
Benchmarking for the provision of water supply and sanitation services to the urban poor: an assessment framework

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Abstract: Assessment frameworks and indicators have been developed to guide water utilities in their benchmarking exercises. These systems are tailored to developed economies, where customers generally enjoy well-functioning piped services and are not well suited to assess the strategies, processes and practices targeted at services provision to the poor in less developed economies. The PROBE projects proposes a supplementary benchmarking framework, that allows the assessment of the enabling contributions by key stakeholders, as well as the quality of water and sanitation services in informal settlements. The framework comprises 13 indicators with 62 and 66 variables for water and sanitation respectively. The overall outcome is summarised in a single matrix. A field manual guiding the application of the framework was developed and tested. The results confirmed that the framework is able to assess performance of pro-poor water and sanitation services and has the potential to encourage dedicated knowledge exchange among stakeholders.

Keywords: water supply and sanitation; benchmarking; utilities; indicators; services for the poor; stakeholders.

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1 Introduction

Following the drinking water and sanitation status updates provided by the Joint Monitoring Program (JMP) of WHO/UNICEF, it is clear that since the year 2000 when the United Nations adopted the MDGs, there has been a tremendous increase in access to improved services – i.e., services that use improved technologies as defined by the JMP – most especially in water supply as compared to sanitation in different regions (WHO/UNICEF, 2004, 2006, 2010, 2012, 2014). However, it is worth noting that, much as the global MDG target for water was met, there are still people without access to improved water sources even within countries that achieved the MDG water target (Kauffmann, 2007; UNESCO/IHP, 2014). At global level and in most developing countries, the sanitation target has not been met. The most affected populations are the poor in urban slums and in the peri-urban and rural areas. Owing to the informal character of the urban slums and low level of organisation among the slum dwellers there is often very limited institutional or governance support and among other aspects the water and sanitation situation appears to be much worse in informal settlements compared to other areas as noted by Kimani-Murage and Ngindu (2007). In order to improve the situation in slum areas, different utilities, NGOs, funding organisations and other stakeholders have worked to increase access to improved services however, the sustained provision of these services is proving to be a challenge (Mutisya and Yarime, 2011). Both internal and external factors contribute to this sustainability challenge. Among these are the lack of supporting policies and poor governance (WaterAid, 2008; Mutisya and Yarime, 2011), limited political support, limited technical, financial and or human capacity of service providers (Gutierrez, 2007), limited knowledge about the urban poor (Evans, 2007) and limited collaboration with other potentially influential and important actors including slum dwellers themselves (Solo et al., 1993). To be in a position to develop effective strategies to accelerate the provision of services to the poor and to set realistic performance targets, it is necessary to assess past performance including the impact of the different potential factors and the level of contribution by the various actors. This *performance assessment* will facilitate the analysis of performance deficiencies and the development of specific measures to improve performance (De Witte and Marques, 2009a).

Benchmarking in the water supply and sanitation sector is being promoted as a low-cost and effective tool to assist the improvement of water utility performance. However, current benchmarking appears to be focused on efficiency and service provision to existing customers that benefit from piped service connections, when considering the indicators presented in Alegre et al. (2006). The current frameworks do not facilitate performance assessment of pro-poor services where many of the poor rely on non-piped water and on-site sanitation (Murungi and van Dijk, 2014; van Dijk et al., 2014) owing to the limited extension of the sewerage network and also depend on shared

water supply connections (Cronin, 2004; Grönwall et al., 2010). There is a need for a benchmarking framework that captures these pro-poor elements and this is what this study aims to contribute to. The objective is to develop a pro-poor indicator framework, upon which the readiness of the utility and other influential actors and factors to sustainably serve the poor is assessed.

2 The benchmarking concept

Benchmarking ‘a tool of both performance assessment and performance improvement’, originated in the manufacturing industry in the 1970s as a strategic tool to stay ahead of competitors (Lema and Price, 1995). After some time, benchmarking also entered the public domain where it is increasingly being used by regulators, national and local governments and public enterprises as a means to enhance both the transparency and the performance of public services (Braadbaart, 2007; Nyarko et al., 2009). Water utilities have been using benchmarking since the 1990s and the use of water utility benchmarking has since spread and is now being used worldwide.

There are varied definitions of benchmarking. De Witte and Marques (2009b) define benchmarking as a process of comparing current performance of a utility with a reference performance and as such, benchmarking is seen as a tool to improve performance. Boxwell (1994) defines benchmarking as a process of systematically identifying, analysing and learning from others’ best practices, ‘learning how much and, perhaps more important, learning how’. Harrington (1996) states that benchmarking is a “systematic way to identify, understand, and evolve superior products, services, designs, equipment, processes and practices to improve an organisation’s real performance” and describes the approach as a ‘never-ending discovery and learning experience’. Generally, the overall objective of benchmarking is to assess and compare performance with others to identify the underlying superior processes and practices used by others and to adapt and apply these to improve one’s own performance.

