections made by the utility (SNDE) in the same period.

Local government and communities are in principle not party to the contracts, but play an important role in the selection and appointment of the operator. However, recent projects such as PIR Brakna and *Projet Eau Gorgol Guidimakha* (PEGG) are paving the way to devolve contracting authority to local governments.

As of 2006, small, private operators managed about 90% of small-piped schemes under public-private partnership arrangements. In 2009, 350 PPPs were in place for the provision of water services.

Source: Valfrey-Visser, et al., 2006; WSP, 2010b; Kleemeier, 2010; Foster, 2012.

Community-based organisations (CBOs) often lack the legal status needed for them to engage in signing contracts with a private operator. When moving from community management to delegated management, the role of the local government, as the contracting authority is likely to increase.

It is not uncommon to have tri-partite partnerships: in addition to a public and a private party, the community—through community-based organisation—can act as a third party. Under these types of partnerships, community involvement often includes having influence on the selection of the private operator, and sometimes, a role in providing corporate oversight to the private operator. An example of such a partnership is presented in box 7.

Box 7: Public-private-social partnerships in Peru

In order to break away from poor service quality and poor cost recovery that prevailed throughout small towns in Peru, provided directly by the municipality—a new management model was introduced and piloted in nine small towns (between 5,000 and 25,000 inhabitants) across the country starting in 2006. The new model was supported through the Small Town Pilot Project (STPP) of the Ministry of Housing, with technical support from WSP and financial support from the Canadian International Development Agency (CIDA). After the municipal elections of 2007, three

new mayors decided to abandon the new approach and to return to the old model of direct municipal management. In the six other cities, specialised operators continued to operate.

Under the new model, the municipality (as "contract authority") hires a specialised (private) operator, which is regulated by a community supervision board under a public-private-social partnership. In this way, the community is included in decision making on issues such as determining the level of service (and technology to deliver this level of service) and corresponding tariffs.

Source: McGregor, 2008.

Delegated management can take place under different contractual arrangements. The type of contract determines to what extent asset management, including extension, rehabilitation and major repairs, may be delegated by the asset holder (the contracting authority) to the operator. Box 8 gives an overview of different types of contracts. It shows that under a management contract, a lease or "affermage", the operator is not made fully responsible for asset management, including capital maintenance and expansion, while under a concession contract, it is. However, in reality it is not always clear who is responsible for rehabilitation and major repairs of assets, as responsibilities for capital maintenance are split between the (private) service provider and the (public) service authority, and contract duration does not always match the system's life expectancy. And even when responsibilities for capital maintenance clearly lie with the public partner, private operators may take up this role, when the public partner is not taking up this responsibility (see box 6 for an example of this from Mauritania).

Box 8: Definition of different contractual arrangements

Under a **management contract**, a private firm is appointed by government to provide managerial services, often for a fixed fee, for a given period of time.

Under a **lease** agreement, a private operator is responsible for providing services, including operating and maintaining the infrastructure for a given period of time. The operator is not responsible, however, for financing investment such as the replacement of major assets or expansion of the network. The private operator collects the tariff and pays, on top of the operation and maintenance costs, a fixed fee to the public sector.

Affermage is very similar to a lease, with the difference that under affermage, the fee is not fixed but proportional to the volume of water sold.

A **concession** is similar to a lease except that the private operator is responsible for asset replacement and network expansion.

Source: Berthélmy, et al., 2004; OECD, 2009.

Kleemeier and Narkevic (2010) state that in case of delegated management, using local government and/ or communities to monitor compliance to contracts is a more feasible approach to performance regulation, than having a dedicated central regulatory body doing this. Norms and standards need to be set at national level as local regulators require direct support in order to perform their tasks.

The independence of the operator from corporate oversight is considered an advantage of delegated management, as this prevents potential conflict of interest. Also, delegated management does, at least in theory, allow for more professional operation with higher level of technical and managerial capacity (Collignon, 2002).

According to WSP (2012a), there is limited quantitative evidence across countries that professionalisation of water services, through the involvement of a private operator, has had a positive effect on water services. They argue that case studies and evaluations have shown a positive effect of private sector involvement on management, including lowering of non-revenue water and costs of operation and maintenance. Also, they argue that private operators have the drive and ability to respond to demands for higher level of water services, through household connections. Higher service levels encourage consumers to use more water, which in turn contributes to financial viability of water services.

According to Forster (2012), there is a growing body of literature detailing the key challenges associated with private sector participation for small town piped schemes (WSP, 2010a; WSP, 2010b; Kleemeier, 2010a; Triche, et al., 2006). These challenges include:

- Reluctance of local stakeholders and perception of users that delegating operations to the private sector will result in higher tariffs (although as shown in box 9 there is little evidence for this) and loss of control over decision making related to water service provision by users.
- Difficulty to find interested private operators, especially for management of smaller schemes, because of low economic viability of these schemes. As mentioned above, levels of water use are often low because of the availability of alternative (possible seasonal) sources.
- Even though the technical and managerial capacity of private operators is generally higher than that of non-professional community-based operators, there are still challenges with the availability of private operators with adequate capacity and qualifications.
- The lack of capacity of local government to provide the required support and regulatory functions is an impediment.
- Short-term contracts do not provide an incentive to private operators to undertake sufficient preventive maintenance and invest in expansion.
- Roles and responsibilities of the different parties are often unclear. This includes a lack of clarity in who is accountable to whom, and who is responsible to pay for what, especially related to maintenance and scheme extension.

Box 9: Tariffs under public-private partnership management models

In the seven francophone West African countries where small town piped schemes managed by PPPs were assessed by WSP (2010b), users were found to generally pay US$ 0.50 to US$ 1.00 per m^3. This is in line with the tariff of US$ 0.50 to US$ 1.00 per m^3 charged in K-Rep[10] financed schemes in Kenya and the US$ 0.90 per m^3 charged by Vergnet in Burkina Faso (Forster, 2012). Adank and Tuffuor (forthcoming) found no major differences in tariffs between community-managed small town piped schemes and schemes under PPP management in Ghana, with both having a tariff of around US$ 1.50.

[10] Kenya Rural Enterprise Program (K-Rep) Development Agency (KDA) is a micro-finance development organisation.

In Anivorano Est—a commune in Madagascar—water services in its largest town with a population of 5,200 inhabitants are provided through a piped gravity flow water system, managed under a PPP. Water services are provided through a mix of household connections, social connections (standpipe shared by a number of households) and public connections. A progressive pricing structure is set in place to differentiate the three service levels offered by the system:

- household connections: US$ 0.50 per m^3
- social connections: US$ 0.40 per m^3
- public connections: US$ 0.35 per m^3

In addition to the tariff, households requesting a private connection are required to pay 50% of the cost of the water metre, as well as the material and installation costs for connecting to the nearest main pipe. In an attempt to extend access to more vulnerable families, households sharing social connections are required to contribute only 50% of the cost of the water metre (Annis and Razafinjato, 2011; Annis, 2012).

In order to ensure efficient and effective delegated management of small town water services, there is a need for:

- Contract durations which stimulate private sector parties to invest in the assets—in Spain for example, the maximum duration of contracts for private operators is 20 years (García-Valiñas, et al., 2013).
- Financing mechanisms that stimulate pro-poor investments, for instance outcome-based financing (see box 10).
- Clear contractual arrangements, with clearly defined roles and responsibilities for different parties.
- Clear regulatory arrangements and instruments.
- Strong and well-capacitated public sector parties, with the mandate, ability and capacity to provide the required level of oversight to the private party.
- Arrangements for support to service providers (business development services), as well as to service authorities.

Box 10: Output-based aid for small town water supply in Uganda

Service providers can provide part of the investment costs and then recover this from users through tariffs. Combining this with grants from development partners can ensure tariffs that do not exclude the poor from accessing the water services (WSP, 2010a). This can take the shape of output-based aid.

In Uganda, water delivery to approximately 160 small towns and 850 rural growth centres is the responsibility of local councils (Azuba, et al., 2010). By the late 1990s, PPPs for water supply in these small towns and growth centres were introduced through a sector reform programme supported by the World Bank and other donors. The management of water at the local level was delegated to local water associations (WAs). WAs were contractually obliged to provide various delegated services, usually through a sub-contracted private operator that undertook day-to-day operations and maintenance and other related operations, based on a management contract. Today, there are around 79 small town management contracts in operation.

