

Small town water services sustainability checks: development and application in Ethiopia

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Abstract

With rising coverage figures and the advent of the Sustainable Development Goals, there is increasing attention given to assessing and monitoring the sustainability of water services. Previous efforts in the rural water supply sector have included the development of sustainability checks, while in the urban water supply sector, benchmarking of water services and the performance of utilities has become common practice. This paper argues that neither rural sustainability checks, nor urban benchmarking frameworks, are entirely suitable for monitoring small town water services. It presents a framework specifically developed and applied for assessing and monitoring small town water services. Application of the framework in seven small towns in Ethiopia shows significant discrepancies between the ideal and actual situations. It reveals specific challenges related to sustainable small town water service provision, including capacity at service provider (utility) level, asset management and regulation. The costs of sustainability checks and prospects for uptake as project and wider sector tools are discussed.

Keywords: Ethiopia; Monitoring; Small town; Sustainability check; Water services

1. Introduction

The Millennium Development Goal (MDG) 7 target C on halving the proportion of people without access to safe drinking water was met in 2010 (WHO/UNICEF, 2014). However, doubts have been expressed about the quality of the ‘access to safe water’ and whether this achievement is telling the full story. Taking into account water quality, for example, significantly reduces coverage figures, as shown by various authors (Godfrey & Labhestwar, 2010; Bain *et al.*, 2012; Onda *et al.*, 2012). These concerns have been driving the development of indicators for measuring water services, going

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beyond simply counting facilities and tracking ‘the haves and the have-nots’ (Bartram, 2008; Lockwood & Smits, 2011) and combining indicators to assess the level of services provided and received (Kayser et al., 2013). The recent advent of the Sustainable Development Goals (SDGs) has emphasised the need for comprehensive monitoring frameworks that integrate quality, affordability, continuity and equity of water, sanitation and hygiene (WASH) services provision.

At the same time, there is increasing interest in finding ways to assess whether or not the conditions for sustainable water service provision are in place. Development partners such as DGIS (Netherlands Directorate-General for International Cooperation), USAID, and more recently, DfID (ICAI, 2016) have been stimulating the development and application of so-called ‘sustainability checks’. These aim to assess whether their investments have led to continuously functioning systems, and the degree to which conditions for future sustainable WASH service provision are in place. Sustainability checks were first developed and implemented in UNICEF Mozambique’s ‘One Million Initiative’ programme (2007–2013) with financial support from DGIS (Godfrey et al., 2015). Subsequently, sustainability checks have been systematically applied in UNICEF programmes funded by DGIS (Boulenouar, 2016). Other frameworks for assessing sustainability which have been developed over the last decade include USAID’s Sustainability Index Tool or SIT (USAID, 2013), and the WASH Alliance International’s Sustainability Monitoring Framework (Dutch WASH Alliance, undated). The majority of these project-based sustainability check frameworks have focused on rural water (and sanitation) service provision, focussed on point sources (Boulenouar et al., 2013).

In the urban water sector, performance benchmarking has been gaining popularity since the 1990s and is now being applied worldwide (Murungi & Blokland, 2016). This kind of benchmarking also looks beyond coverage and commonly includes sustainability indicators, especially related to operational efficiency, financial efficiency, production and consumption and poverty and affordability. Since 1996 IBNET (International Benchmarking Network for Water and Sanitation Utilities) has been providing standardised measurements of utilities’ operational and financial performance. It provides access to information on the performance of more than 2,500 water and sanitation utilities from 110 countries, including Ethiopia (van den Berg & Danilenko, 2010).

1.1. Small town sustainability checks

In line with the topic of this Special Issue, this paper focuses on assessing and monitoring water services in small towns. Small town water services provision spans the middle ground of the rural-urban continuum: not fully urban, as it usually does not concern big public utilities managing complex piped schemes, and not fully rural, as the common rural model of water service provision through community-managed hand-pumps is not a realistic model in these settings either (Adank, 2013; Moriarty et al., 2002). Various service delivery models can be found in small town settings, including municipal-management, community-management, public-owner operators, and public-private partnership arrangements. The type of management model commonly depends on the local context and the complexity of the technical scheme (Adank, 2013; Pilgram et al., 2007). The diversity of service delivery models and the mix of urban and rural characteristics limits the applicability of strictly urban or rural monitoring frameworks.

As mentioned above, rural water sustainability checks tend to focus on one specific service delivery model, community-managed handpumps, which is less relevant in small town settings. Urban benchmarking frameworks are too complex, too comprehensive, or not fully relevant for application in small town contexts. The data needed in order to do this kind of benchmarking is often not available

in small towns. Since aggregation of data is an important requirement for the authorities overseeing small town water services provision, monitoring tools need to be designed with this in mind. Governance and legitimacy issues and issues related to the enabling environment are also often not included into utility performance benchmarking. Where urban utilities generally do not require technical support from the public sector, as they either have this in-house or access the private sector for such support, small town water service providers generally do require direct support. The monitoring of such support functions is critical for small town water service provision.

