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**SUSTAINABLE WATER AND SANITATION SERVICES  
FOR ALL IN A FAST CHANGING WORLD**

**Service Delivery Indicators for strengthening local  
monitoring of rural water service delivery in Uganda**

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*This paper presents a framework of service delivery indicators (SDIs) for monitoring rural water services in Uganda. This has been developed for use by the sector to broaden the scope of the existing national monitoring system, the golden indicators, beyond tracking performance of systems to actual services delivered. The SDIs were developed based on sector norms, standards and guidelines set by the Ministry of Water and Environment. This paper describes the process of developing the indicators, and shows how they complement the golden indicators, tracking critical service parameters that were not captured so far, such as reliability, users' satisfaction or performance of districts. The additional information from SDIs for instance highlights that a district may have a functionality rate of 82% and yet users are only assured of getting water at any time from 70% of the systems.*

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**Background and rationale for Service Delivery Indicators (SDIs)**

The performance of Uganda's Water, Sanitation and Hygiene (WASH) sector is monitored through tracking of 11 "golden" indicators. Data on these indicators is collected by District Local Governments (DLGs) staff, under the guidance of the Ministry of Water and Environment (MWE). The MWE compiles and analyses this information in the annual Water and Environment Sector Performance Report which is presented and discussed among sector stakeholders during yearly Joint Sector Reviews (Ssozi and Kerstin Danert, 2012).

Although very helpful for national stakeholders to track general progress in the sector, the golden indicators have a number of limitations:

- By definition, they only capture a small part of all issues related to rural water. Out of the 11 golden indicators, 7 are related to rural water, focusing on access to water, per capita investments, water quality, and functioning of the service provider<sup>i</sup>. They don't include information on aspects that the literature on rural water supply identifies as being important, such as the likelihood of sustainability of water facilities, service levels, users' satisfaction, or technical backstopping provided to water service providers.
- Because of the limited number of parameters, they do not allow making correlations that could inform the reasons behind the progress and trends that the golden indicators track.
- They have been designed for use by national policy-makers and decision-takers, and do not provide sufficient information to allow local actors such as staffs of District Water Offices (DWOs) of Technical Support Units (TSUs<sup>ii</sup>) to take informed decisions and direct remedial actions at local level.

In view of the shortcomings of the Golden Indicators, IRC/Triple-S in Uganda together with the MWE has been developing Service Delivery Indicators (SDIs), with the aim of supplementing the already well-established national monitoring framework. The SDIs should provide a deeper understanding of the results on the golden indicators, and therefore allow enhanced monitoring of rural water services delivery, so that action can be taken at local and national level. For the purpose of the development of this framework, a Steering Committee was established with membership from governmental and non-governmental bodies. The technical tools and platform are designed with support from Makerere University in Kampala.

This paper presents the proposed framework for monitoring using the SDIs, which encompasses more than the mere definition of monitoring indicators. It entails also the definition of the principles for the monitoring, the structure and content of the SDIs themselves and a detailed methodology for data collection, guidelines and formats for analysis and presentation of results from the collected data.

## Key principles and approach for the development of SDIs in Uganda

### Process, scope and key considerations for the development of SDIs

The SDIs were developed by comparing the Golden Indicators to the various rural water sub sector policies and guidelines including service delivery norms, standards and prescribed practices, and roles and responsibilities of stakeholders. In this way, we identified gaps not covered by the Golden Indicators that the SDIs could fill. For instance, with respect to service levels, the golden indicators capture information on water quality, access to an improved facility and its functionality. SDIs could supplement that, with data on distance of the facility, quantity of water accessed, reliability of the facility and quality of the water source.

#### Example of complementarity of SDIs and golden indicators on service delivered

The MWE sector performance report 2013 shows that functionality for rural systems in Kabarole and Lira districts reach 82% and 74% respectively. However, preliminary analysis of the SDIs shows that, if we take into account reliability of the facilities, only 70% of rural water systems in Kabarole and Lira are functioning and reliable<sup>iii</sup>. Since functionality is derived from calculating the number of water points delivering water at the time of spot check, an indicator on reliability helps adding a time dimension, showing that actually for two third of the facilities users are assured to find water at their water point.