In November 2005, an output-based aid programme was launched for piped water supply schemes in small towns and rural growth centres in order to address the rising demand for water connections. Under the OBA scheme, contracts are primarily awarded for the installation of connections as well as some investment in distribution infrastructure. It also contains a management component, which assigns the selected firm with the responsibility for managing water supply in line with the existing method of engagement with private operators (POs).

The OBA scheme introduced a number of changes in the framework for contracting POs, including:

- The mode of payment for investment in distribution infrastructure, including new connections.
- Investment has to be financed entirely by the operator up front. A specified share of the investment cost is reimbursed as soon as pre-identified investment targets have been completed and independently verified.
- Firms are remunerated at a higher rate (a maximum service fee of 95% of revenue, instead of 90% under previous management contracts).
- The contract period under OBA is longer (typically five to ten years, instead of only three years under previous management contracts).
- The administration of funds under OBA is not managed by government, but by an appointed fiduciary agent, such as Price Waterhouse Coopers.

Under the initial OBA pilot, a total of eight towns were selected out of an initial sample of 19 candidate towns, along with four rural growth centres.

Since the introduction of the OBA scheme, some towns have seen a relatively rapid increase in the number of connections, while using less public funding than under traditional management contracts. However, the research shows considerable diversity of outcomes, with some OBA contracts having run smoothly (as in the towns of Busembatia, Kachumbala, Kalisizo, Luwero, Namutumba and Wakiso) and some have been associated with extreme difficulties (Rukungiri and Wobulenzi). In addition, it is uncertain whether results can be directly attributed to the output-based aid because of the above mentioned modifications to the contractual framework (amongst others, a higher service fee and longer contract duration).

Source: Bayliss and Kuloba Watasa, 2011.

The application of a service area approach was suggested as a way to overcome the challenges related to relatively high unit costs, low revenues and low technical capacity of staff, as described in chapter 2. A **service area approach** is employed, for instance through market consolidation (supply side) or service area aggregation (demand side).

Under **market consolidation**, successful service providers (operators) grow their business by winning contracts for more than one town. In this way, they can grow to full service operators, providing services to a large number of towns through individual contracts (Pilgrim, et al., 2007). In Benin for example, a single operator manages as many as 28 schemes, and in Niger as many as 40 (WSP, 2010).

From the demand side, towns group together and enter into a single agreement with a full-service operator, or their own team of skilled technical and managerial staff is employed. This is called "**aggregation**" (Pilgrim, et al., 2007). In Burkina Faso, for example, a package of seven and one of

eight schemes was tendered as build-and-operate contracts. The French firm Vergnet Hydro, which won one of the two packages, indicated that the ability to spread costs and revenues across several schemes was indispensable to the firm's entry into the market (Kleemeier, 2010).

Under a service area approach, a service provider may provide services through a mix of different schemes, including piped schemes, but could also manage a number of point sources (for instance boreholes with handpumps).

The concept of having a private firm or individual that receives a long-term government-led contract to design, build or rehabilitate, operate and/ or maintain water supplies within a defined geographical area, which can cover both small towns, as well as remote villages, is referred to as the Forming Rural Utility Groups and Leases (FRUGAL) concept (Kleemeier and Narkevic, 2010). In this instance, legal ownership of all assets remains with (local) government. The idea is that funds for capital maintenance is channelled through a local (private) operator of the service area, making funding levels more consistent and predictable. Users would pay regularly for high-quality service, leading to full operation and maintenance cost recovery, and significant investment cost recovery over time (Kleemeier and Narkevic, 2010).

Binder (2008) identifies a number of challenges related to service area aggregation. These include the following:

- Local government may be reluctant to delegate control over the provision of water services for a large area to another party.
- Aggregation introduces distance between users and service providers. Particular attention should be paid to user requirements of various towns or villages, to the difference in local distribution networks, and to a fair share of benefits.
- The distance between settlements in a service area may pose problems to the effective and cost-efficient delivery of services.
- Aggregation results in higher transaction costs. For this reason, even though there is long-term reduction in costs, aggregation may be difficult to establish. This is especially true for multi-utility aggregation.
- Aggregation may result in additional risks for municipalities if they are jointly responsible for liabilities.

There are also models of delegated management, in which not only the operation is delegated to private entrepreneurs, but also the development of assets. Private sector participation through contracts that combine design, construction and operation institutions seems to be on the rise, especially in Asia and Latin America. Box 11 gives an overview of the most common contracts under these models.

Box 11: Common build-operate contracts

Under a **BOT (build-operate-transfer)** contract, a private sector entity builds the water supply infrastructure and operates it for a given time. On expiration of a BOT, the assets are returned to the public sector.

BOTT (build-operate-train-transfer) is a variation of BOT whereby private operators commit to train the public sector for a smoother transfer of the facility.

BOOs (build-own-operate) are similar to BOTs except that they do not involve transfer of assets to the public sector after a pre-determined period of time. The private operator remains responsible for carrying out all investment required to meet its service obligations, as set out in the contract signed with the public sector.

Under **BOOT (build-own-operate-transfer)** schemes, the private sector obtains the capital needed for development and construction of assets (which makes it different from a concession contract, under which replacement and expansion becomes the task of the private sector, but not initial development of assets), builds and operates the infrastructure for an agreed period of time (anywhere between 15 and 30 years) and then transfers ownership back to the relevant government department.

Source: Berthélmy, et al., 2004.

Triche, et al., (2006) describe a number of these arrangements for the development and operation of piped schemes, including design-build-lease agreements (DBL) found in the Philippines and Vietnam and Cambodia; design-build-operate (DBO) agreements in Cambodia[11]; and build-operate (BO) contracts in Paraguay, where private operators enter into a construction contract with the national sector agency and an operational contract with the local water user association. In addition, these models are applied for the development and management of water kiosks, for instance in India, where regional governments issue public BOT tenders for kiosks (de Carvalho, et al., 2011).

An advantage of contracts with private operators, which combine design, construction and operation, is that the private operator must operate the system it builds. This helps to limit the operators' inclination for over-design and promotes quality construction. Another advantage of these contracts is that because revenues are directly tied to tariffs, the operator has an incentive to connect customers and provide good customer service, including billing and fee collection (Kingdom, 2005). Kleemeier (2010) quotes a private operator from Burkina Faso, who identified additional advantages being that—there can be no subsequent disputes between the operator and the other parties about the state of the infrastructure: the operator is expected to be completely familiar with the system, and time is saved in the contracting process.

Box 12: Design-build-lease arrangements in Vietnam

In 2002, the Public-Private Infrastructure Advisory Facility (PPIAF) started piloting DBL contracts for water supply in two small towns in Vietnam (PPIAF, 2010). Under this scheme, communities, along with their local authority and provincial water company, take part in design and implementing the scheme, including the unfamiliar tasks of preparing the projects for bidding, evaluating bids, and awarding the contracts, with the support of PPIAF. Once competitively selected, the private operator carries out detailed design work on the water supply system, constructs the system, and then operates it for a specified lease period (ten years), before handing it over to the provincial water company, which is the owner of the assets. The private operator pays a lease fee to the provincial

[11] Under DBO agreements in Cambodia, a private operator, designs, builds and operates a system for a period of 15 years, after which the contract is renewable for another 15 years (Triche, et al., 2006). Six contracts were awarded, but in 2008, only one system has been completed and made operational. Implementation was affected by the World Bank's partial cancellation of credit for four contracts in June 2006, and temporary suspension of credit for the remainder because of suspicion of fraud and corruption (Navarro Tavares, 2008).

water company and is bound by a performance bond in case the operator does not meet its obligations (PPIAF, 2010).

The private operator designs, builds, and operates the water system, borrowing funds from the water utility, which the utility offers as an equity investment. After a grace period, the contractor repays the utility—including the debt service fees—out of its revenues. For the utility, the risk of fronting an equity investment under the scheme (15%) is managed because the utility will be the owner of the assets, which will grow in value. This provides an additional incentive for the utility to provide oversight over the private operator (Kingdom, 2005).

Results have so far been encouraging. In Lim Town, with a total population of approximately 12,500, consumer uptake of piped connections has been faster than originally envisaged, and individual household consumption increased. Viable tariffs have been established, and the private operator is already interested in expansion, either through direct investment or bidding for additional DBL contracts. Lim Town has seen the number of connected households grow from 1,792 to 2,336, and a further increase to 2,500 is expected (PPIAF, 2010).