Benchmarking involves two stages, that is performance assessment and performance improvement. Performance assessment looks at measuring performance for example percentage of people served or labour productivity. It enables performance comparisons overtime, or with other water providers or against stipulated guidelines or standards. Performance improvement deals with discovering the difference in the underlying policies, processes and methods being used. It enables comparison of processes for example between water utilities. Best practices are identified and these can be fine-tuned to suit context specific situations to enhance performance. This paper focuses on performance assessment.

3 The existing benchmarking framework for water supply and sanitation

In the water supply and sanitation sector, benchmarking was introduced in the 1990s (Kurian and McCarney, 2010). Internationally, benchmarking is being embraced, even though participation in benchmarking schemes is still quite low. The International Water Association (IWA) has taken on a leading role and has published benchmarking manuals for water supply (Alegre et al., 2006) and waste water (Matos et al., 2003). The manuals define hundreds of performance indicators supplemented by contextual indicators where

the latter allow the capturing of contextual information that may be useful in the understanding the outcome of the performance assessment. Apart from defining the indicators, the manuals also provide a rationale and approach for selecting indicators where IWA proposes that benchmarking should be part of a utility's strategic planning efforts and serves the conversion of strategic objectives into goals, targets, critical success factors and ultimately the choice for befitting performance indicators. The indicators are selected from the set of indicators provided by the manual.

There have been regional benchmarking initiatives by water utilities and or their associations, including among others the European Benchmarking Cooperation (EBC) and the Water Utility Partnership for Capacity Building – Africa (WUP). The EBC was initiated in 2005 by the national water utility associations of The Netherlands and the Nordic countries and several utilities of the six-cities group (<https://www.waterbenchmark.org/content/about>). By now more than 50 utilities mostly from Europe participate. The Dutch water supply companies have been benchmarking since 1989 and initially the results were shared only between the utility directors. At a later stage Vewin, the association of Dutch water supply companies was tasked to arrange the annual benchmarking exercise and by then the results were publicised and became available to the general public (<http://www.vewin.nl>). In 2010, benchmarking became a mandatory activity under the new drinking water act and henceforth the Dutch government defines the set of indicators in consultation with the sector. One of the interesting features of the Dutch benchmarking exercise is that at a very early stage the participating utilities decided to use a single, uniform, multi-layered accounting system thus ensuring cross-utility comparability at all management levels.

The EBC system distinguishes three benchmarking levels, from basic to advanced implying the assessment of 36 and 273 performance indicators respectively. Five key performance areas are analysed to provide a balanced view on utilities' performance in areas of water quality, reliability, service quality, sustainability and finance and efficiency. WUP-Africa in association with the African Water Association first undertook a performance assessment exercise in 1996 in which 21 utilities from 15 African countries participated. Later initiatives expanded African water utility benchmarking exercises to comprise 134 utilities (Water and Sanitation Programme – Africa, 2009). Development banks such as the World Bank and the Asian Development Bank have supported water utility benchmarking in several ways. They have assisted the development of appropriate performance indicators (WSP, 2006) and promoted the use of benchmarking and performance comparison. Best known among them is IBNET, the world wide benchmarking network supported by the World Bank in which 3,500 utilities are participating (Danilenko et al., 2014).

3.1 Concept of benchmarking perspectives and indicators

The origin of benchmarking is in the private sector where it developed as a means to ensure survival in an increasingly competitive environment. By measuring performance in various business processes and by comparing this performance with that in other industries and by studying the related processes, a company could find which business processes could be improved and how. Kaplan and Norton (2007) introduced the concept of benchmarking perspectives, thereby defining four thematic areas where a company needs to focus to ensure its survival. These were the financial perspective, the customer perspective, the integral business perspective, and the innovation and learning

perspective. Within these perspectives an individual company could define its own goals or targets (indicators) and specific measures to achieve these. The four perspectives identified by Kaplan and Norton have in the 1990s been supplemented with a social perspective and an environmental perspective, as the private sector was increasingly being challenged to contribute to the community and take good care of the physical environment in which it operates (Hubbard, 2009).

The concept of perspectives as a means to ensure focus on organisational objectives was also introduced in water utility benchmarking. The Dutch water utility benchmarking is pursuing four perspectives, namely water quality (product), service quality (customer), physical environment (pollution, energy) and finance and efficiency. Tynan and Kingdom (2002) proposed that water companies in developing countries should focus on seven thematic areas namely operational efficiency, cost recovery, commercial performance, coverage and access, asset maintenance, service quality and price and affordability.

After identifying the perspectives or thematic areas for benchmarking, the appropriate indicators can be identified. The choice of indicators is guided by several considerations including the so-called SMART considerations that is specific, measurable, achievable, relevant and time bound. Very often and particularly in the water and wastewater industry, the performance indicators such as those defined in the IWA manuals are quantitative indicators that are represented by a formula in which feature several variables. This focus on quantitative indicators is enabled by the fact that the mandate and the product of the organisations are rather clear and uniform, that is drinking water that needs to comply with specific quality standards, and likewise treatment plant effluent that needs to meet certain standards. This uniformity creates a high level of similarity among water utilities in terms of desired outcomes, key business processes and related indicators and respective variables.

