Local Government planning: from data to action

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Abstract
Decentralisation is built on the assumption that decentralized governments are more knowledgeable about and responsive to the needs of the poor. This article examines the role of local governments in Kenya and the ways in which they make their decisions about the allocation of resources to deliver water and sanitation services. Two major challenges are identified: i) lack of data that accurately reveal which areas are most in need; and ii) inadequate instruments for planning, monitoring and evaluation. In tackling previous shortcomings, this study i) adopts a new specific approach for data collection at community level, and ii) exploits these data through simple composite indicators as policy tools that assist local government with decision-making. It concludes that accurate and comprehensive data are the basis of effective targeting and prioritization, which are fundamental to sector planning.

Keywords
water point mapping; household survey; local government; planning; Kenya

INTRODUCTION

Advocates of decentralisation argue that decentralised governments have an informational advantage over the central government with regard to local needs and priorities, for which reason they are assumed to supply services in accordance with demand, allocate resources more equitably, and ultimately conceive and implement policies with a focus on poverty reduction (Steiner, 2007). This belief is, however, naive, and the links between decentralisation and the development of pro-poor outcomes are at best ambiguous (Blair, 2000; Crook, 2003; Devas & Grant, 2003; Steiner, 2007; Jiménez & Pérez-Foguet, 2011). For decentralisation to work effectively, local governments need to make decisions autonomously and be accountable for the performance of service delivery. This requires amongst others effective management tools for establishing preferences (Jiménez & Pérez-Foguet, 2010), combined with adequate accountability mechanisms (Blair, 2000; Devas & Grant, 2003). Both prioritization and accountability depend on the availability of reliable information, since it is essential to assist decision-makers in i) identifying those regional areas and population groups most in need, ii) improving transparency in budgetary procedures, and iii) measuring progress. Similarly, civil society wants objective data which testify to the use of limited resources. Such information is often missing in many developing countries, particularly in rural areas; but even when it is available, there is no guarantee that it is adequately exploited for planning and monitoring purposes. Political will and management-related capacities are further requirements that hinder decision-making processes. It is well known that unless data is presented in a user-friendly format, water planners will commonly do without the information.

In recognition of this fact, the aim of this study is to develop an evaluation framework to compile, analyze and disseminate water, sanitation and hygiene (WASH) information for the improvement of sector planning. First, it implements an innovative methodology for primary data collection at local level. It takes the Water Point Mapping (WPM) as starting point to comprehensively record all improved waterpoints at the area of intervention. This information is then combined with data provided from a cluster-sample survey, in which the household (HH) is taken as the basic sampling

unit to assess sanitation and hygiene habits. Second, data is analysed to underline the emerging development challenges, and the use of aggregated indicators serves as the basis to rank all communities and reveal which areas may be most in need of further investment. A set of simple indices therefore results in appropriate policy tools for targeting and prioritization. Third, various approaches are in place to translate previous development potentials into beneficial development initiatives, in which base the formulation of strategies to steer development and progress in the region. Two Kenyan rural districts, Suba and Homa Bay, have been selected as initial case studies to test the applicability and validity of the proposed monitoring framework.

The paper is organized as follows. The next section provides background description of the WASH sector-related institutional framework in Kenya. Afterwards, the methodology employed for data collection and analysis is outlined, and key mechanisms for prioritization are introduced. The approach adopted for planning is then presented. The situation of WASH issues in the area of intervention is examined; and on the basis of this analysis, priorities are identified and proposals to overcome major development challenges are articulated. Main findings are discussed. The paper concludes with a discussion of policy relevance of the proposed planning and evaluation framework.

DECENTRALIZED PLANNING IN KENYA

In recent years, Kenya has been facing a transition based on the principle of "decentralisation by devolution", and in 2002 a revised Water Act was launched to embody the new policy framework. It encompasses a comprehensive reform in the management of the water sector, which primarily revolves around four different underlying principles (Mumma, 2005): i) switch in the role of the government, specifically the Ministry of Water and Irrigation (MoWI), from direct service provider to regulatory functions; ii) decentralisation of the provision of water services to lower level public institutions; iii) separation of functions between the bodies that regulate the water services and the ones that regulate the water resources management; and iv) involvement of non-government entities in the management of water resources and in service provision.