Kingdom (2005) stated that there is a competitive market for operators in Vietnam, which enabled this process.

4.6 Private ownership and management

Point sources such as hand-dug wells and boreholes with handpump or motorised pump and storage reservoir, that provide (complementary) water services in small towns, can be privately owned and operated. These are often implemented through self-supply (see section 4.7) and provide services to a limited number of people, generally neighbours of the owner-operator.

Owner-operators building and operating small piped schemes or kiosks, without outside support emerged in Cambodia, Vietnam and India (Kleemeier, 2010) over the last years. Small-scale private companies managing small town schemes are often granted a license to allow them to provide services, and are fully autonomous with respect to their management and operations (Pilgrim, et al., 2007). Box 13 gives an example of private owner-operators of small piped schemes in Paraguay.

Box 13: Aguateros: Private owner-operators in Paraguay

The inability of the public sector to provide water services to a large portion of the Paraguayan population, has led to the rise of private sector vendors, called *aguateros,* who sell water primarily in the greater Asuncion metropolitan area, but also in small towns. These include small companies distributing water through small piped schemes to up to 2,000 metred connections.

Connection fees and the sale of water cover operation and minor maintenance costs, the capital expenditure of initial investment, as well as expansion of the schemes.

Aguateros were only given five years to operate before having to hand over all their infrastructure to the government. After this time new permits go for public bidding. Many *aguateros* argued that the time span was not sufficient for them to fully recover investments. To address this, a new law that permits extension of up to ten years was introduced—after which time the assets revert to government ownership.

The private water service providers are however, not regulated nor formally registered. They have limited access to financing from commercial or public development banks.

Source: Fragano, n.d.

Examples of privately owned and operated kiosks include Sarvajal Reverse Osmosis Franchise in India, under which over 120 kiosks were privately owned and operated as of end 2010 and Naandi Community Water Services, which installed over 500 kiosks as of the end of 2010 (de Carvalho et al., 2011).

An advantage of private ownership and management is the fact that commercial pressure ascertains that the service provider hires trained staff, train existing staff, or outsource specialist activities. A challenge is found in the lack of price and quality regulation of water services provided under this management model. Kiosk owner-operators are often restricted in their technology choice, as they are often strongly linked to manufacturers of kiosks, using a specific technology (de Carvalho et al., 2011). Examples of this are the above mentioned Sarvajal Reverse Osmosis Franchise, which operates (rather expensive) reverse osmosis technology, and the Naandi Foundation, which owing to its strong links with Water Health—a manufacturer of water kiosks—is mandated to set up Water Health Centres using Water Health technology. De Carvalho, et al., (2011) argue that for privately owned and operated kiosks to serve people in different contexts, their manufacturing and operating roles have to be separated to allow kiosk operators to source the cheapest and most appropriate technology from a range of manufacturers.

At around US$ 2 to US$ 6 per m^3, which is comparable to the price of water supplied by vendors and tankers in urban areas, tariffs charged by privately managed water kiosks are considerably higher than those charged under other models (Foster, 2012; de Carvalho, et al., 2011). These costs are related to the considerably higher expenditure on operation and minor maintenance, resulting from higher water treatment costs and the absence of price regulation

4.7 Self-supply

In addition to the models described above, water schemes in small towns can be implemented and managed by households themselves. This model of water service delivery is referred to as “self-supply”. Self-supply is especially practiced in small towns where piped water supply is expensive and/ or unreliable. Within the self-supply model, households invest in their own hand-dug wells, boreholes or rainwater harvesting systems. Many gradually extend services to their neighbours, which can provide them with extra income (Sutton, 2009).

One of the main advantages of self-supply is that systems owned and managed by households tend to be better maintained than communal systems (Lockwood and Smits, 2011). Also, as households themselves are responsible for financing implementation and management of the water system, self-supply water services do not rely on public and donor funding. Little to no regulation of water quality does however provide a disadvantage (see box 14).

As self-supply is generally not an officially recognised service delivery model for small town water supply, little information is currently available on the extent to which this model is practiced in small towns. It is likely that this model is especially applied in areas where good quality and shallow ground water or spring water is available.

Box 14: Self-supply in a small town in Uganda

Busia, a small town in Uganda with a population of about 40,000 people, is served by a piped scheme supplied by seven boreholes. This scheme is estimated to only cover half of the total town population, and water services provided by the scheme are considered unreliable. This system is managed by the town council on behalf of the District Water Office, which also provides water services through 14 protected springs, four unprotected springs and 21 shallow wells with handpumps. In addition, an estimated 108 private hand-dug wells can be found, constructed and maintained by households themselves (self-supply), at a convenient distance for the users. The quality of water from these hand-dug wells was found to be cause for concern as all samples taken from the wells were contaminated by faeces. In addition, two out of three samples from the piped water was also contaminated (although the water should be chlorinated before distribution, this had not happened for several months at the time of data collection, due to lack of money and chlorine).

Source: Rogenhofer, 2005.

4.8 Mixed management models

With urbanisation and growth of piped water supply, there is likely to be an increase in cases in which bulk water supply is organised under a particular management model (often national or regional utility, or private management), while distribution and actual provision of water services is managed under a different management model (such as community-based management).

Kleemeier (2010) found that in multi-village schemes in India, production and distribution were under private operator management, while distribution of water was managed by community-based service providers. In Ghana, for example, bulk water supply was managed by the national utility (Ghana Water Company Limited), while a community-based water and sanitation board managed distribution and service provision (Adank and Tuffuor, forthcoming). In South Africa, government-owned water boards are in charge of managing bulk water supply infrastructure, while municipalities are in charge of water distribution, either directly—through municipally-owned enterprises—or through delegated management to private companies.

5 Direct support to small town service providers

As mentioned in chapter 2, there is often a lack of technical and managerial skills in small towns. Small town service providers often require direct (professional) support in order to provide sustainable and high quality services. This is especially the case for CBOs managing relatively complex piped schemes in small towns, where limited technical and managerial capacity is available. In the case of delegated management, technical and managerial capacity is expected to be higher, but professional support may still be required. Furthermore, in these cases, there is often a need for the provision of direct support to water service authorities, which require support to handle delegation contracts properly and regulate the service provider. The need for direct support to national and regional utilities is low as support functions are generally taken care of internally within the company. These utilities can be provided with direct support from similar utilities from other countries through so-called Water Operator Partnerships (WOPs).

Water service providers may have access to several different support arrangements (Smits, et al., 2011). This chapter presents a number of different arrangements for the provision of direct support in different contexts.

5.1 Direct support from the public sector

Direct support from **local government** is a common form of direct support to community-based service providers. Under public-private partnership arrangements where a community or municipality delegates operation functions to the private sector, local governments often have a role to play in providing direct support. Examples include Ghana, Mozambique and Uganda.

This kind of direct support to community-based service providers and PPPs can also be provided from **central government or parastatal agencies**, including a larger public utility providing support to smaller community-managed piped schemes, like in Chile (Smits, et al., 2011).

5.2 Direct support from private sector and NGOs, under contract by public sector

More and more, private firms provide direct support previously extended by the public sector to water service providers (Kleemeier and Narkevic, 2010). Classic examples include Support Services Agency (SSA) in South Africa, described in Gibson (2010), *Suivi Technique et Financier* (STEFI) in Mali (see box 15) and the local consulting firm CMSP (*Chargé de Mission de Service Public*) that supervises technical and financial arrangements of the water service in Mauretania, described in Rotbardt (2011). This direct support is often directed at the service provider, and in cases of delegated management, also at the service authority.

Box 15: Suivie Technique et Financier in Mali

In Mali, direct support to small town service providers is provided under a system called STEFI that was established by the central government of Mali in the early 1090s, with support of a German-assisted project. Support includes performance monitoring, technical and accounting assistance and advisory services to both local governments, as well as to CBS providers and private operators under PPPs (since their respective introduction in 2007), which have been delegated by local government to provide small town water services.

Under STEFI, two private companies were contracted by central government to provide these direct support services, including monitoring, in two separate regions of the country: one for the Kayes region (2AEP) and one for the remaining national territory (GCS-AEP). In addition to the five-year contract with the central government (in the form of the National Department of Hydraulics (DNH)), 2AEP and GSC-AEP had to sign contracts to conduct technical monitoring (de Carvalho, et al, 2011).