In the water resources management sector, river basin organisations may have very different mandates ranging from monitoring river flows through licensing abstractions and discharges to the actual control of the water resources and water resource infrastructure. When wanting to benchmark across river basin organisations whilst acknowledging their diversity, it appeared more appropriate to focus the benchmarking on the processes and hence the development of qualitative indicators that attempt to measure the quality of organisational processes (Hooper, 2006). Evidently, the quantification of a value for this type of indicators is more difficult than for a quantitative indicator.

3.2 The gaps that the pro-poor benchmarking frameworks seeks to bridge

The emerging assessment framework seeks to address two key gaps in conventional water utility benchmarking, that is:

- 1 the development of pro-poor indicators
- 2 the incorporation of pro-poor actors in the benchmarking framework.

The benchmarking systems that have been developed over the past 20 years by the water and wastewater sector and more specifically by its professional organisations such as IWA and Vewin (viz. Diaz and Blokland elsewhere in this issue) have been embraced by the water utilities and have been utilised as such or adapted to suit specific needs of the users. Performance assessment and performance improvement activities have both been

taken up even though on a worldwide scale the use of benchmarking as an organisational tool is still limited. Even then, the continued use of the system by groups of water utilities and their associations has reportedly proven the value of the benchmarking tool. For example in The Netherlands voluntary water utility benchmarking is claimed to have led to very significant improvements in water utility performance (De Witte and Marques, 2009a).

However, the feasibility and adequacy of the IWA system and its indicators to address specific issues that prevail in a developing country context, remains a point of concern. One of those issues is coverage or access to services by the residents of the service area and within that there is the issue of equity in access, specifically with regards to the poor. The necessity of decreasing the inequity requires a specific focus by utilities and other stakeholders on services provision to the poor. As indicated by Mehta et al. (2011), benchmarking in developing countries pose a serious challenge as the developed benchmarking conventional approach is not adequate in situations where people depend on shared connections with majority lacking sewerage services. As such, as highlighted by Mehta et al. (2011), though there is a lot of literature on benchmarking in the water sector, benchmarking efforts directed towards services for the poor in slums is grossly lacking and this is the key gap that this study seeks to contribute to.

In a developing country context besides the issues of inequality, the other aspect is that when intending to provide services to the poor, the utilities run up against problems that require the involvement of other stakeholders notably the municipality, the slum dwellers themselves, other government bodies, NGOs/CBOs and others (Bamidele, 2010). The system of IWA indicators does not include or address these stakeholders. However, the involvement and active participation of these other parties is important to the extent that without it, the provision of services to the poor by water utilities becomes practically impossible. Typical inputs provided by other parties in resolving deficiencies in services provision to disadvantaged populations include among others suitable policies, legislation and regulation, collaboration of various agencies, awareness raising and demand articulation by slum dwellers, collaboration with communities and their leadership. All these inputs are not necessarily within the competencies of a water utility and need to be mobilised externally. In addition, utilities need to develop their own competencies in the area of pro-poor services provision, including inter alia organisational adjustments, staff capacity, pro-poor mapping, technical and financial tools. Also here, the prevailing water utility benchmarking systems do not provide adequate guidance.

4 Objective of the PROBE research project

The PROBE research project was developed and implemented to enhance or supplement existing water utility benchmarking systems, by developing a dedicated system that would focus on the provision of water and sanitation services to the urban poor only. The importance of pursuing such a system lies in the fact that the unserved in the rapidly growing cities and towns of the developing world are almost exclusively the poor, and that they make up an important part of the city population. In Sub-Saharan Africa, an estimated 60% of the urban population lives in informal settlements or slums. The dedicated benchmarking system would overcome the shortcomings of the conventional benchmarking systems in that it would in addition to the water operator, include multiple

actors and also, that it would develop specific pro-poor indicators that would cover the inputs, processes and outputs by these actors, to contribute to respectively deliver pro-poor water and sanitation services. The system would be targeted for use in an urban setting where the water operator, in collaboration with the other actors, is mandated to provide water and sanitation services to all inhabitants including the poor.

There are other initiatives that have been undertaken to institute pro-poor benchmarking for example the PAS project (Mehta et al., 2011). The PAS project that is hosted by CEPT University in Ahmedabad, India, is piloting benchmarking in 400 Indian municipalities. PAS has taken up the issue of access and equity when formulating their set of performance indicators. Benchmarking with a specific focus on the provision of services to the poor is also receiving some attention elsewhere. For instance, in Sub-Saharan Africa, the Kenyan regulator is planning to add a pro-poor indicator to the existing set of ten key performance indicators. In Zambia, even though no specific pro-poor performance indicators exist the provision of services to low income areas is a concern of the regulator as evidenced by a dedicated chapter in its reports (NWASCO, 2013). Few, if any, utilities or utility associations have developed pro-poor indicators.