Small towns have a unique institutional arrangement. The nature of the small town population precludes the use of ‘community management’ of the piped water service but often does not reach the level of ‘professional water service delivery’ that is achieved in the capital or large cities. The lack of professionalised water utilities in many small towns in Africa, precludes the use of utility benchmarking as a means of measuring water service sustainability. In this context, how can small town water service provision be checked and monitored? What indicators are most useful for monitoring small town water service provision and what conditions need to be in place? What do results of monitoring small town water services tell us and how can these results be used? This paper seeks to provide answers to these questions by presenting and discussing the case of the development of a sustainability check framework for small and medium town WASH services provision and its application in seven towns in Ethiopia.

2. Setting the scene: small town water services provision in Ethiopia

Ethiopia is a mostly rural country undergoing rapid urbanisation. While around 80% of the population live in settlements with fewer than 2000 people (CSA, 2013) there is considerable urban growth. The number of people living in towns and cities is expected to increase from 15.2 million in 2012 to 42.3 million by 2037, increasing at 3.8% per year (CSA cited by World Bank, 2015), or may even triple by 2034 based on the World Bank’s growth rate projection (5.4% a year).

With the exception of two chartered cities (Addis Ababa and Dire Dawa), which form their own administrative states, every town or city is part of a regional state. As a federal republic, Ethiopia is divided into nine national regional states, mainly based on ethnicity and language. Regions are subdivided into ‘woredas’ (districts) which are further subdivided into ‘kebeles’ (wards or neighbourhood associations). Woredas are grouped into zones, which either have a role in supervising the woredas (like in Oromia and Tigray Regions) or play a less active role (like in Amhara and Somali Regions). Towns with a population of at least 17,500 have a mayor and a town council (Ministry of Urban Development & Housing, 2013) and tend to form an ‘urban woreda’ or municipality, while smaller towns tend to be part of a ‘rural woreda’ and fall administratively under a woreda council.

Every settlement with a population above 2,000 and any settlement which serves as a woreda capital is considered a ‘town’ in Ethiopia. Out of the 882 urban settlements counted by the Ministry of Water, Irrigation and Energy (MoWIE) in 2014, the vast majority (847, which amounts to 96%) were small (2000–20,000 population) and medium (20,000–50,000) size towns (MoWIE, 2014). These small and medium towns are considered strategic for development due to their rapid population growth and their importance as centres of local business and growth within their rural hinterlands. The current lack of infrastructure and services in such towns is identified as a critical gap and a risk to the success of urbanisation policies (World Bank, 2015).

According to WHO/UNICEF’s Joint Monitoring Programme (JMP), access to improved water services in urban areas in Ethiopia has improved from 84% in 1990 to 93% in 2015 and access to piped water on

premises also increased considerably, from 10% to 56% during the same time period (WHO/UNICEF, 2017). However, these largely positive coverage figures hide the reality of low levels of service and challenges related to the sustainable provision of small town water services (Adank et al., 2016).

Small town water services provision is, in Ethiopia, a part of urban water service provision. Service delivery models applied in small towns do not differ considerably from service delivery models applied in cities. Small town piped schemes are commonly managed by Town Water Utilities with a Water Board. These schemes provide services through household connections and public standpipes. Regional Water Bureaux are responsible for the development of such schemes and they tend to contract out activities like drilling, construction, capacity building and supervision to private sector enterprises. As soon as the infrastructure is put in place, it is handed over to the town administration, which is then responsible for establishing a Town Water Supply and Sewerage Service, also referred to as a Town Water Utility. These autonomous public enterprises are responsible for the management of such piped schemes. The general manager of a Town Water Utility is responsible for organising, directing and administering the activities of the utility and its staff within the different sections (human resources development, finance and property administration, operation and maintenance, etc.). The Town Water Utility is overseen by a Water Board, which is supposed to lead and regulate the service as a supervisory body on behalf of the town council and other represented stakeholders. It also appoints the general manager of the Town Water Utility, who is a non-voting member of the Water Board. In addition, Town Water Boards generally consist of representatives from the town administration, from the relevant local government offices (e.g. water office, health office, finance and economic development office, education office), and from the customers (a male and a female representative from the domestic customers and possibly a representative from the business community) (MoWIE, 2013). Water Board members are to meet on a regular basis. Sitting allowances related to such meetings are generally covered by the Town Water Utility through revenues from tariffs.

Town Water Boards are established based on regional proclamations. Water Boards of small towns (category 3–5, with a population of less than 100,000) are established by the town administration and are hence officially accountable to the town administration¹ (MoWIE, 2013). However, in reality there are no performance agreements between a Water Board and a town administration and therefore limited formal accountability between the two. The main role the town administration plays is approving tariffs and in providing match-funding in case of rehabilitation or expansion of the scheme.

The Regional Water Bureau is to continuously follow up on the performance of both Town Water Boards and Town Water Utilities, and to give training and technical support when needed (MoWIE, 2013).