Service providers pay for the services provided by STEFI based on the amount of water produced. This fee amounts to about US$ 0.04 per m3. The average annual cost is estimated at about US$ 0.35 per person per year. These costs are offset by better revenue–expenditure balance, as a result of improvements in monitoring and management of the service provision (Ministère de l'Énergie).

In 2006, about 90 out of 271 piped schemes were covered by STEFI (Kleemeier, 2010), while in 2010 in Keyes alone, 91 out of a total of 122 small piped schemes service providers were provided with direct support through STEFI[12].

Source: de Carvalho, et al., 2011; WSP, 2010b.

Another form of government delegating direct support to private sector is support through a central helpdesk and work-based outreach training programme. An example of this is the outreach training programme established under a World Bank project in Nigeria, to support small town water management, which consists of a helpdesk manned by five people managing a database of about 500 experts, serving about 250 towns (Cresswell, 2003).

5.3 Direct support from the private sector

Direct support from the private sector can also be fully private (rather than delegated by local government), based on the demand of service providers. Consulting engineers and financial advisors can, for example, provide direct support on a retainer basis through **service contracts** with small town service providers (Pilgrim, et al., 2007). This type of private support can be provided to CBS providers and PPPs, but also to utilities and municipal water providers.

Another form of direct private sector support is **franchising**, in which business know-how and practices are transferred from a franchisor to a franchisee—both of which are generally private sector stakeholders. Although the potential for franchising in the water and sanitation sector is assumed to be high (Van Ginneken, 2004; Wall, et al., 2009), practical examples and case studies seem to be rare. One example is presented in box 16.

[12] The 31 water systems not monitored by 2AEP in Keyes are under the EU-financed Regional Solar Program and World Bank-financed Rural Infrastructures National Program, which have not given formal approval for being monitored by 2AEP (de Carvalho, 2011).

Box 16: Sarvajal Reverse Osmosis Franchise in India

Sarvajal Reverse Osmosis Franchise is a privately owned and operated franchise of local water kiosk operators. In the first year(s) of operation, franchisees—who are private sector actors—received support in setting up the kiosk, were trained, and got regular technical assistance from the franchisor. As soon as the franchisee was found to have had built up a solid client base, Sarvajal used modern communication technologies to monitor and support its franchisees. For this support, they a fee amounting to 40% of the franchisee's monthly revenues was charged.

However, after the first years of operation, many of the best kiosk operators felt they knew how to operate and conduct basic maintenance. They preferred to purchase and operate their own equipment and pocket the full profit, instead of retaining the franchise and paying the franchise fee.

Source: De Carvalho, et al., 2011.

5.4 Direct support from NGOs

NGOs can provide direct support to small town service providers, either on the request of the service providers (similar to the private sector), or on their own initiative. An example is the support provided by SNV, a Dutch NGO, to small town service providers in East and South Africa, as presented in box 17.

Box 17: NGO support to small town service providers

SNV, which is active in 36 countries all over the world, has been providing direct support to small and medium town service providers in eastern and southern Africa. This has, for example, included support to the Isiolo Water and Sanitation and Sewerage Company in Northern Kenya (60,000) and the Chambeshi Water and Sewerage Company in Zambia (about 11,000 inhabitants); and the provision of training to service providers of 11 towns across Uganda, Tanzania and Kenya under the UN-HABITAT Lake Victoria Regional Water and Sanitation Initiative.

SNV's approach to direct support to small town service providers aims to stimulate socially responsive commercialisation of water services. In order to achieve this, SNV has developed a three-pronged approach, consisting of inter-dependent actions:

- Analyse the contexts in which small-town water utilities operate. For this, SNV developed a set of approaches and tools, including Systemic Action Research (SAR) tools and service surveys, such as customer satisfaction surveys.
- Facilitate capacity building of service providers (utilities) for improved performance, including supporting institutional development, commercial efficiency, development of (pro-poor) policies and strategies, and strengthening internal governance.
- Strengthen the broader institutional environment and the formulation of supportive pro-poor policy interventions.

Source: Klinken, et al., 2012.

5.5 Direct support from Association or umbrella organisations of service providers

Service providers can form associations or umbrella organisations to provide direct support to its members. Examples of this type of support include the National Rural Water Association in the USA (Gasteyer, 2003), the *Fédération des usagers de l'eau de la région de Bobo-Dioulasso* in Burkina Faso (Tsitsikalis, 2010) and the Honduran Association of Water Boards (Asociación Hondureña de Juntas Administradoras de Agua – AHJASA) (Brand, 2004). An example of an association of service providers providing direct support from Brazil is presented in box 18.

Box 18: Integrated Systems for Rural Sanitation, SISAR in Brazil

Integrated Systems for Rural Sanitation (SISARs) are confederations of water and sanitation service providers and local user groups in three states in north-eastern Brazil. The development of SISARs was started in 1996 as a result of the Financial Cooperation Program between Germany and Brazil. The size of a SISAR may vary depending on geographical, political and water availability characteristics. In the state of Ceará, eight SISARs were created in each of the existing watershed catchments. In 2012, 715 communities with about 105,000 household water supply connections were under SISARs.

SISARs provide technical and administrative support to community-based service providers (local user groups) and help them set and collect realistic tariffs. They monitor local user groups and build their capacities. SISARs also manage capital maintenance expenditure and promote hygiene education, and are responsible for part of the service provision functions—in particular, the preparation and distribution of monthly bills for each client.

Each SISAR has a general assembly, consisting of the presidents of each of the member local user group associations and a management council. The management council has eleven members of which six are representatives of the local user groups and five represent the state and municipal agencies. SISAR headquarters has three departments: technical support, administration and commerce, and social work. Each department has a head and technical staff.

Source: Meleg, 2011; Meleg, 2012a; Meleg, 2012b.

In addition to the provision of direct support, an association or umbrella organisation can play a role in enabling access to financial resources for capital maintenance expenditure and expansion, such as through pooling of funding by service providers (for example the Association of Water and Sanitation Development Boards in Ghana). Associations or umbrella organisations can also play a role in facilitating cross subsidising between different systems. An example is the Federation of Community-based Service Providers in Burkina Faso (FAUREB), which has set a uniform tariff for its members providing water services to 40 small towns and villages in their region. Through FAUREB, a cross subsidisation between different small towns and villages in the federation has been organised (Tsitsikalis, 2010).

5.6 Direct support through Water Operation Partnerships

Direct support to national, regional or local utilities can take the form of Water Operation Partnerships (WOPs)—a partnership with a larger utility (possibly from other countries) that provides direct support to smaller utilities managing small town schemes. Under such partnerships, emphasis is on building the capacity of service providers through peer-to-peer support (Coppel and Schwartz, 2011). A practical example of such a partnership is that of Vitens Evides International of The Netherlands' and the Water Supply Investment and Asset Holding Fund (FIPAG) in Mozambique[13], presented in box 19.

Box 19: Partnership between Vitens Evides International and the Water Supply Investment and Asset Holding Fund in Mozambique

Vitens Evides International, powered by the two largest water companies of The Netherlands—Vitens and Evides Water companies—undertakes water supply projects in developing countries on a non-commercial basis. In Mozambique, they have been providing technical assistance to water companies providing water services in four medium size towns (with a population of about 100,000): Chókwé, Inhambane, Maxixe and Xai-Xai. The support provided by Vitens Evides International includes assistance with the development of business plans, implementation of management information, technical and financial administration systems, on-the-job training at all levels, formal training courses, review and instruction, workshops and exposure visits. It also supports the development of standard procedures for processes in the fields of production, distribution and sales (VEI, ca. 2009).

The partnership activities, which were implemented over a time span of nine years (2003-2012) were financially supported by Vitens Evides International (€ 1.4 million for human resources costs, some goods and services, and audit costs); The Royal Netherlands Embassy in Maputo (€ 1 million for costs of the transition period towards autonomy) and FIPAG (€ 255,000 for training, goods and services) (RNE, 2004).

Van Haren and Van den Horn (2008) found that performance in the four utilities showed considerable improvements over the 2004-2008 period. However, Coppel and Schwartz (2011) questioned the sustainability of the partnership. They argued that the model of providing direct support might not be replicable on large scale, as it was heavily dependent on external financial support. Coppel and Schwartz (2011) argued that service providers might not be willing and/ or able to invest their own funds in such a partnership.