4.1 Approach and methodology

The PROBE project undertook its research in three stages. The first stage consisted mostly of desk studies and comprised a reconnaissance of factors, actors and issues that shaped the contours of the pro-poor benchmarking framework. During the second phase the framework was filled in by developing and testing the set of pro-poor indicators. During this phase in-depth studies were carried out in the field to enhance the understanding of particular aspects of the framework; also the emerging set of indicators was tested in various countries. In the third and final phase, a field manual for the application of the pro-poor framework was developed. Guided by that manual the pro-poor framework and its indicators were tested in seven countries.

The development of the indicator framework has been mainly based on:

- 1 review of secondary resources and field studies to identify success factors and key actors that need to be included in the performance assessment processes
- 2 field testing of the framework to have a practical experience in its application and to identify areas of improvement.

The process of identification of successful factors and actors in pro-poor services provision followed a review of 50 water supply and sanitation case studies spread across different regions in developing countries. The cases were collected from various sources like ADB, WSP, WHO, IWA, IRC, UNDP, UN, BNWP, Water Aid, UNICEF, DANIDA, SLE/BPD, WSUP to mention a few. A cross-case analysis was conducted to identify the different actors and factors. The primary focus of the analysis was on the identification of factors and actors in the 50 cases and their relative importance that was determined by the number of times that they featured in the cases. Findings from the 50 case studies were supplemented by additional studies carried out during the research (both desk studies and field-based).

To improve and test the applicability of the emerging framework, a mix of primary data collection techniques have been used to collect field data. They include semi-structured interviews, focus group discussions, questionnaires and observations.

The framework has been tested in Kenya in Kibera and Mathare slums, Zimbabwe (Bulawayo – in Makokoba, Iminyela and Mabuthweni), and South Africa (Pietermaritzburg – in Chris Place, Inkululeko and Hlalakahle and a formal township called France). In Kenya, semi-structured interviews were carried out with officials from the Ministry of Water and Irrigation, Water Services Regulatory Board, Water Services Trust Fund, Athi Water Services Board, Nairobi City Water and Sewerage Company, Umande Trust, Pamoja Trust, UN-Habitat, CBOs in Kibera and Mathare slums. In Zimbabwe,

semi-structured interviews were carried out with officials from Bulawayo City Council, Dabane Trust and World Vision International, and the Zimbabwe National Water Authority. In South Africa, semi-structured interviews were carried out with officials from Pietermaritzburg which is situated within the Msunduzi Municipality.

Surveys were also administered to communities to study the quality of services provided. Overall, observations were made to triangulate data collected from the survey and semi-structured interviews. The observed aspects include water supply service provision in terms of water network, other existing water sources, water point cleanliness and distance between water points and houses. For sanitation services provision, aspects on toilets cleanliness, types of toilets, toilet designs, distance between toilets and houses, distance between toilets and water sources and excreta disposal were observed.

To enhance the applicability of the framework, a field manual was developed to guide researchers/investigators in different countries in further testing of the framework. The manual provides a step by step guide on conducting research on the assessment and monitoring of water supply and sanitation service provision to the urban poor. One of the key advantages of the manual is the increased ability to easily compare findings from different countries thus making it possible to identify performance gaps and share successful practices. The framework has been currently being tested in Uganda, Nigeria, Angola, Kenya, Ethiopia, Ghana and Zimbabwe. Interviews and review of secondary sources are supplemented by questionnaires and observation methods to study the situation of water and sanitation in the respective slum areas.

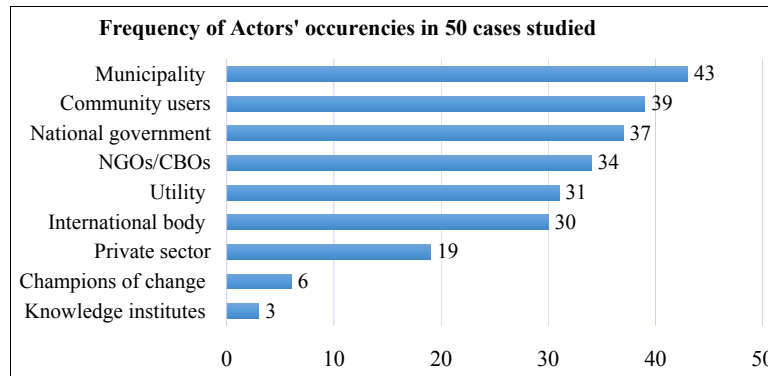
5 Findings of phase 1: shaping the pro-poor benchmarking framework

The review of 50 case studies resulted in the identification of the success factors and key actors that are keys to the establishment of pro-poor water and sanitation services (Bamidele, 2010). The top-five actors include;

- 1 municipality/government
- 2 the community users
- 3 national government
- 4 NGOs/CBOs
- 5 utility.