3. A sustainability check for small town water service provision: framework and methodology

A sustainability check framework and methodology was developed as part of the ONEWASH Plus Programme². This programme, implemented by UNICEF in collaboration with the Government of Ethiopia and with financial support from DfID, focuses on improving sustainable WASH services in

¹ In Oromia Region, Water Boards can also be established by the Zonal Water Bureau. Water Boards for towns with a population of 100,000 or more (grade 1 and 2) are established by the Regional Water Bureau.

² The three authors of this paper from IRC have been actively involved in the monitoring and evaluation component of this programme, including the development of the sustainability check framework.

eight small towns and their surrounding rural areas. The development of the framework drew on existing frameworks and experiences with urban benchmarking and mostly rural-focused sustainability checks presented in the introduction. Based on these frameworks, and taking into account suggested indicators, norms and standards as set out in Ethiopia's One WASH National Programme (OWNP) (Federal Democratic Republic of Ethiopia, 2013) and the second Growth and Transformation Plan (Federal Democratic Republic of Ethiopia, 2015), a draft sustainability framework was developed to suit the Ethiopian small town context. The draft framework was discussed with stakeholders during a series of consultation workshops in 2015 at town, regional and national level, including representatives from government, NGOs and development partners. Feedback from the consultations at these levels was used to further refine the framework.

The check was first applied in 2015 in seven small towns³ and is subsequently being applied on an annual basis over the duration of the project (2014–2018). They continue to provide the project with insights into what is going well and what needs additional attention, including whether or not the necessary conditions for sustainable WASH service provision are in place. In addition, results are used as an input for the development of town-level sustainability plans. In this way, the results are intended to support decision making at town (utility) level related to planning and corrective actions.

The ambition of the development and application of sustainability checks goes beyond the project. The initiative intends to pilot useful indicators and mechanisms for monitoring and regulating small town WASH which could be applied at scale within Ethiopia's sector-wide One WASH National Programme.

3.1. Service levels and sustainability indicators

The sustainability check framework developed under the ONEWASH Plus Programme consists of MS Excel sheets with indicators and scoring tables. This includes (1) indicators related to the level of services provided and (2) indicators for assessing the degree to which the conditions for sustainable WASH service provision are in place. The framework has separate indicator sets for small town water, small town sanitation, rural water, rural sanitation, and institutional WASH. The rural component was included as the programme also targets satellite villages around the towns. This paper focuses on the indicators related to small town water services provision.

The indicators related to level of service were set in line with the minimum service levels as defined in Ethiopia's second Growth and Transformation Plan (GTP-2) and summarised in [Table 1](#). These are a step up from the minimum urban water supply access standard level under GTP-1 which was set at 20 litres per capita per day within a distance of 500 m for urban people. The goal of GTP-2 (2016–2020) is to ensure access for everyone at the GTP-1 level, while 75% of the urban population are expected to receive services at the improved GTP-2 levels (FDRE, 2015).

The sustainability indicator framework follows a structure which is commonly applied in rural sustainability check methodologies, where indicators are defined to assess the presence of conditions for sustainable WASH service provision related to institutional/managerial, technical, financial, environmental and social sustainability (also referred to as FIETS: Financial, Institutional, Environmental,

³ As implementation in the project town Jijiga focuses on solid waste management, the water component of the sustainability check was not applied in this town.

Table 1. GTP-2 normative service levels.

Town category	Population	Water quantity	Water quality	Accessibility	Reliability
Category 5 (small)	<20,000	40 lpcd	In line with water quality	Within 250 m	Uninterrupted for
Category 4 (medium)	20,000–50,000	50 lpcd	standards of WHO, supplied		at least 16 hours
Category 3	50,001–100,000	60 lpcd	by schemes labelled as		per day
Category 2	100,001–1 million	80 lpcd	‘improved’ by Joint		
Category 1	>1 million	100 lpcd	Monitoring Program (JMP) of UNICEF and WHO		

Source: Compiled from [FDRE \(2015\)](#) by authors.

Technical, Social ([Rijksdienst voor Ondernemend Nederland RVO.nl, 2016](#))) at different institutional levels. The sustainability check framework developed under the ONEWASH Plus Programme considers three institutional levels: the service provider level, the service authority level and the national level. Functions at the service provider level are related to the day-to-day operation and maintenance of water schemes. Service authority functions include strategic planning, oversight of the service providers, provision of technical support to service providers and monitoring ([Lockwood & Smits, 2011](#)). In small towns in Ethiopia, service provision functions clearly lie with the Town Water Utility as, while service authority functions are divided over three entities at different levels: the Water Board, which oversees the service provider functions of the Town Water Utility, the town administration, to whom the Water Board is accountable, and the Regional Water Bureau, who oversee and provide technical support to the Water Boards and Town Water Utilities.

As such, the service authority level determines the local enabling environment in which service providers operate. The enabling environment at national level sets the policy and normative frameworks, as well as the systems and mechanisms for sector monitoring, regulation and capacity development.