[13] This approach is being promoted by the International Water Association (IWA) and UN-HABITAT, which has led to the establishment of the Global Water Operators' Partnerships Alliance (GWOPA), a network of organisations committed to stimulating and facilitating WOPs.

6 Emerging issues and remaining questions

In the two previous chapters, management models and support arrangement for the provision of small town water services have been described, with their strengths and weaknesses. This chapter discusses emerging issues and questions related to the provision of small town water services.

6.1 How to decide which small town service delivery model is applicable?

Unlike rural areas: where water services are generally provided through community-managed point sources, and urban areas: where water services are provided through utility-managed piped schemes and (often informal) intermediate private service providers—a wide range of different service delivery models can be found in the small town sub-sector, and sometimes even within the same town. These models may differ in terms of the level of services provided, the type of infrastructure, the division of roles and responsibilities regarding service provision and authority functions, costs of providing the service and the amount of money users have to pay to access and use the service. Diversity in small town sub-sector service delivery models can be attributed to a wide variety of contexts, and to the challenge of finding suitable models for water service provision.

It is not uncommon for people in towns of similar population and context to be served under different models, and to be provided with different levels of services at different prices. Who decides which service delivery model is applicable in which context? In theory, service authorities should play an important role in deciding which service delivery model to apply where, based on local context and consumer preference. In reality however, especially in countries where the water sector is heavily donor dependent, the small town service delivery model applied in a certain context is often determined by implementation projects. The question remains: how can service authorities play a stronger role in deciding which service delivery model is to be applied in a certain location and at what price?

6.2 Privatisation or professionalisation?

Over the last decades, the move to delegated management with stronger private sector involvement has been perceived (and pushed) as a possible solution for overcoming the challenges related to small town water supply under community- and municipal-managed models. However, for the effective and sustainable provision of water services, the level of professionalism is more important than the type of management model applied (and whether or not private sector is involved). Regardless of the management model and degree of private sector involvement, there is a need for clearly defined roles and responsibilities related to management, appropriate levels of technical and managerial capacity and clear financing arrangements for covering expenditure on operation and minor maintenance, expansion and rehabilitation, and replacement of assets. Although private sector involvement in the provision of water services puts more emphasis on these elements of professional water service provision, professionalism is not synonymous with private sector involvement.

There is ongoing debate within the sector on how contracts can best contribute to improved small town water service provision. Especially in case of delegated management involving private sector investment, detailed contracts are needed which clearly spell out the different roles and responsibilities. Short contract periods of between one and three years are not encouraging for private operators to invest in rehabilitation and expansion.

6.3 At which scale are service delivery models and support arrangements most effective and efficient?

An issue of ongoing debate in the sector is the scale at which small town service delivery models and support arrangements can be most effective and efficient: the level where economies of scale and the right level of professionalism can be attained. The application of a service area approach could help overcome some of the challenges described in chapter 2, related to high costs and low levels of revenues and lack of skilled human resources. However, better understanding is needed in the sector on what this level is. In addition, the above-mentioned level of professionalism, including clarity on and well documented roles and responsibilities and asset ownership are key boundary conditions.

6.4 How to strengthen the regulation of small town water services?

Regulation of small town water services is a major weakness (Pilgrim et al., 2007; de Carvalho, et al., 2011; WSP, 2010a, Pezon, et al., 2013; Adank and Tuffuor, forthcoming). In urban areas, a central regulatory body can regulate utilities, by local government through contractual arrangements, or through self-regulation. Regulatory arrangements for small town water services are often missing, unclear or, in case of multiple service delivery models in the same town, in contradiction with each other.

In small town schemes, the asset owner (generally local government) often acts as the local regulatory body for those aspects most directly related to service provision, such as tariff setting (Pilgrim et al., 2007) and performance regulation. Kleemeier and Narkevic (2010) suggest that in case of delegated management, using local government and communities to monitor compliance to contracts, is a more feasible approach to performance regulation, than having a dedicated regulatory body doing this. Where communities play a role in the selection of the operator through some form of formal selection process, they can themselves play an important regulatory role (Valfrey-Visser, 2006), as tends to be the case (at least in theory) in rural areas.

6.5 How to ensure an enabling environment for small town water services?

Norms and standards need to be set at national level and local level 'regulators' will require direct support in order to take up their tasks. There is a need for clear policies and laws to guide small town water supply. However, such an enabling environment at national level to support sustainable small town water service provision is often lacking. Also here, small towns fall in between the urban and rural crack, with generally a national ministry, department or agency dedicated to rural and one to urban water supply, with the small town sub-sector falling in either or neither. The question thus remains: how to ensure a conducive and enabling environment for small town water services?

Should there be a separate small town unit at national level? How should this relate with existing ministries, departments and agencies related to rural and urban water supply, and local government?

6.6 How to finance capital maintenance expenditure related to small town water services?

Clarity regarding asset ownership is important as a precondition for revenues being reinvested in schemes (or alternative financing secured) for maintenance, renewal and replacement, and expansion. Ownership is often vested in local government, which implies that local governments are generally responsible for the rehabilitation and expansion of rural and small town piped schemes. However, local government often lacks the resources to do so, as decentralisation processes have not yet resulted in full financial decentralisation and sufficient resourcing of local government.

Sector financing, especially through transfers from national government (including grants from development partners) is generally biased towards capital investments in new (rural and urban) infrastructure, rather than towards capital maintenance and expansion. This is a challenge for small town water supply, where more emphasis is on capital maintenance and expansion than for rural water supply.

6.7 Should emphasis of small town water services be on high or basic level services?

So, should emphasis of small town water service provision be on ensuring 'more for some', or on 'some for all'? Under all the described models, a mix of service levels is generally provided in small towns, with emphasis on high service levels under utility management models, and on basic service levels under community-based management models. Providing higher levels of services does have implications on the investment costs. With limited available financial resources, governments and development partners are inclined to go for the 'some for all' option for water service provision in small towns.

However, it could be argued that focusing on providing higher service levels could improve sustainability, as users with household connections may be more likely to pay and contribute to sustainability of services, especially if they depend on water supply for multiple uses. Through their research in 47 piped schemes in Senegal and 50 piped schemes in Kenya, Ralph Hall and colleagues (Hall, 2012) found that more than half (54%) of the users of piped water services, used the water for productive uses. In Kenya, households with a private tap were found to be twice as likely to grow crops and 1.3 times as likely to keep livestock, than households depending on kiosks and other sources of water supply.

The demand for higher levels of services seems to be there and seems to be increasing, as discussed in chapter 2. If the provision of water services does not respond to this demand, people will find alternative ways to satisfy their demands, which can include tampering with the scheme, which could have a negative effect on sustainability of small town service provision (Smits, 2012). In addition, providing higher levels of services through more complex, and potentially more

economically viable piped schemes, may attract more professional management, which could also have a positive effect on sustainability (Smits, 2012).

6.8 How to plan for small towns in transition?

Small towns are generally on the threshold where sanitation and drainage cannot be dealt with on an ad hoc and on-site basis—but need to be planned for and managed in an integrated way. Small towns are often dynamic and in transition. The transitional nature of small towns puts existing schemes under pressure and calls for strong planning and asset management processes. Also, with a growing number of inhabitants and increasing water use, tackling issues related to wastewater management in an integrated way becomes even more urgent. This calls for more integrated and holistic approaches towards water management and water service provision in small towns.

7 Conclusions and recommendations

With increasing urbanisation, economic growth and demand for higher levels of water service that this brings along, there is growing need for service delivery models in between predominantly "rural community-based management model" and predominantly "urban utility model". This is the domain of small town water service provision. Small town water service provision is generally too complex to be provided through community management, based on voluntarism, and too commercially unattractive to draw the right level of professional management.

Differences in demographic characteristics (including settlement patterns), the transitional nature of settlements, the mix of economic livelihoods, and the governance and political context of small towns, mean that there is not one single model for delivering small town water services that fits all. As small towns are emerging, and as there is no one clear and primary model for small town water service delivery—a variety of different water service delivery models has emerged. Based on the examples described above, it seems that similar towns can be served by a mix of service delivery models in terms of: schemes and management models, the level of service they provide, and the costs and price of water related to this level of service.