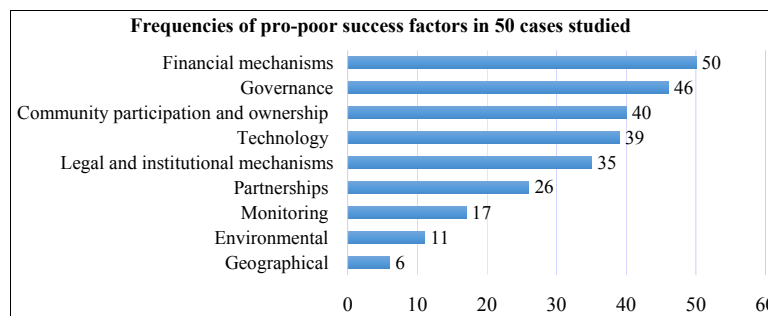
It is important to note that the positions taken by the specific factors and actors (see Figures 1 and 2) represent their degree of occurrence but not the importance of their inputs.

Figure 1 Key actors in pro-poor services provision (see online version for colours)



Source: Bamidele (2010)

Figure 2 Success factors for pro-poor services provision – adjusted from (see online version for colours)



Source: Bamidele (2010)

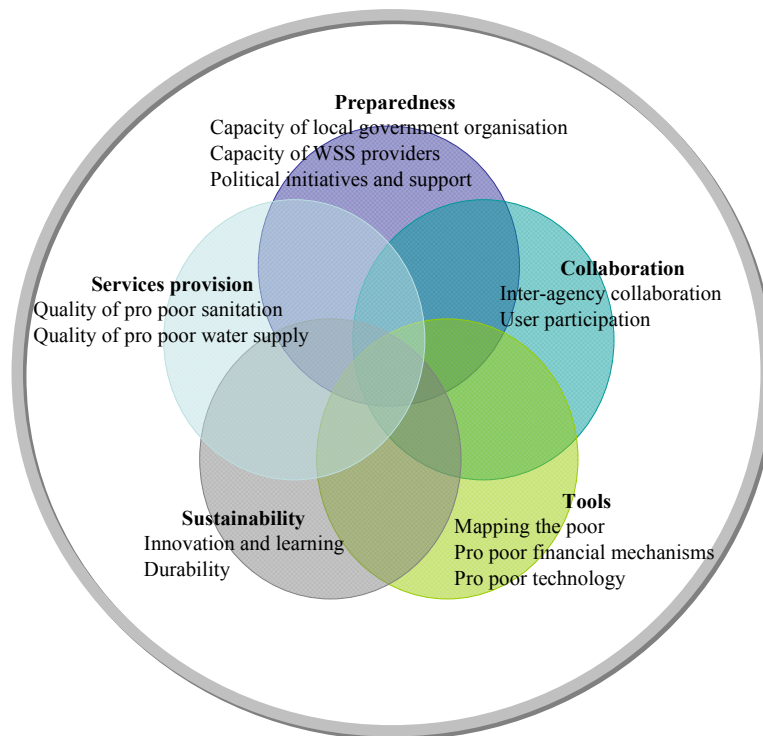
The top-five success factors are:

- 1 financial mechanisms
- 2 governance
- 3 community participation and ownership
- 4 technology
- 5 legal and institutional mechanisms.

The results on factors and actors were supplemented by another study by Sánchez (2010). Through review of literature, Sánchez (2010) identified a list of factors that are needed to successfully provide pro-poor services. Focusing the study on private and public sector benchmarking and in particular water utility benchmarking, Sánchez (2010) found that the benchmarking approaches defined for use by the private sector have in many cases been adapted, expanded and applied by the water utility sector and that the perspectives and indicators being used in the water services sector, are often being selected and modelled after the IWA benchmarking guidelines. However, these perspectives and indicators do not provide data, information and insights to establish progress and

challenges when providing access to improved services by the poor. On the basis of these findings together with the use of findings from other studies, Sánchez proposed the initial set of pro-poor perspectives and indicators that would provide a better insight in pro-poor services provision (Figure 3). The perspectives included preparedness (later modified to policies, arrangements and capacities), collaboration, tools, sustainability and services provision. The overall outcome from preliminary studies resulted in the drafting of the emerging benchmarking framework.

Figure 3 Perspectives and corresponding performance indicators (see online version for colours)



Source: Sánchez (2010)

6 Findings of phase 2: developing and testing the indicators

Further development of the framework and development of indicators has been through additional studies by Murungi (2011), Mutai (2011), Muzvidzwa (2014) and Ndlovu (2011). These contributed to the improvement of the draft benchmarking framework leading to the current more inclusive and specific performance assessment guide (Table 1) which tackles pro-poor water and sanitation services separately.