[Table 2](#) provides an overview of the indicators at the three levels. Several of these indicators build on urban water service benchmarking indicators (e.g. staff productivity and billing and collection).

3.2. Scoring tables

A scoring system was developed with micro-scenarios to which ordinal scores were attached, going from 0 to 100, with a 50 score indicating the minimal acceptable score (the benchmark). For the service level indicators, the 50 score were set to equal the GTP-2 norm. For the sustainability indicators scores have been set as much as possible in line with national guidelines and in consultation with town, regional and national stakeholders. The draft framework and scoring system were discussed with a wide variety of stakeholders, including representatives from government, NGOs and development partners, through consultation workshops at different institutional levels: national, regional and town level. Feedback from the consultations at the three levels was used to further refine the framework and resulted in the modification, deletion and addition of some indicators and scoring elements. An overview of the indicators, micro-scenarios and the associated scores can be found in Annex 1 (available with the online version of this paper).

It is sometimes argued that ordinal variables cannot be treated as numeric, which means they cannot be added, subtracted, divided and multiplied, as the distance between the different steps between ordinal

Table 2. Summary of indicators included in the small town water services provision sustainability check.

Service provider	Service authority	National enabling environment
Institutional sustainability		
SP-I-1: Effective utility management	SA-I-1: Sufficient capacity at regional and zonal level to provide support to TWUs SA-I-2: Presence of Water Board (WB)	N-I-1: National monitoring system or database
SP-I-2: Staff productivity		N-I-2: National support to Regional, Zonal and Woreda/service authority, including capacity building training and technical backup
SP-I-3: TWU staffing		N-I-3: Urban regulatory agency
Technical sustainability		
SP-T-1: Non-revenue water	SA-T-1: Effective provision of technical support to the TWU SA-T-2: Checks on construction quality	N-T-1: National/regional standard/ guideline/ norms for urban water service provision
SP-T-2: Adequate supply of spare parts for minor maintenance (pipes, fittings etc.)		
SP-T-3: Effective maintenance system in place		
SP-T-4: Water quality management and disinfection		
Financial sustainability		
SP-F-1: Cost recovery		N-F-1: Availability of national budget related to urban water supply
SP-F-2: Effective financial management		
SP-F-3: Effective asset management		
SP-F-4: Effective billing and collection		
Environmental sustainability		
	SA-E-1: Catchment management system in place	N-E-1: National environmental protection standards are established and applied to town water services
Social sustainability		
SP-S-1: Urban poor get affordable water		

Source: Authors.

scales are not exactly the same (Pelto & Pelto, 1978). However, according to Wijk-Sijbesma (2001), if properly constructed these kinds of scales can be treated as interval scales with an assumed equal distance between subsequent steps. Care was taken to construct the scoring tables related to each indicator ensuring more or less equal distance between the scores. This allows aggregation of scores through summation or averaging of scores over multiple indicators or multiple units of observation, which will be especially relevant if the framework is taken to scale.

3.3. Data collection and analysis

Different data collection methods were applied to collect the data needed for the scoring of the service level and sustainability indicators. Some of the service level indicators, like the proportion of households within 250 metres, can only be sensibly scored based on household data, while others can be

scored based on observations, available secondary data at town level (e.g. financial records), or on information from key informants.

In the case presented here, data on service levels were collected as part of the ONEWASH Plus baseline data collection exercise. This included a household survey administered to 100 randomly selected households in each town between 22 September and 12 December 2014 by local enumerators supervised by IRC. The survey included questions about the accessibility of the water scheme and the payment modalities for water services. In addition, a water point survey was conducted at all public standpipes in the seven towns. Data were collected by enumerators using surveys loaded on phones using Akvo FLOW software. Further methodological details on collection of service level data are included in [Adank et al. \(2016\)](#).

The data required for scoring of the sustainability indicators at service providers, service authorities and the national enabling environment level were mostly collected through key informant interviews with staff from the Regional Water Bureaux and the Town Water Utility, and undertaken by experienced Ethiopian WASH experts in June 2015.

Data were used by project staff to determine scores associated with the service level, service provider, service authority and national enabling environment indicators. The findings were presented to town and regional level stakeholders for validation and, where needed, correction in December 2015.

3.4. Introduction to the project towns

The seven ONEWASH Plus project towns considered in this paper are served by piped schemes providing services through private connections and public standpipes. The towns were selected by the Government of Ethiopia and UNICEF in 2013 based on access criteria. Six of the seven ONEWASH Plus project towns are served by a piped scheme supplied by one or multiple boreholes, with water treatment limited to disinfection. The piped scheme of Adishihu is supplied by a protected spring. Sheno and Wukro have a relatively high number of household connections and Welenchiti the highest number of public standpipes. The piped schemes are managed by Town Water Utilities, each with a Water Board, set up in line with Regional proclamations ([Table 3](#)).