There are many different models for the management of rural and small town piped schemes, with different degrees of involvement of public and private sector institutions. The private sector's role is growing, both in providing small town water services and direct support to service providers. In many cases, this has taken the form of public-private partnerships, in which the public sector delegates service provision or support tasks to the private sector.

There is general agreement in the sector that for all small town service delivery models, there is a need for:

- An appropriate level of professionalisation, including clear and formalised roles and responsibilities, and sufficiently skilled and experienced staff for implementation.
- Clarity on service authority, support and regulatory functions and well-resourced service authorities, in terms of human and financial resources.
- Clarity on ownership arrangements and financial mechanisms for covering life-cycle costs, including the costs of capital maintenance and expansion.

However, ways on how to shape these are still under development and debate, as experimentation with these is ongoing.

In general, over the last two decades, significant steps have been made in documenting and understanding small town water services. There is increasing insight in the wide variety of service delivery models and in what is needed to ensure sustainable small town water services. Attention is shifting from the big picture, to the fine tuning of service delivery models, especially as these relate to the issues mentioned above. The time has also come to ask questions such as:

- How to decide which service delivery model to apply where, and at what scale?
- How best to deal with the transitional nature of small towns and ensure that integrated planning and provision of WASH services in such towns are not compromised?

- How to create an overall enabling environment for small town water services?
- How to address the classical split between urban and rural sub-sectors?

7.1 Recommendations for development partners and INGOs

- Too much emphasis is made on piloting new service delivery models for small town water service delivery—concentrate on strengthening existing models.
- Increase focus on stimulating the establishment of an enabling, facilitating and regulating environment at local and national level. For example, set clear norms and standards for small town water services and service providers, and develop mechanisms for providing support to small town service providers and service authorities.

7.2 Recommendations for national governments

- Support local government in decision making over the selection of small town service delivery models, and in planning and providing water services in an integrated way.
- Set up a dedicated small town unit within national government to address challenges to small town water supply and ensure that sustainable delivery is not impeded by ongoing rural-urban debate. Such a unit could dedicate itself to responding to questions related to small town service delivery models, asset ownership and management, regulation of small town water, supply etc.
- Agree on which institutional home best facilitate the proper functioning of the proposed small town unit: whether it is the Ministry of Local Government or the Water Ministry.

7.3 Recommendation for local government

- Plan water services in an integrated manner, taking into account small town characteristics such as their dynamism and transitional nature.
- Adopt an area approach instead of a technology-driven approach, in order to set in place a comprehensive tariff setting system that is based on the level of service.

7.4 Recommendations for the private sector

- Make sure that ownership arrangements and service authority functions are well described and formalised, preferably in comprehensive contracts.
- Assess the economic feasibility of involvement in small town water service provision, taking into account realistic water consumption levels.

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VEI-Vitens Evides International, ca. 2009. *Southern Mozambique, Chókwé, Inhambane, Maxixe and Xai-Xai*. Utrecht: VEI.

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Resources

Relevant literature

Small urban centres and small towns in general

Satterthwaite, D., 2006. *Outside the large cities: The demographic importance of small urban centres and large villages in Africa, Asia and Latin America*. (Human Settlements Discussion Paper Urban Change 3) London: IIED-International Institute for Environment and Development.

This paper was developed from a background paper for the second report on Water and Sanitation in the World's Cities, which focused on small urban centres (United Nations Human Settlements Programme, 2006). The paper draws on census data for some 70 nations in Africa, Asia and Latin America to examine the proportion of national populations living in 'large villages' and in urban centres in different population-size categories. It highlights the ambiguous definition on 'Large villages', 'small towns' and 'small urban centres', which depending on each nation's definition of 'urban', can be classified as rural or as urban.

Small town water services

BNWP-Bank Netherlands Water Partnership, 2002. *Small Towns, Special Challenge*, International Conference on Water Supply and Sanitation for Small Towns and Multi-Village Schemes, 11-15 June 2002, Addis Ababa. Available at: <http://siteresources.worldbank.org/INTWSS/Resources/multi0page.pdf>

This is the report of the 2002 Addis Ababa small town conference, which brought together over 200 global practitioners, of whom 70% were from Africa, to discuss water services through small town and multi-village schemes. It includes a reflection on the special challenges related to small town water supply. Ingredients for success identified in the report include autonomy; transparency and accountability; demand responsiveness; cost effective design and operations; professional capacity; competition; and ability to expand. The report presents a number of tools for building the capacity of local service providers, including cost effective design tools, business planning tools, tools for assessing willingness to pay and billing systems. Furthermore, the report discusses management and contracting options, including direct versus delegated management, public-private partnerships and aggregation.

David J. and Pilgrim N., 2000. *Annotated Bibliography for the Small Towns Water and Sanitation Electronic Conference*. S.l.: WSP: Water and Sanitation Program of the World Bank and Loughborough: WEDC-Water, Engineering and Development Centre.

In 2000, approximately 350 people participated in an e-conference on the subject of small town water and sanitation, organised by WEDC and the World Bank. Participants discussed criteria for defining small towns in the context of water and sanitation and exchanged experiences related to various management models for water supply and sanitation in the small town sub-sector.

Klinken, R., Dido, S. and Mwango, W., 2012. *Sustainable water services and the poor in small towns.* (ESA Policy Brief 3) Nairobi: SNV Netherlands Development Organisation East and Southern Africa Office.

This Practice Brief shares experiences from SNV's practice in supporting small town water companies in several African countries, including Kenya, Zambia, Tanzania, Uganda. SNV support for socially responsive commercialisation of basic services has adopted a three-pronged approach, which includes

understanding the contexts in which small-town water utilities operate with the help of a set of analytical tools; facilitating capacity building of utilities for improved performance; strengthening the broader institutional environment and the formulation of supportive pro-poor policy interventions.

Moriarty, P., Patricot, G., Bastemeijer, T., Smet, J. and van der Voorden C., 2002. *Between rural and urban: Towards sustainable management of water supply systems in small towns in Africa*. (Working Paper) Delft: IRC International Water and Sanitation Centre.

This is an IRC working paper on sustainable small town water supply in Africa, based on a number of case studies from Tanzania, Sudan and Ghana, Senegal, Benin. It argues that small towns pose unique challenges to the water services sector - challenges that are neither urban nor rural. These include differences in the scale of systems, institutional capabilities, financial constraints, and the variety of management models that are used. Further, small towns in Africa have been growing, which poses planning issues, especially with regards to expanding capacity. The paper concludes that the impacts of decentralization and increased use of private sector participation will be beneficial to alleviate the constraints on water services. However, these need to be matched with effective management of resources and capacity building at the municipal level.

Pilgrim, N., Roche, B., Kalbermatten, J., Revels, C., and Kariuki, M., 2007. *Principles of town water supply and sanitation, Part 1: water supply*. (Water Working Note 13) WA DC: The World Bank. Available at: <http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2008/07/21/000333038_20080721232742/Rendered/PDF/442230REPLACEM1ument10WN131TownsWSS.pdf > [Accessed 20 November 2013].

This document synthesises the lessons learnt from the Bank Netherlands Water Partnership initiated project on small town water and sanitation. The report focuses on towns in the 2,000 to 50,000 population range, which it argues fall between the rural and urban crack. The strategy proposed in this report is set out in terms of sound management structures, appropriate design and financing, effective professional support, and contracting to secure continuity in professional support. A business-planning concept is presented that integrates these four aspects of service provision, and provides a tool to build the capacity of utility managers (service provision) and town administrators (regulatory oversight). A final set of policy recommendations and actions for government / project planners and for towns is outlined.

UN-HABITAT-United Nations Human Settlements Program, 2006. *Meeting development goals in small urban centres: Water and sanitation in the world's cities.* [pdf] London: Earthscan. Available at: <http://www.unhabitat.org/pmss/listItemDetails.aspx?publicationID=2057> [Accessed 10 November 2013].

The 2006 global report of the state of water and sanitation in the world's cities of UN-HABITAT focuses on small town water and sanitation. It provides an assessment of the development of small town water supply, identifies the key challenges to providing sustainable water and sanitation services to all small town populations and provides the key elements of a strategy for putting in place the needed pro-poor governance frameworks and financing water and sanitation in small urban centres.

WaterAid and BPD-Building Partnerships for Development, 2010. *Small town water and sanitation delivery. Taking a wider view*. [pdf] London: WaterAid. Available at: < http://www.wateraid.org/~/media/Publications/small-towns-water-sanition-service-delivery.pdf > [Accessed 18 November 2013].