### Unit of analysis and scope of application

The purpose of the SDIs is to provide a quick understanding of the situation of the rural water supply sector, which affects – positively or negatively – the delivery of sustainable water services. For this, SDIs can provide the status of services at a certain moment in time and, when data collection is repeated, measure changes over time. However, the SDIs are not meant to be used for tracking the performance of every single water facility, service manager or service authority<sup>iv</sup>. They rather provide information of the main trends in a broader geographical area, like a district or sub-county. The unit of analysis is therefore the sub-county or district. This also implies that data on the SDIs is collected on a sample of water systems.

The SDIs are also designed in such a way that they are applicable to the two main rural service delivery models<sup>i</sup> found in Uganda, so as to facilitate aggregation.

Given that the main persons who would use these SDI are staff of water service authorities, data collection and analysis tools have been kept simple and quick to apply. For instance, the data collection protocol is designed in such a way that enumerators do not have to go to households to conduct interviews, but rather ask questions to users who come and collect water. Data collection questions are kept as simple as possible, often simply requiring a yes/no answer or a response that can be selected from a list of pre-set options.

### Structure and content of the Service Delivery Indicators in Uganda

SDIs describe the way rural water supply services are delivered and supported across the following levels:

1. **Users level** : This refers to their satisfaction with the service and their sense of ownership of the facility, measured through proxy indicators such as financial contribution to O&M and clean facility surroundings;
2. **Service delivered**: Covering widely recognised services level parameters – water quality, quantity, distance and reliability of the facility (Kayser et Al., 2013) – as well as quality of the water source (i.e. non exposure to pollution and seasonal variations);
3. **Service management level**: Referring to the composition and activeness of service managers, their performance in their tasks and responsibilities, as well as their internal governance;
4. **Service authority and support mechanisms level**: Focusing on performance of service authority functions before construction (planning phase, community mobilisation), during construction (supervision) and after construction (support and supervision to service managers, monitoring), as well as general conditions for the performance of these functions (DWO staffing, district coordination).

The detailed content of the SDIs is presented below, indicating also how they expand on the Golden Indicators.

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<b>Table 1. Parameters monitored by Golden Indicators and SDIs for rural water services in Uganda</b>		
<b>Level</b>	<b>Golden Indicators (GIs)</b>	<b>Service Delivery Indicators (incl. <i>sub-indicators</i> feeding into these indicators; <i>(sub)indicators specific to WSSBs</i>)</b>
<b>Service delivered</b>	<b>Water quality</b> (E. Coli)	<b>Water quality</b> (E. Coli; TDS; Turbidity)
	<i>Not included in GIs</i>	<b>Water quantity</b> (Water quantity delivered; Water quantity accessed)
	<b>Access</b> (distance to improved water facility)	<b>Accessibility</b> (Number of users; Distance to water facility; Walking time)
	<b>Functionality water facility</b>	<b>Reliability</b> (Uptime water facility)
	<i>Not included in GIs</i>	<b>Quality of water source</b> (Non exposure to pollution; No seasonal variations water quality; No seasonal variations of yield)
<b>Users' level</b>	<i>Not included in GIs</i>	<b>Users' satisfaction with the service delivered</b> (Users' satisfaction with water quality; Users' satisfaction with water quantity; Users' satisfaction with accessibility; Users' satisfaction with reliability)
	<i>Not included in GIs</i>	<b>Users' sense of ownership of water facility</b> (Users' financial contribution to O&M; Cleanliness water facility surroundings)
<b>Service management level</b>	<b>Management</b> (actively functioning WSC/WSSB) <b>Gender</b> (women in key positions in the WSC/WSSB)	<b>Service manager and operator composition and activeness</b> (Activeness service manager; Gender; <i>Viability of scheme operator</i> )
	<i>Not included in GIs (although some aspects may be captured under the WSC/WSSB being active)</i>	<b>Service manager's and operator's performance of tasks</b> (Financial records; Collection user fees; Cost recovery; Meetings with users; Preventive maintenance; <i>Scheme operator's reports; Meetings with tap committees; Relationships with service authority and support</i> )
	<i>Not included in GIs</i>	<b>Service manager and operator internal governance</b> (Records on decision points; Transparency on O&M fund; <i>Transfer water fees to WSSB</i> )
<b>Service authority and support mechanisms</b>	<i>Not included in GIs</i>	<b>District Water Office (DWO) staffing</b> (No staff DWO)
	<b>Equity</b> (Deviation from the District average no. of persons per water point)	<b>District planning</b> (Planned investment based on equity)
	<b>Per Capita Investment Cost</b>	
	<i>Not included in GIs</i>	<b>Community mobilisation pre-construction</b> (Signed Memorandum of Understanding; Community capital cash contribution; Land agreement)
	<i>Not included in GIs</i>	<b>Support and supervision to service managers by service authority and Handpump Mechanics / HPMS</b> (Reactivation of service managers; Responsiveness DWO to major breakdowns; Responsiveness HPMS to breakdowns)
	<i>Not included in GIs</i>	<i>Support and supervision to service managers by Umbrella Organisation (Support visits; Responsiveness to major breakdowns)</i>
	<i>Not included in GIs</i>	<b>Construction supervision</b> (Quality construction supervision)
<i>Not included in GIs</i>	<b>Monitoring</b> (Use of water facilities' functionality data; Monitoring of service managers' activities)	