In five of the seven towns, more than 90% of people rely on water from the piped scheme through either household connections ('piped on premise') or public taps or standpipes ([Figure 1](#) and [Table 4](#)). In Kebridehar, the majority of people (66%) depend on birkas or other household level storage facilities, commonly filled by tanker trucks or cart vendors. In Maksegnit, about a third of households depend on alternative improved sources such as communal handpumps in addition to water supply from the piped scheme.

4. Applying the sustainability check framework: results

4.1. Small town water service levels

The sustainability check results showed that the seven Town Water Utilities struggle to provide water services as per national norms and standards ([Table 1](#)). Achieving reliability and water supply quantity targets were particular challenges, as shown in [Table 4](#). Only the amount of water sold in Welenchiti reached at least 75% of the GTP-2 norm. In all towns water supply is intermittent, with rotation of

Table 3. Overview of pilot small towns, ordered from smallest to largest population size.

Town	Adishihu	Sheno	Maksegnit	Abomsa	Welenchiti	Kebridehar	Wukro
Region	Tigray	Oromia	Amhara	Oromia	Oromia	Somali	Tigray
Town population, 2014 (CSA, 2013)	10,771	15,459	16,930	20,517	21,282	35,807	49,925
Year of construction of piped scheme	1996	1985	1996	1994	1970	1978	1986
Year of latest rehabilitation of piped scheme	NA	2011	2013	2014	NA	2013	2004
Number of functional sources	1 spring	3BHs	1 BH	2BHs	5BHs	2BHs	6BHs
Electricity supply	National grid + generator	National grid ± generator	National grid	National grid	National grid	Generator	National grid + generator
Number of household connections, 2014	687	2078	823	1928	1673	1000	5147
Number of public water points, 2014	11	11	10	29	38	22	4

BH = borehole.

Source: Authors.

supply to service areas in different parts of the town at least for part of the year. None of the towns meet the GTP-2 norm of having at least 16 hours of uninterrupted water supply per day. Water quality is also problematic in many towns. Only in Sheno and Wukro were all water quality samples from the piped scheme found to be safe (with an *Escherichia coli* count of less than 10 MPN per 100 ml). The accessibility score is closely related to the number of household connections: the two towns with the most

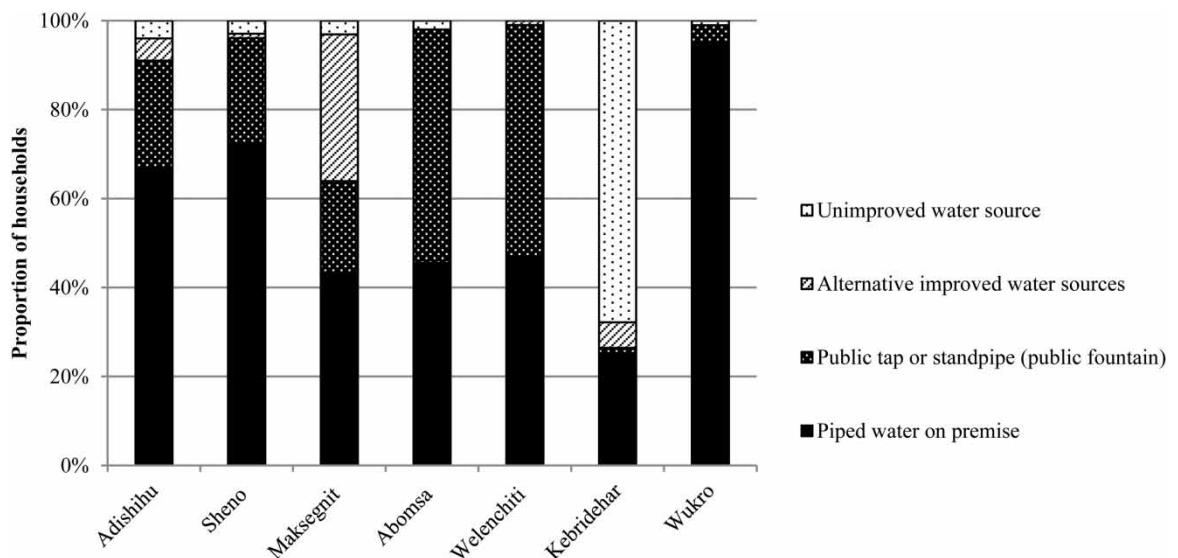


Fig. 1. Sources of main dry season water supply in ONEWASH Plus towns. Source: Authors.

Table 4. Service level scores for ONEWASH Plus Programme towns.

	Adishihu	Sheno	Maksegnit	Abomsa	Welenchiti	Kebridehar	Wukro
Piped scheme coverage: % of households which use piped scheme as their main source of dry season water supply, based on household survey	91%	96%	64%	98%	99%	27%	99%
Reliability score	0	0	0	0	0	0	0
Accessibility score	50	50	25	25	25	0	75
Quality score	25	50	0	25	0	25	50
Quantity score	25	25	0	0	25	0	0
Average score	25	31	0	12.5	12.5	6	31
Number of service level benchmarks met	1	2	0	0	1	0	2

Source: Authors.

household connections (Wukro and Sheno) scored highest and the towns with the lowest numbers of household connections (Maksegnit and Kebridehar) scored lowest.