This report was the result of a year-long study by WaterAid and BPD, aiming at synthesising existing knowledge and identifying promising approaches related to small town water services. It argues that demographics, economics and local governance have a clear bearing on both the demand and supply of water and sanitation services and that these need to be factored more coherently into the design and delivery of services. It introduces a framework for understanding the internal and external influences on small towns, with three tiers of analysis (household, town, external) and three elements of analysis (demographics, economic drivers, and autonomy/ decision making).

WSP-Water and Sanitation Program of the World Bank, 2002. *Water services in small towns in Africa: The role of small and medium-sized organizations*. (Field Note 12) [pdf] Nairobi: WSP. Available at: <http://www.wsp.org/wsp/sites/wsp.org/files/publications/af_bg_small.pdf> [Accessed 20 November 2013].

The field note introduces case examples of from Mali (voluntary-sector Users Associations managing water services in the peri-urban areas), Mauritania (young graduate entrepreneurs providing water services to individual towns under a contract from the government), Niger (a medium-sized private company operating and financing the rehabilitation of particular small-town water supplies) and Tanzania, Uganda and parts of Niger (small local private-sector companies having won tenders to manage or lease water systems). The field note concludes that with appropriate professional support and regulation, both non-profit organisations and commercial companies can provide good water services in small towns.

WSP-Water and Sanitation Program of the World Bank, 2010. *Sustainable management of small water supply systems in Africa - Practitioners' Workshop Report*. (Field Note) [pdf] Nairobi: WSP. Available at: <http://www.wsp.org/sites/wsp.org/files/publications/Sustainable_Management_of_small_water_supply_systems_in_Africa_English.pdf> [Accessed 17 July 2013].

This field not is an output from a practitioners' workshop, organised by WSP in Maputo, Mozambique in 2010, on sustainable management of small piped water systems in Africa, taking stock of 20 years of efforts in improving water services by delegating management of small piped schemes to private operators or user associations.

Country specific case studies

Brazil

Meleg, A., 2011. *SISAR: An innovative sustainable management model for small decentralized water and wastewater systems in developing countries*. Frankfurt: MACS Management and Consulting Services. Available at: <http://www.macsonline.de/ivs/fileadmin/macs_data/Media/SISAR_article_AM.pdf> [Accessed 5 July 2013].

Burkina Faso

Marin, P., Fall, M. and Ouibigi, H., 2010. *Corporatizing a water utility: A success case using a performance-based service contract for ONEA in Burkina Faso.* (GRIDLINES Note 53) WA DC: PPIAF-Public-Private Infrastructure Advisory Facility. Available at: <http://www.ppiaf.org/sites/ppiaf.org/files/publication/53-corporatizing-water-utility.pdf> [Accessed 20 November 2013].

Cambodia

Navarro, M. and Tavares L., 2008. *Output-based aid in Cambodia: Getting private operators and local communities to help deliver water to the poor – The experience to date*. (OBA Working Paper Series 9) WA DC: World Bank.

Ghana

Adank, M. and Tuffuor, B., forthcoming. *Management models for small town and peri-urban water supply*. Accra: TREND Group and The Hague: IRC International Water and Sanitation Centre.

Madagascar

Annis, J. and Razafinjat, G., 2011. Public-private partnerships in Madagascar: a promising approach to increase sustainability of piped water supply systems in rural towns. In: St Gallen: Rural Water Supply Network, *6th Rural Water Supply Network Forum 2011: Uganda Rural Water Supply in the 21st Century: myths of the past, visions for the future.* Kampala, Uganda 29 November-1 December 2011. [pdf] St Gallen: RWSN. Available at: <http://rwsnforum.files.wordpress.com/2011/11/152-annis-madagascar-long-paper.pdf> [Accessed 3 July 2013].

Mozambique

Coppel, G. and Schwartz, K., 2011. Water operator partnerships as a model to achieve the Millennium Development Goals for water supply? Lessons from four cities in Mozambique, *Water SA 37*, pp. 575-83. Available at: <http://www.ajol.info/index.php/wsa/article/view/71453> [Accessed 10 November 2013].

Van Haren, A. and den Horn, P., 2008. *Public-private partnership water supply in Choke, Inhambane, Maxixe and Xai-Xai (Mozambique): Activities report and financial statement Jan 2005 - Jun 2008.* [report] Maputo: FIPAG and Vitens Evides International.

Nigeria

Cresswell, J., 2003. Outreach training systems in Nigeria. In Appleton, B., 2003. *Town water supply and sanitation companion papers.* [pdf] Available at: <http://siteresources.worldbank.org/INTWAT/Resources/TownsWSS_Companion.pdf> [Accessed 24 November 2013].

Paraguay

Fragano F., n.d. *Management models for small towns Community Water Board in Itagua, Paraguay.* s.l.: s.n.

Peru

McGregor, J. L., 2007. *Small Towns Pilot Project – STPP: Towards sustainability of the water and sanitation services in Peruvian small towns*. [ppt] s.l.: Water and Sanitation Program, Latin America & Caribbean Region. Available at: <http://www.wsp.org/sites/wsp.org/files/pa_1_peru_dpsp.pdf> [Accessed 5 July 2013].

Switzerland

Saladin, M., n.d. C*ommunity water supply in Switzerland: What can we learn from a century of successful operation?.* [pdf] St Gallen: Skat Foundation. Available at:

<http://www.sswm.info/sites/default/files/reference_attachments/SALADIN%20Community%20water%20supply%20in%20Switzerlad.pdf> [Accessed 10 November 2013].

Uganda

Bayliss, K. and Kuloba Watasa, S., 2011. *Output-based contracts in small-town water supply in Uganda: Challenges and opportunities*. [pdf] NY: United Nations Development Program. Available at:<http://www.undp.org/content/dam/undp/library/Poverty%20Reduction/Uganda_webVersion928.pdf> [Accessed 5 July 2013].

Rogenhofer, E., 2005. *Self supply in Busia town, Eastern Uganda*. MSc thesis research, Cranfield University, Silsoe [pdf]. Available at: <http://www.rural-water-supply.net/_ressources/documents/default/272.pdf> [Accessed 20 November 2013].

Ukraine

Sorokovskyi, V. and Olschewski, A., 2011. Service cooperatives: Solution for rural water supply In Ukraine. In: RWSN-Rural Water Supply Network, *6th Rural Water Supply Network Forum*. Kampala, Uganda 29 November-1 December 2011.

USA

Gasteyer, S., 2003. *NGO technical assistance providers in the USA*. In Appleton, B., 2003. *Town water supply and sanitation companion papers.* [pdf] Available at: <http://siteresources.worldbank.org/INTWAT/Resources/TownsWSS_Companion.pdf> [Accessed 24 November 2013].

Vietnam

Kingdom, B., 2005. *Adapting Contracts to Local PSP – Design Build Lease Experience in Vietnam*, World Bank Water Week Presentation – Session 28. s.l.: s.n.

Relevant websites

World Urbanization Prospects: The 2011 Revision

<http://esa.un.org/unpd/wup/index.htm>

The Population Division of the Department of Economic and Social Affairs of the United Nations has been issuing, since 1988, every two years revised estimates and projections of the urban and rural populations of all countries in the world and of their major urban agglomerations. This web site presents the main findings of the 2011 Revision of World Urbanization Prospects, which are consistent with the size of the total population of each country as estimated or projected in the 2010 Revision of World Population Prospects (United Nations, 2011). The World Urbanization Prospects are used widely throughout the United Nations and by many international organizations, research centres, academic researchers and the media.

General WASH sector websites

IRC International Water and Sanitation Centre

<http://www.irc.nl/>

IRC is an international think-tank and knowledge centre committed to bridging the knowledge gap and facilitating joint learning with partners for improved and low-cost water supply, sanitation and hygiene in developing countries. The IRC website compiles current news and organises events relevant to the sector, provides access to a wide range of web-based publications and materials, and links up its readers to ongoing development work conducted by a wide network of sector professionals and key

WASH stakeholders. It includes a comprehensive WASH library, which can be accessed at www.washdoc.info

RWSN Working Group on Management and support of Rural Water supplies

<http://www.rural-water-supply.net/en/management-and-support>

The RWSN thematic group on management and support to rural water supplies brings together sector stakeholders with an interest in this topic. Its website gives an overview of relevant documents, news and events related to this topic.