Table 1 Pro-poor benchmarking framework

<i>Perspective</i>	<i>Party being benchmarked</i>	<i>Number and name of the indicator</i>	
Policies, arrangement and capacities	Government	1	Political initiative and support
	Regulator	2	Capacity of the regulating authority
	Service provider	3	Capacity of the service provider
Collaboration	All	4	Inter-agency collaboration
	User community	5	Community leadership and outreach
	User community	6	Community involvement and participation
Tools	Service provider	7	Mapping the poor
	Service provider	8	Pro-poor financial instruments
	Service provider	9	Pro-poor technology
	Service provider	10	Pro-poor incentives
Sustainability	Regulatory and service provider	11	Innovation and learning
Quality of services	End Users (slum dwellers)	12	Quality of pro poor water services
	End Users (slum dwellers)	13	Quality of pro poor sanitation services

Subsequent research by Mutai (2011) and Ndlovu (2011) took the indicators forward by developing content for each of the indicators and developing a scoring system to assess the field data thus, enabling them to test the framework in Kenya, Zimbabwe and South Africa. Each indicator is made up of item(s) and the corresponding variables on which information needs to be collected from a variety of sources including documents, interviews, questionnaires and observation. For example, enabling indicator 1 – political initiative and support has items on policy, regulation and legislation. The policy item seeks to find out whether the policy on either water or sanitation:

- a has a component on water or sanitation services for the poor
- b elaborates priority to services provision to the poor
- c has community participation and gender component
- d has financing mechanisms for pro-poor services provision.

After analysing, the variables provide a value for each indicator. The 13 indicators can be categorised in two groups where indicators 1–11 concern enabling and conceptual parameters and are more qualitative in nature whereas indicators 12 and 13 are out-put type performance indicators as they mostly focus on output or performance. They are quantitative in nature and help to assess the quality of services provision for water and sanitation separately.

After the studies conducted by Mutai (2011) and Ndlovu (2011), the framework was further developed to clearly define the respective items and corresponding variables for both water and sanitation services. In total, the framework consists of 5 perspectives and the related 13 indicators, with 62 and 66 assessment variables for water and sanitation respectively (Table 2).

Table 2 Perspectives, indicators, items and number of assessment variables for water and sanitation services

<i>Perspectives</i>	<i>Indicators</i>	<i>Items on pro-poor water supply</i>	<i>var</i>	<i>Items on pro-poor sanitation</i>	<i>var</i>
a					
Policies, arrangement and capabilities	1 Political initiative and support	Policy	4	Policy	4
		Legislation	5	Legislation	5
		Regulation	4	Regulation	4
	2 Capacity of the regulating authority	Capacity to regulate	4	Capacity to regulate	4
	3 Capacity of the service provider	Capacity to provide	4	Capacity to provide	4
b	4 Inter-agency collaboration	Collaboration (meetings and stakeholder participation)	4	Collaboration (forums and stakeholder participation)	4
		Collaboration (institutional arrangements)	3	Collaboration (institutional arrangements)	3
	5 Community leadership and outreach	Community's interest	4	Community's interest	4
	6 Community involvement and participation	Evidence on community participation	4	Evidence on community participation	4
c	7 Mapping the poor	Identifying the poor	3	Identifying the poor	3
	8 Pro-poor financial instruments	Financial support mechanisms	3	Financial support mechanisms	5
	9 Pro-poor technology	Identification, implementation and sustainability of appropriate technologies	4	Identification, implementation and sustainability of appropriate technologies	4
	10 Pro-poor incentives	Incentive system	4	Incentive system	4
d	11 Innovation and learning	Research/pilot projects, staff competence and trainings	4	Research/pilot projects, staff competence and trainings	4
e	12 Quality of pro-poor water services	Status of the service	8	Status of the service	10
	13 Quality of pro-poor sanitation services				
	In total				
Five perspectives	13 indicators	62 variables (var) on water		66 variables (var) on sanitation	

7 Findings of phase 3: field-testing of the framework

The framework was first tested in Kenya, Zimbabwe and South Africa. However, the studies were carried out without a uniform guide and this made comparability quite challenging. To overcome this deficiency, a field manual was developed for use by the field-level investigators. The manual contains an introduction on background and objectives of pro-poor benchmarking followed by chapters with comprehensive information on the preparation and implementation of the fieldwork. The annexure contain the questionnaire, observation guide, stakeholder interview guide, and the indicator framework.

7.1 Application to various stakeholders

The framework distinguishes the following stakeholders that take part in the benchmarking exercise: the national government, the regulating authority, the utility, the community and the slum dwellers. The regulating authority can be a national regulator for the water industry or the local government or both. The community pertains to the informal settlement under investigation and can include any organisation that is active in the settlement such as dedicated NGOs, CBOs, or other local social, cultural or political collectives. The slum dwellers constitute the population of the informal settlement that is under investigation.

7.2 Data collection: sources and methods

Data collection is through several methods including semi-structured interviews, focus group discussion, questionnaires, observation, and secondary data. For each indicator the method or methods of data collection have been identified. Also, protocols have been developed that guide the use of each method. For example, there is a standard questionnaire that is administered to slum dwellers; also there is a method for identifying the slum dwellers to be interviewed. Likewise, there are lists of items for observation and a protocol for conducting the semi-structured interviews.

7.3 Data processing and analysis

Data processing and analysis is different for the qualitative and quantitative indicators. For establishing the value of the 11 qualitative indicators, each indicator comprises of a number of variables, usually four. For example, the capacity of the water operator in the area of pro-poor water services is assessed by investigating the following variables:

- 1 a pro-poor water services strategy
- 2 set targets for providing water services to the poor
- 3 a dedicated pro-poor unit or adequate staff and material resources for the addressing the provision of water and sanitation services to the poor
- 4 an annual budget allocation for expanding and sustaining water services to the poor.