	<i>Not included in GIs</i>	<b>District coordination</b> (Functionality of District Water and Sanitation Coordinating Committee)
	<i>Not included in GIs</i>	<b>Responsiveness of TSU</b> (Responsiveness of TSU to request for support from DWO)

The above table highlights how SDIs can provide additional information to the golden indicators, differing mainly in the following:

- The SDIs contain the complete set of generally accepted service level parameters, as compared to the three covered by the GIs
- The SDIs contain information about user s' satisfaction, an area completely not covered by GIs
- Arguably the biggest difference lies in the service management and support level, where the SDIs contain more detailed information, whereas these are weakly covered by the GIs.

## Framework for SDIs data collection and analysis

### Sampling strategy

Keeping the costs of the application of the SDIs low is a key consideration when designing the monitoring framework. This important aspect was central in the design of the sampling strategy that works as follows:

- Service authority level: all service authorities are sampled
- Service management and service level: these are collected for water points but not for all in a geographic area. The designed sampling strategy allows a small sample size while still ensuring good accuracy of the results. Based on a number of assumptions, i.e. that the sub-county would be the lowest geographical unit for analysis of the results, and that a lower precision is acceptable as long as accuracy<sup>v</sup> is high, a minimum sample size is set at 11 water points. This means that for each district, data has to be collected from all sub-counties, with 11 point sources and (when available) at 11 taps visited in each sub-county.
- Users. For each water point, 10 users who come to fetch water are interviewed; in order to allow representativeness of the users, interviews are conducted at different moments of the day, and every 5th visitor of the facility is interviewed.

This approach has the advantages of being a standard statistically based sampling, that reduces the costs of full surveys, with very reliable estimates at the district level (within 10% points confidence interval) and within 5% points confidence interval at the national level. The main disadvantages of such a small sample size is that the sampling strategy needs to be strictly adhered to, to ensure accuracy of the results, and that service authorities cannot take actions on specific water points that fall outside the sample.

### Data collection methodology and tools

The information required for tracking the sub-indicators and indicators comes from various sources, so that the best informed individual / group is interviewed for each specific issue:

- Households (represented by the person collecting water at the facility) for some of the indicators related to the service delivered, users' satisfaction, and performance of the service manager
- WSC / WSSB (represented by at least two members of the committee / board) for technical information on the water point, some of the indicators related to the service delivered, users' payment for the service, performance of some service manager's tasks, support provided by the service authority
- Staffs of sub-county and DWO for performance of some of the service authority tasks
- Umbrella Organisation Staff for matters related to post-construction support to WSSBs

Standard mobile phones (non-smart phones) are used to record the data collected. Apart for the questions directed to the service authority and support institutions (DWO, sub-county and umbrella organisation), the entry point for data collection is the water point. Most of the data, particularly at the water facilities as well as interviews with WSCs / WSSBs and water users is collected by local Handpump mechanics (HPMs) who are familiar with the areas and location of water points. In addition, most of them have already been involved in collecting data for the DWO to feed into the golden indicators and already are conversant with data collection using mobile phones. The HPMs participated in a two day training on the data collection protocol and on how to use mobile phones to collect data.

For the first round of data collection, which took place in December 2013, the information from staffs of the DWOs, sub-counties and umbrella organisations was gathered by Triple-S staff.

The data collected is then directly stored on an online platform that is accessible to field supervisors to monitor in real time incoming data. The platform is now accessible to all relevant stakeholders.

### Data processing: calculation and possible aggregation of the SDIs values

Each sub-indicator is tracked through one or several measurable parameters (also see Adank *et Al.*, 2013). For each water point, a value is allocated to each sub-indicator:

- “0” when the response is negative, or under a set benchmark, or
- “1” when the response is positive, or reaching the benchmark.

The table below shows examples of links between sub-indicators and parameters and how scoring is done.