The Water and Sanitation Programme of the World Bank

<http://www.wsp.org>

The Water and Sanitation Program (WSP) is a multi-donor partnership administered by the World Bank to support poor people in obtaining affordable, safe and sustainable access to water and sanitation services. It works with client governments at the local and national level in 25 countries through regional offices in Africa, East and South Asia, Latin America and the Caribbean, and in, Washington D.C.

WaterAid

<www.wateraid.org>

Water Aid is an international charity that aims to overcome poverty by enabling the world's poorest people to gain access to safe water, sanitation and hygiene education. Part of WaterAid's work is also to examine the interconnections and impact of financing in achieving its core development visions.

WEDC – Water, Engineering and Development Centre

http://wedc.lboro.ac.uk/

WEDC is a leading education and research institute for improving access to infrastructure and services for the poor in low- and middle-income countries. Based in the Department of Civil and Building Engineering in Loughborough University, WEDC provides post-graduate education, training courses and undertakes research consultancies.

WHO/ UNICEF Joint Monitoring Programme (JMP)

http://www.wssinfo.org/

The WHO/UNICEF Joint Monitoring Programme (JMP) for Water Supply and Sanitation is the official United Nations mechanism tasked with monitoring progress towards the Millennium Development Goal (MDG) relating to drinking water and sanitation. Its website gives access to information and data on access to water and sanitation services.

Websites on small town water services

Body of knowledge on infrastructure regulation

<http://www.regulationbodyofknowledge.org>

Developed by the Public Utility Research Center (PURC) at the University of Florida, in collaboration with the University of Toulouse, the Pontificia Universidad Catolica, the World Bank and a panel of international experts, the Body of Knowledge on Infrastructure Regulation (BoKIR) intends to summarise some of the best thinking on infrastructure policy. Funding for this project came from the Public-Private Infrastructure Advisory Facility (PPIAF). This site provides links to more than 500 references, an extensive glossary and self-testing features to facilitate learning. The references include publications and decisions by regulatory agencies and other governmental bodies; policy advisories by think tanks, consultants, donor agencies, and others; and research by academics, consultants, and other experts.

Global Water Operators' Partnerships Alliance (GWOPA)

<http://gwopa.org>

The GWOPA is a network of partners committed to helping water operators help one another improve their collective capacity to provide access to water and sanitation services for all.

RWSN MSTG meeting on management and support of piped water supplies

<http://www.rural-water-supply.net/en/resources/details/401>

On this website, background paper, case study presentations and report can be found from the first thematic meeting of the Rural Water Supply Network (RWSN) working group on management and support of rural water supplies focussed on rural and small town water supplies. This meeting took place in October 2012.

Sharing platform on monitoring of rural and small town water services

<http://www.reseaux-aep.org/index.php?option=com_content&view=category&layout=blog&id=34&Itemid=27>

This is a digital sharing platform, developed with support from AFD (French Development Agency), SEDIF (Syndicat des Eaux d'Ile de France), the AESN (Agence de l'Eau Seine Normandie) and the French development NGOs GRET. Included experiences from Bénin, Burkina Faso, Cambodia (under development), Haiti, Laos (under development), Madagascar (under development), Mali, Mauritania, Niger, Chad.

WaterAid and BPD small town website

<http://small-towns.org/>

This website presents the findings from a year-long piece of analytical work on the supply of water and sanitation services in small towns, undertaken by WaterAid and Building Partnerships for Development (BPD). It includes the findings, documents and a number of videos.

Country/ project websites

Business Planning for Water Utilities

<http://www.waterbusinessplanning.com/>

This website aims to provide water utility managers and consultants working in small to medium sized towns, with the tools and support needed for the preparation of business planning. The tools, guideline documents and training material available on this website were prepared during projects with the Ministry of Water Resources in Ethiopia.

Second Small Towns Water Supply and Sanitation Sector Project Nepal

http://www.sstwsssp.gov.np/

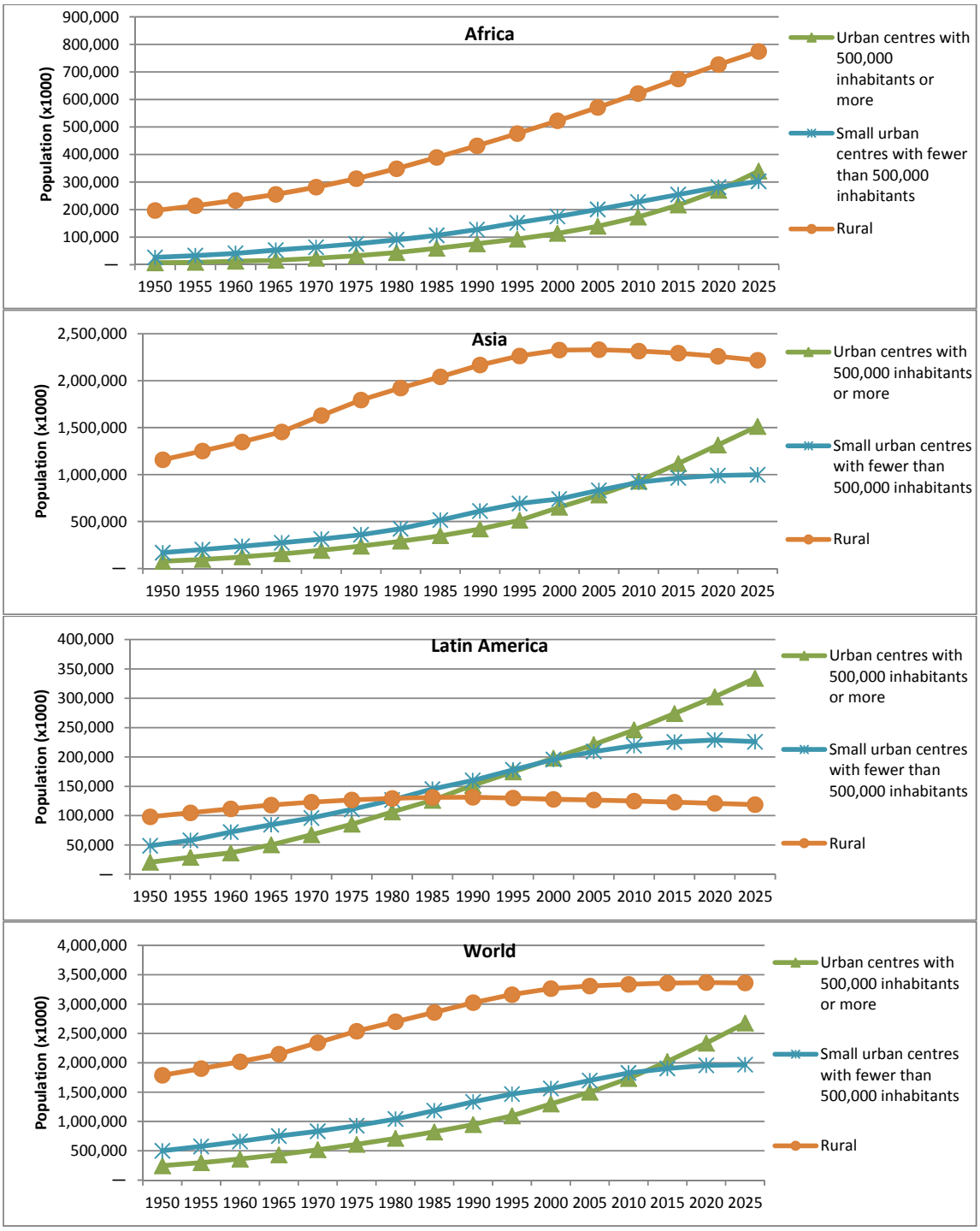
The Second Small Towns Water Supply and Sanitation Sector Project (the Project) is designed to improve the health and economic and environmental living conditions of people in small towns in Nepal. The expected outcome of the Project is improved, affordable, and sustainable water supply and sanitation services, which are governed and managed by locally accountable representative bodies.

Tri-Partite Partnership Project, Ghana

<http://www.washghana.net/page/687>

This is the website of a research project in Ghana on management of water and sanitation services for the urban poor, containing working documents on global literature reviews, mapping of management models for small town and peri-urban water supply and case studies.

Annex 1: Rural, urban and small urban centre population trends



Source: UNDESA, 2012.

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