The investigator has the choice to either assign a value 0 or a value 1 to each variable depending on his findings. In this case, if there is no strategy the resulting value would be 0, if there is a strategy, the value should be 1. Here, a judgement by the investigator is required and can be subjective. Is a poorly developed strategy nonetheless a strategy to be given a score 1, or should a poor strategy be valued as 0? Whatever the score given by the investigator, this needs to be substantiated in the fieldwork report. The value for the indicator equals the sum of the outcomes on the four variables divided by the number of variables and will range between 0 (no capacity) to 1 (full capacity), or 0% and 100%.

The values of the two quantitative indicators on quality of services provision are based on the outcomes of the questionnaires that are administered to the end users that is the slum dwellers. The outcomes for the quantitative variables are numerical (e.g., 75 m, or 40%). These outcomes are also converted to a score 0 or 1 by using a benchmark value as a reference. Where the outcome is equal to or higher than the benchmark, the score is 1 and where the outcome is below the benchmark, the score is 0. The value for the indicator is arrived at in the same way as for the qualitative indicator. The results of the questionnaires may be processed by standard statistical packages, but the processing is more often done using spreadsheets. Below are two examples showing the assessment criteria and assignment of values for both a qualitative and quantitative indicators.

As shown in Table 3 and Table 4, the same approach was used to assess the other perspective together with their corresponding indicators, items and variables. The results for the respective indicators in the different countries studied were summed up to provide an overall picture of the situation as shown in Table 5.

Table 3 Assessment of a qualitative indicator

<i>Perspective 3: tools</i>				
Indicator 7: mapping the poor				
Party being benchmarked: service provider Ghana Water Company Limited (GWCL)				
1	Evidence of criteria for identifying the poor	1	Semi structured interview with commercial manager and pro-poor coordinator.	GWCL has adopted the PURC definition for 'poor' which places water supply issues on the basis of access.(See detailed explanation in results)
2	Evidence of criteria for identifying slums	0		
3	Evidence of regular mapping practice by WSP to identify the poor with/ without access to improved water services by the WSP in its service area	0		Under the urban water project (UWP), poor areas have been mapped out in the various communities where the project would be taking place.
	Total (minimum = 0, maximum = 3)	1		
	Score on this indicator	.33 or 33%		

Note: Score on a variable: 0 = none or poor, 1 = good.

Source: Draft report on field testing of the framework in Ghana

Table 4 Assessment of a quantitative indicator

Variable	Indicator 12 (quality of pro-poor water SERVICES)	Unit	Benchmark	Value/score			
				Dagomba line (S1)		Fares (S2)	
1	Distance to the water source	m	50	200	0	500	0
2	Facility is an improved technology	%	75	75	1	75	1
3	Facility is for single family use	%	75	0	0	0	0
4	Facility is available 24/7	hrs/d	24	2	0	15	0
5	Facility is accessible for physically challenged persons	%	75	0	0	0	0
6	Facility provides good quality water	%	90	90	1	72	0
7	Facility is affordable	%	75	20	0	75	1
Total (minimum = 0, maximum = 8)					2		2
Score on this indicator					0.25 (25%)		0.25(25%)

Note: The benchmarks were self-defined for the field testing but can be adjusted to local conditions.

Source: Draft report on field testing of the framework in Ghana

8 Discussions and recommendations

Throughout the development and field testing of the framework, the investigators had questioned its ability to capture and assess the actors, issues and factors that contribute to the provision of water and sanitation services to the poor. Two major adjustments were made in the process namely the separation of water supply from sanitation throughout the framework and all field protocols, and the inclusion of an indicator named community leadership and outreach. The separation of water supply and sanitation enabled the clarification of the apparent differences between these two services in terms of progress made in strategy, capacity, tools, service quality; a picture that tended to be blurred when combining the two into one outcome. The community leadership indicator was included to express the apparent importance of the ability of the local community to organise itself for the purpose of obtaining improved services. Remaining challenges concern the coverage of all relevant actors and the inevitable subjectivity in the assessment of the qualitative variables. Concerning the actors, the framework provides for the most common group of actors. Investigators should however always be ready to expand or contract on the actors that are subject of investigation, as per the prevailing situation. The inevitable degree of subjectivity of the investigator in assessing the value of the qualitative indicators is acknowledged and could be counteracted by expanding the guidance leading to the decision to assign either ‘0’ or ‘1’ to a variable.