4.2. Small town sustainability indicator scores

Table 5 presents the scores on the different sustainability indicators at service provider level. It shows widely varying scores over the different indicators and the different towns. Overall Wukro scores best and Kebridehar worst on these indicators.

Table 6 presents the indicator scores at service authority level. With the exception of Kebridehar, service authorities met the benchmark on three out of four indicators. The towns in Tigray (Adishihu and Wukro) scored best.

From Table 7 it is clear that there are also considerable challenges in Ethiopia with the enabling environment for small town water service provision at national level. The relatively low scores related to the enabling environment at national level, are not unique to small town (or urban) water supply with rural water supply facing similar challenges.

5. Discussion

5.1. Indicators for monitoring small town service levels

The framework presented in this paper allows for undertaking a rapid assessment of water service levels based on national (GTP-2) norms and standards. In Figure 2 results from the seven towns are compared with the level of service resulting from applying the methodology developed recently by the WHO/UNICEF Joint Monitoring Programme (JMP) for monitoring the Sustainable Development Goals. The JMP analyses nationally representative data, while the sustainability check presented here is mainly intended for assessing water service levels of individual towns, with the possibility of aggregation of scores at higher levels.

Like the JMP methodology, the ONEWASH Plus sustainability check framework combines different sub-indicators into a composite indicator. The highest service level in the JMP framework is ‘Safely

Table 5. Service provider and authority indicator scores for ONEWASH Plus Programme towns.

Service provider indicator	Adishihu	Sheno	Maksegnit	Abomsa	Welenchiti	Kebridehar	Wukro	Average	Proportion of towns which score at least 50 (meeting the benchmark)
SP-I-1: Utility organisation	25	50	50	50	50	50	50	46	86%
SP-I-2: Staff productivity	50	75	0	50	50	0	50	39	71%
SP-I-3: Town Water Utility staffing	0	0	0	25	25	0	25	11	0%
SP-T-1: Non-revenue water	50	100	25	75	75	0	0	46	57%
SP-T-2: Adequate supply of spare parts for minor maintenance (pipes, fittings etc.)	75	50	25	25	50	25	75	46	57%
SP-T-3: Effective maintenance system in place	25	50	50	50	75	25	50	46	71%
SP-T-4: Water quality management and disinfection	75	0	25	0	0	25	100	32	29%
SP-F-1: Cost recovery	50	50	50	50	50	0	50	43	87%
SP-F-2: Effective financial management	75	25	50	25	50	0	100	46	57%
SP-F-3: Effective asset management	0	0	25	0	0	0	0	4	0%
SP-F-4: Effective billing and collection	50	25	50	50	75	75	100	61	86%
SP-S-1: Urban poor get affordable water	25	25	25	25	25	25	25	25	0%
Average SP score	42	38	31	35	44	19	58		
Proportion of benchmarks met	58%	50%	42%	50%	67%	17%	67%		

Source: Authors.

Table 6. Service authority level indicator scores.

Service authority indicator	Adishihu	Sheno	Maksegnit	Abomsa	Welenchiti	Kebridehar	Wukro	Total	Number of towns which score at least 50
SA-I-1: Sufficient capacity at regional and zonal level to provide support to TWUs	75	50	50	50	50	25	75	54	86%
SA-I-2: Presence of Water Board (WB)	50	25	50	100	25	25	75	50	57%
SA-T-1: Effective provision of technical support to the TWU	50	50	50	50	50	25	50	46	86%
SA-T-2: Checks on construction quality	75	50	50	50	50	50	75	57	100%
SA-E-1: Catchment management system in place	0	0	0	0	0	0	0	0	0
Average SA score	50	38	38	38	38	25	50	41	
Proportion of benchmarks met	80%	60%	80%	80%	60%	20%	80%		

Source: Authors.

managed services', which implies access to improved water services on premise (accessibility), available when needed (reliability) and free of contamination (WHO, 2017). The sustainability check framework combines similar indicators, in addition to water quantity. Both use household survey

Table 7. National level indicator scores.

Indicator	Score and micro-scenario
N-I-1: National monitoring system or database	25: National database is in place, including asset and functionality data, but not updated annually
N-I-2: National support to regional, zonal and woreda/ service authority, including capacity building training and technical backup	25: There is ad-hoc/project based training of regional, zonal and woreda staff
N-I-3: Urban regulatory agency	0: No regulatory agency
N-T-1: National/regional standard/guideline/norms for urban water service provision	50: There are national or regional level norms and standards related to urban water service provision and they are known at regional, zonal, woreda level
N-F-1: Availability of national budget related to urban water supply	25: Less than 50% of required funds available
N-E-1: National environmental protection standards are established and applied to town water services	25: National standards to protect environment in design, sizing and siting of water supply infrastructure, but not known and/or enforced

Source: Authors.