Indicator	Sub Indicator	Measurable parameter	Score
Accessibility	No of users of water facility	No of regular users registered by the committee	No. users $\leq$ norm = 1 No. users $>$ norm = 0 <i>(norm is 300 users for a borehole, 200 for a shallow well or a protected spring, and 150 for a tap)</i>
	Distance to water facility	Distance between household and water facility for 10 users	At least 80% of users are within 1 km = 1 Less than 80% of users are within 1 km = 0
	Walking time	Time spent (minutes) by 10 users for a round trip to the facility	At least 80% of users do a round trip within 30 min = 1 Less than 80% of users do a round trip within 30 min = 0

Values for each sub-indicator are calculated at the lowest geographical unit for analysis, i.e. the sub-county for data on users, service delivered and service management and the district for the ones on support authority. It is obtained by calculating the average of the scores for the 11 water points (point sources or taps), converted into a percentage. For instance, if for the sub-indicator “Walking time”, 7 water points scored a “1” and 4 a “0”, the value of the sub-indicator is 64%. Each sub-county hence obtains a value for each sub-indicator and can be compared to other sub-counties.

The value of a given indicator is simply obtained by calculating the average of the values of the corresponding sub indicators. Further aggregation can be done to obtain a value for each individual level of service delivery (service delivered, users’ satisfaction and sense of ownership, service managers, and service authority and support mechanisms). For instance, the value for service delivered is the average of the values for the 5 individual indicators (Water quality, Water quantity, Accessibility, Reliability and Quality of water source). Again, the value obtained in a sub-county or a district can be compared with the ones obtained for other areas.

Results can be presented for point sources, for piped schemes, or for all sources together. Aggregations can also be done for various geographical levels: sub-county, district, or national.

### Data analysis

Analysis of data collected in December 2013 shall be finalised in April 2014. Results for each sub-indicator, each indicator and each level of service delivery will be obtained through downloading of short (1-2 pages) automatically generated PDF reports that present key graphs and tables and are accessible online.

Once these reports are accessible, staffs of DWOs and sub-counties will interpret them with support from Triple-S and the MWE. The joint interpretation of what the SDIs mean shall lead service authorities to the design of remedial actions based on the identification of gaps and issues in service delivery.

### Way forward and conclusion

This paper has presented an additional framework for monitoring rural water supplies that complements the well-known Golden Indicators. The testing of the SDIs has shown that they have potential to generate

information on actual service levels, reliability of the service, user satisfaction and performance of service authorities that is not captured by the golden indicators. As a result the SDIs provide opportunity for identifying issues and gaps across the 'entire service delivery chain' that have been overlooked. The paper shows evidence on how tracking reliability of rural water systems tells the water users' story hidden behind functionality figures. Despite the advancement in the process of developing the indicators, there is still contention among sector actors that parameters tracked by SDIs are very many and that the system may not be easy to replicate by government given its available resources. The on going process of analysis of data from the first round of data collection will be used to further prioritize the indicators to select those that produce the most relevant and actionable data.

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### Note/s

- <sup>i</sup> There are two main service delivery models for rural water in Uganda: point sources (boreholes, shallow wells and protected springs) and piped schemes. The service manager (also called service provider) is the body that manages and delivers the water service to a defined population in a defined service area, taking care of operation, maintenance and administration (book keeping, tariff collection, etc.) of the system. For rural water services in Uganda, the service managers usually are community-based Water Source Committees (WSCs) for point sources and Water Supply and Sanitation Boards (WSSB) for piped schemes.
- <sup>ii</sup> TSUs are regional units established by the MWE to build capacity and offer back-up support to district local governments in their fulfilment of roles and responsibilities as regards to WASH services.
- <sup>iii</sup> A water point is considered as reliable when it provides water 95% of the time or only breaks down for a maximum period of 2 weeks in the whole year.
- <sup>iv</sup> The service authority is the body with legal responsibility for guaranteeing a water service in a defined area, fulfilling functions such as planning, coordination, oversight of services. A service authority usually is responsible for technical assistance to service managers although this can be contracted out. In Uganda, service authority functions are split between two administrative levels: districts and sub-counties.
- <sup>v</sup> Accuracy is the trueness of the result, the proximity of measurement results to the true value; this should not be confused with precision, which consist of the repeatability or reproducibility of the measurement. Accuracy is determined by the sampling strategy which sets how representative the sample is, while precision is largely determined by the sample size and to some degree to the sampling strategy.

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