Table 5 Overall assessment (see online version for colours)

Perspective	Number and name of the indicator	Country 1			Country 2			Country 3			
		All results are presented in %s			All results are presented in %s			All results are presented in %s			
		Slum 1 W ¹	Slum 1 S ²	Slum 2 W	Slum 2 S	Slum 1 W+S	Slum 2 W+S	Slum 1 W+S	Slum 2 W+S	Slum 1 W+S	Slum 2 W+S
Policies, arrangement and capacities	1 Political initiative and support	93	92	93	92	100	100	100	19	19	19
	2 Capacity of the regulating authority	75	80	75	80	88	88	88	0	0	0
Collaboration	3 Capacity of the service provider	83	80	75	83	50	50	50	0	0	0
	4 Inter-agency collaboration	88	88	88	88	75	75	75	0	0	0
Tools	5 Community leadership and outreach	13	13	13	13	28	12	12	100	100	100
	6 Community involvement and participation	0	16	0	6	60	14	14	0	0	0
	7 Mapping the poor	50	50	50	50	100	100	100	0	0	0
Sustainability	8 Pro-poor financial instruments	33	50	33	63	33	33	33	0	0	0
	9 Pro-poor technology	50	63	75	75	100	100	100	0	0	0
Quality of services	10 Pro-poor incentives					50	50	50	38	38	38
	11 Innovation and learning	81	81	81	81	0	0	0	13	13	13
Quality of services	12 Quality of pro-poor water services	56		78		80	80	80	75	75	75
	13 Quality of pro-poor sanitation services		33		67	80	80	80	88	88	88

Notes: ¹Water, ²sanitation, ³results on pro-poor incentives and pro-poor financial instruments were combined.
■ High performance, ■ moderate performance, ■ low performance.

After making the required adjustments and acknowledging some weaknesses, it is felt that the framework has the following strengths and weaknesses.

1 Strengths:

- the pro-poor assessment system establishes the ability of multiple actors to contribute their share to enable services delivery to the poor
- the system establishes the quality of water and sanitation services delivery to slums
- the testing of the field manual shows that the implementation of the system is feasible and cost-effective
- tentative results show huge potential for exchange of information and experiences, especially between countries.

2 Weaknesses:

- fieldwork preparation requires investigators to independently assess the group of prevailing actors and make adjustments to the framework to reflect the actual situation
- there is difficulty faced by the field investigator when having to assign either 0 or 1 to a qualitative variable when the evidence is not that conclusive.

The development and application of the framework has shown the possibility of capturing the water and sanitation situations across slum setups in the respective countries while capturing the existence/contribution of the different potential actors besides the water utilities. As evidenced in the Dutch water sector, where a standardised performance assessment framework was adopted by the different water companies; thus easing performance measurements (Braadbaart et al., 1999), one of the key features in the application of the framework is the mandatory usage of the Field manual by the investigators across all slums/countries. This provides a standardised approach towards the application of the framework, the outcome of which provides clarity on which slum/country seems to perform better than the other ones for a specific indicator or even perspective. This kind of assessment provides the basis and serves as the driving factor to seek to understand the underlying approaches and practices that are being undertaken in for example a *better performing country* thus, enabling/facilitating the transfer of knowledge, experience and practices between countries/stakeholders thus, contributing to the development of performance improvement measures.

One of the major concerns in the application of the framework is the scoring mechanism where either '0' or '1' is assigned to represent the evidence after assessing the concerned qualitative variable. It was noted that in some cases and contrary to instructions, an investigator assigned a '0.5' instead of either a 0 or a 1 as prescribed by the fieldwork manual. This choice by the investigator signals the difficulty he/she is experiencing when using this binary approach to scoring. One proposed way to address the assessment challenge is to apply a wider range of scores (say 0 to 5) to reflect the findings on the concerned variable. A low score would signal the absence or near absence of any evidence on the variable whereas higher scores would represent an increasing positive impact of the variable on pro-poor service provision. A high score evidences a more effective contribution, involvement or participation depending on the subject matter. The fieldwork manual would have to provide elaborate guidance on deciding scores using this wider range.

To improve the application of the framework and the quality of the data collected, it is important that the investigators understand how to use the manual and also, understand the different aspects in the framework for which data have to be collected. The terminologies used in the framework that are likely to be misinterpreted by the investigators need to be clearly defined as noted by Berg (2010). This will guide the investigators to collect as much more reliable and reflective data as possible. Therefore, besides providing an improved manual and also putting into consideration that there is a possibility of someone not reading all the details therein, there is need to mentor the investigators with more emphasis on the aspects for which data has to be collected, use of the scorecards and presentation of findings. It is also during such sessions that application gaps can be identified and clarified or worked upon before commencing the data collection process.

9 Conclusions

In conclusion, the pro-poor assessment framework is a promising approach towards the assessment of water and sanitation services provision in informal settlements. It not only brings on board the multiple actors whose contributions affect services provision in slums, but also captures context specific situation in slums like use of on-site sanitation which dominates in slum setups, dependency on shared connections for water services and overall pro-poor strategies which the conventional benchmarking approach do not look into. The challenges faced in applying the framework in the field are on assigning values to the qualitative indicators. It is thought that this issue can be addressed by further elaborating on this in the field manual without the need for re-testing the framework in the field. The comparison of the results of the field studies carried out using the manual show very different outcomes for the countries/slums that were the subject of study. This result evidences the potential of comparison of results among countries, and more importantly of learning about the different practices underlying the varying results, thus opening up the perspective of exchange and adaptation of practices, and, ultimately, the improvement of the quality of water and sanitation services to the poor.

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