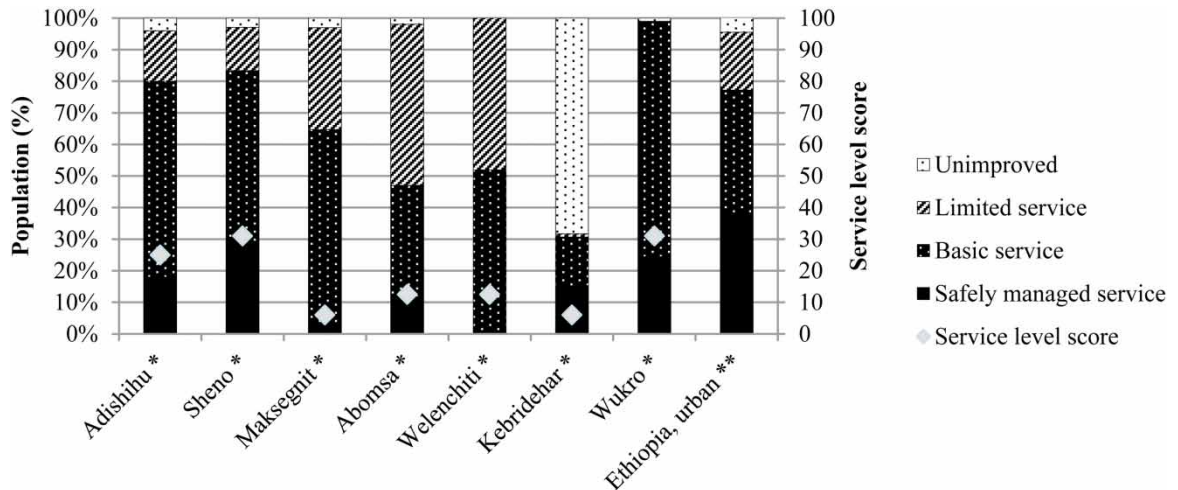


Fig. 2. Water service levels. *Source:* Compiled by authors based on (*) ONEWASH Plus 2014–2015 household survey and sustainability check data and (**) 2015 JMP data (WHO/UNICEF, 2017).

data as well as data from service providers or regulatory bodies. However, where the emphasis of JMP is on household survey data, the sustainability check mainly depends on data obtainable from service providers.

As shown in Figure 2, application of the JMP framework and the sustainability check framework shows similar trends in service levels, with highest levels in Wukro, Sheno and Adishihu and lowest in Maksegnit. The fact that Welenchiti scores higher under the sustainability check framework than under the JMP framework is due to the fact that water quantity, on which the town scores relatively well, was included in the sustainability framework and not in the JMP framework.

5.2. Main small town challenges

The low scores on various sustainability indicators reflect some of the main issues that small towns face in water service provision. Looking ‘horizontally’ at Tables 5 and 6, the towns score lowest on the following indicators: Town water utility staffing; Effective asset management; Initiatives for the urban poor; Water quality management and disinfection; Catchment management.

Small town staffing and capacity. One of the major challenges that these towns face is in attracting, employing and training operational and managerial staff (Adank, 2013). The ONEWASH Plus sustainability check showed low scores on the ‘staffing’ indicator, with four of the seven towns having an understaffed Town Water Utility with less than 75% of the required staff in place. Capacity of the existing staff was also observed as a potential sustainability challenge. In none of the towns had all staff members received training. Only in Adishihu, Maksegnit and Abomsa had at least half of the operational staff received training, while half of the administrative staff had been trained in Adishihu, Welenchiti and Wukro. In Abomsa, only financial staff had received training.

Asset management. A good overview of assets and their state is crucial for sustainable water service provision. This facilitates planning of timely repairs and rehabilitation of scheme components and is especially important for more complex urban and small town schemes. Asset management has proven a big challenge and is a potential sustainability risk in the assessed small towns. This is partly due to challenges with the handing over process of the infrastructure. Construction supervisors, usually consultants under contract with the Regional Water Bureau, are supposed to provide construction completion reports, which include an overview of all developed assets. However, these construction completion reports are often not submitted, or are only submitted to the Region and not included in the handover of the infrastructure to the town and are therefore often not available to Town Water Utilities. Another challenge is the fact that it is not always clear who is the asset holder and therefore responsible for asset renewal and replacement. As the water policy states that water infrastructure is owned by the state, the town councils representing the public in the service areas can be considered the asset holders. However, Town Water Utilities are also expected to contribute to asset expansion and renewal. Rules and arrangements in this area have yet not been clearly spelled out.

Initiatives for the urban poor. Water service provision to the poor is often not high on the agenda of small town water service providers, and this was also the case for the seven Town Water Utilities discussed in this paper. All provided water services through public taps, which are considered as pro-poor solutions. However, with the exception of Wukro, none of the utilities had made provisions for shared yard connections, which allow the urban poor living in compound housing to jointly apply and pay for a connection. Although shared connections were allowed in Wukro, the number of public taps was very limited.