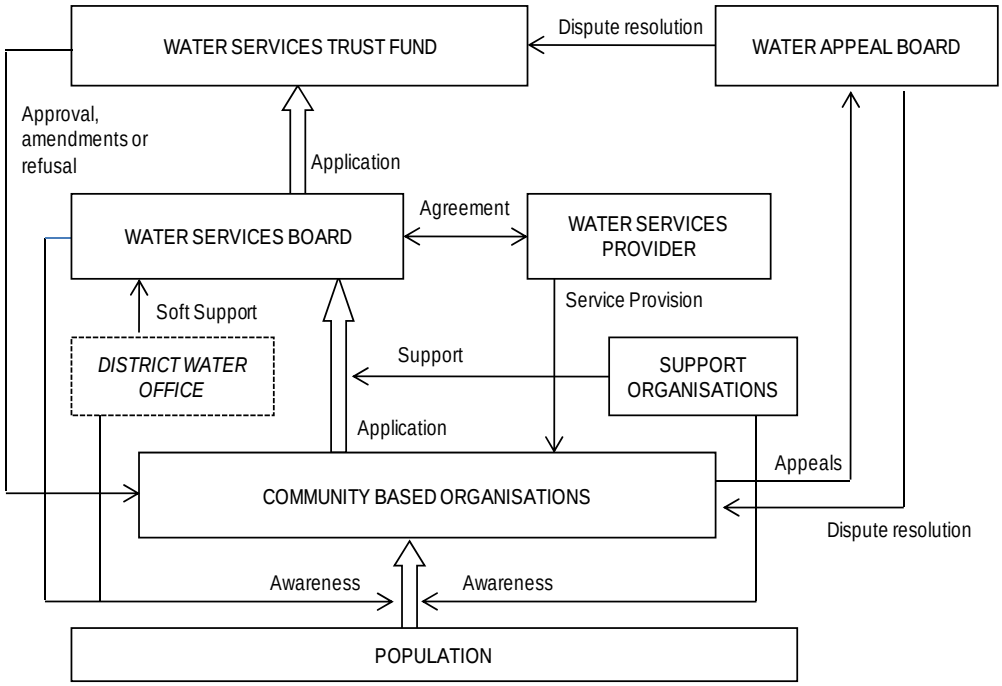

Figure 1. Institutional framework for service delivery in Kenya

In service delivery, the new institutional framework takes into account the Water Services Regulatory Authority, the Water Services Trust Fund (WSTF) and the Water Services Boards

(WSBs). As schemed in Figure 1, the WSTF act as a hub and is where all the money from the ministry and donors, except donors that carry out autonomous interventions, goes on, thus is the body which has the capacity to fund interventions. The money received is handed over to each of the seven WSBs, which conclude Service Provision Agreements with the individual Water Services Providers (WSPs). Each WSP has a defined service area where it has to strive for full coverage. The dashed box of the District Water Office (DWO) indicates that although it is not officially recognized by the Act, it has some implicit functions that denote its transcendental natural role.

With regard to financing mechanisms, the WSTF employs an allocation formula to target finance on the basis of need and quality of projects, but the specific criteria included in the formula remain unclear. Moreover, the assignment of funds by the WSTF is a one way process in the sense that the WSBs barely participate in the decision-making steps. The WSBs submit the documentation for the targeted communities and then the WSTF makes the decision, thus the WSBs do not have any capacity to negotiate or to get further involvement in the process.

In terms of the planning process, the backbone of the mechanism is the Community Project Cycle developed by the MoWI (Government of Kenya, 2007), and the overall funding allocation for the target location is a step-by-step process that consists in six stages: pre-application, application, preparation, design, implementation and post-implementation. The most delicate part, because of its inherent unclear criteria, is the target selection. Apparently, the each WSB selects 50 target locations based on a combination of the Central Bureau of Statistics Poverty Index with extra qualitative data from local stakeholders such as the DWO or the own WSB. As it is understood this should be a dynamic exercise updated on a yearly basis at least. The true though, is that at the Lake Victoria South Water Services Board (LVSWSB), where Homa Bay and Suba Districts are found, they are managing data that had not been updated since 2003. Another flaw of the overall process is the complexity and the endless bureaucracy involved during the application procedures, which require the participation of Support Organizations (SOs). Non-organized communities without resources will be hardly able to access to these SOs, thus jeopardizing the whole strategy in terms of equity, as the selected communities are eventually the most capable instead of the neediest.

Criticism of the 2002 Water Act

One of the striking thinks that comes up after revising the Act is that DWOs, as representative state organs of the MoWI, are not included as institutional bodies within the legal framework. As the Water Act is drafted, the decentralization is completed through the WSBs, and DWOs therefore operate in a sort of limbo, in a way that their duties depend very much on the availability of resources, the motivation of their staff and the relationship between them and the WSB. For example, in the districts of Homa Bay and Suba, the DWOs operate a role as the “field offices” of the LVSWSB, that is to say, identifying priorities, supporting communities, looking after the implementation of projects and ensuring coordination. Alongside with the implementation of the Water Act, it has been demonstrated that the role of DWOs as the last step of the institutional ladder is fundamental to achieve decentralised link between the reality on the ground and the WSBs.

Another point that has drawn together a lot of criticism is the real decentralization degree achieved by the Water Act, showing the MoWI highly centralised performance regarding the appointment of the staff and the funding allocation procedures (K'Akumu, 2007). The bureaucratic procedures in the Community Project Cycle have been also censured by SOs, particularly those related to the application for funding, which often excludes most vulnerable communities from the process.

The monitoring framework presents significant flaws and evaluation routines are rarely in place. Accurate information is thus not available to inform decision-making or to promote accountability mechanisms. As cited above, data currently used in the targeting process of recipient locations are out of date and WASH-nonspecific, which hampers an unbiased and updated target selection.