Water quality management and disinfection. Water quality management practices were found to differ between the regions. The three Oromia towns did not practise disinfection of the ground or elevated storage reservoirs. In the Amhara town, Maksegnit, and the Somali town, Kebridehar, disinfection of storage reservoirs was practised, but less often than once a month. In the Tigrayan towns Wukro and Adishihu, monthly disinfection of reservoirs was undertaken by a qualified operator and water quality (chemical, bacteriological, physical) was checked on irregular (less than once a month) basis.

Catchment management. Growing small towns put increasing demands on water resources. Catchment management is important to protect quality and quantity of the water source, as well to avoid conflicts between different water users. Not having any arrangements in place, as was found to be the case in the study towns, could pose a serious environmental sustainability risk.

Enabling environment at national level. Small town water supply often falls between the cracks between urban and rural when it comes to setting clear policies and laws. This is often the case in contexts where one national ministry, department or agency is dedicated to rural and one to urban water supply, with the small town sub-sector falling in either or neither (Adank, 2013). Various authors consider regulation of small town water services a major weakness (Adank, 2013; Pilgrim et al., 2007; WSP, 2010; Pezon, et al., 2013) as 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. This is also the case in Ethiopia where the absence of a regulatory agency was identified as an urban and small town weakness.

5.3. Use and conditions for use of sustainability checks

The sustainability check developed and applied under ONEWASH Plus is a project-based tool, and has been used for monitoring progress on project outcomes. In addition it has informed simple sustainability plans, with actions for mitigating identified sustainability challenges. Scoring of the indicators has so far been done by project staff based on data they collected from Town Water Utilities and staff from the Regional Water Bureaux. In subsequent annual rounds, the project intends to involve these stakeholders further in data collection and indicator scoring processes. This is intended to provide staff with deeper insight into challenges that need to be addressed.

In the absence of clear regulatory mechanisms, sustainability check results can provide Regional Water Bureaux with a tool for regulating the performance of Town Water Utilities and the services that they provide. Principles, indicators and methodologies developed as part of the sustainability check could be incorporated into and linked to regional and/or national monitoring systems and regulatory arrangements, which are currently under development in Ethiopia.

The dissemination and sharing of the results of the checks at national level can inform and influence policy discussion and change. The presentation of the first sustainability check at the 7th Multi Stakeholder Forum, organised by the One WASH National Programme has for example contributed to the discussion on the need for an urban and small town regulatory framework.

The costs of the first round of sustainability checks, which, in addition to small town water services included institutional WASH services, rural water and sanitation services in the villages around the towns, and town sanitation services, amounted to about 14,000 USD per town (about 0.72 USD per town inhabitant). This is equated to about 1.2% of the total project implementation costs. This is within the 0.8% to 2.8% range reported as the costs of a range of sustainability checks (Schweitzer, 2016). Sustainability checks are considered to be a cost effective means for measuring and influencing the sustainability of water services in small towns. Inclusion of sustainability check indicators into the national and regional monitoring, audit and reporting frameworks could provide substantial economies of scale and greater impact. Uptake by Regional Water Bureaux of roles in data compilation, processing and analysis at scale is estimated to cost about 42,000 USD per year per region (about 430 USD per town). This is considered good value, but to put this figure into perspective, current operational budgets of Regional Water Bureaux are only about 85,000–125,000 USD. Application of sustainability checks at scale through government structures will likely only be achieved when more financial (and human) resources are allocated to recurrent expenditure and support activities, as opposed to construction of new infrastructure.

6. Conclusions

This paper has presented a framework for assessing and monitoring small town water services provision. It combines elements from rural sustainability checks and urban benchmarking frameworks and methodologies. Application in seven towns has shown the usefulness of the framework and generated actionable insights for small and medium towns.

Use of the sustainability check framework has revealed discrepancies between the ideal and the current situation, both in provided levels of service, and in terms of conditions for sustainable water service provision at service provider, service authority and national levels. While a useful tool for identifying service provision and sustainability challenges, whether the capacity and motivation are in place to address these challenges beyond the scope of the ONEWASH Plus Programme remains to be seen.

At the moment, execution of the sustainability checks as applied in the ONEWASH Plus project context is human resource and capital intensive and therefore relatively difficult for service providers (Town Water Utilities) and service authorities (Water Boards, Town Administrations, Regional Water Bureaux) to take up themselves. Elements of sustainability checks, including indicators and parameters related to service levels, performance of service providers and service authorities, should ideally be integrated into national and regional M&E and reporting frameworks. If such indicators and parameters were part of routine, continuous monitoring and reporting, the costs of application of the sustainability checks could be reduced considerably. When applied at scale, sustainability checks would also have the potential to inform regulation. This could involve use of sustainability checks by a national or regional regulator, assessing water service provision against norms and standards and enforcing these. Dissemination of sustainability check results, especially when done at scale also has the potential to assist water service users in holding their service providers and authorities accountable for their performance and the services that they provide.

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