Finally and as correctly seen so far, the Act revolves around water access. It implicitly deals with sanitation to lesser degree, but the institutional framework do not even include as key stakeholders the Ministry of Public Health and Sanitation or the District Public Health Offices (DPHOs), which have the authority on sanitation and hygiene matters. As a result, even though it is known that water supply, sanitation and hygiene promotion should be adequately integrated, coordination between related initiatives is by and large poor. Moreover, government departments depicts a hierarchy of administrative system in which the national level acts as the centre of decision-making, while the lower sub-national units are required to relate to the higher authorities. Such hierarchy further hinders adequate cooperation among different departments (for example between Water and Public Health).

METHOD

To help overcome previous institutional flaws and ultimately improve local decision-making, this study suggests a new framework for planning. It first considers the district as the key stakeholder, and specifically engages the DWO and the DPHO in various stages of the process. In addition, to promote the appropriation of all planning instruments by these institutional bodies, they are applied at this administrative scale. Second, the approach adopted for prioritization and targeting relies on WASH-specific and updated data, in which we base a set of simple tools to promote an equity-oriented selection of communities, as well as accountability issues. Third, the proposed monitoring framework integrates water, sanitation and hygiene, and therefore strengthens sector coordination.

In terms of method, study's implementation is two-fold. A comprehensive assessment of WASH issues at local level is carried out through an innovative methodology for field data collection, which combines the household and the waterpoint as information sources (Giné & Pérez-Foguet, 2011). On the basis of baseline survey data, a set of easy-to-use planning tools have been developed to support prioritization and targeting at local level.

Evaluation of water, sanitation and hygiene issues

Strategic planning of water and sanitation services might be strongly assisted by accurate and accessible information, which synthesised further can guide the elaboration of development initiatives. In this research, to assess status of WASH issues in the area of intervention, a WPM is carried out as the starting point of the evaluation framework. In brief, the WPM methodology can be described as an "exercise whereby the geographical positions of all improved waterpoints[1] in an area are gathered in addition to management and technical data. This information is collected using GPS and a questionnaire located at each waterpoint. The data is entered into a geographical information system and then correlated with available demographic, administrative, and physical data" (WaterAid & ODI, 2005). In the end, WPM objectively demonstrates who is and is not served; thus becoming a valuable analysis and planning tool for decentralized governments. Besides to the mapping, a household-based survey is conducted to observe sanitation status and assess hygienic habits. To do this, a sample of households is randomly selected in clusters around all audited waterpoints, although to avoid bias, additional clusters of households are included in those areas where improved sources are not available. For planning purposes, representative estimates are required at division level in addition to the district level, and the sample size to achieve adequate statistical precision at both scales is determined based on a formula used for cluster-sample surveys (Bennett *et al.*, 1991; United Nations Children's Fund, 2006).

In the end, the evaluation framework is reliant on a combination of survey instruments specially designed to collect information from these two sources: the waterpoint and the household. Key features of the methodology include (Giné & Pérez-Foguet, 2011): i) exhaustive identification and audit of improved drinking-waterpoints; ii) calculation of a sample size of households that is representative at district level and below; and iii) random household selection at each visited waterpoint. The primary data collection has been conducted by a joint working team made up of

staff from the UPC, the DWO, the DPHO and a local consultant, between January and March 2011. In all, 1,157 households have been interviewed and 187 improved waterpoints audited to cover Homa Bay District, while the sample at Suba District has included 1,215 households and 241 water sources.

Development of planning tools for targeting and prioritization

In terms of poverty reduction, the basis for successful planning relies on a transparent selection of communities, based on needs / hardship. With limited resources, the issue of prioritization is crucial in determining what gets done, and where, targeting first the neediest and promoting a more equitable allocation of resources. With this in mind, this study first analyses survey data as the starting point for planning, to enable comprehensive understanding of key WASH-related constraints to development. Afterwards, planning criteria are defined in the form of simple indices to identify and rank all eligible communities (Jiménez & Pérez-Foguet, 2010). Finally, each priority list is related with specific remedial actions to be accomplished by the local government, therefore translating development challenges into beneficial development activities. This approach ultimately allows the formulation of tailored strategies based on real needs, while increases upward and downward accountability, both on part of the WSB when dealing with the DWO, and on the part of DWO when tackling public issues.

The set of planning indices has been defined in collaboration with with the DWO and the DPHO. To do this, design criteria has included simplicity, exhaustiveness, data accessibility and reliability of information source, amongst others. The proposed indices are summarized in Table 1. For each index, one ranking is produced and transposed into one league table to denote priorities. In one ranking, whenever two locations score same index value, the most populated one is first positioned to maximize number of beneficiaries. To determine prioritized communities, a different threshold limit is set per list. And different maps are developed to show at a glance both index values and priorities, enabling a quick identification of key focus areas to achieve maximum impact.

STUDY AREA

This study has been carried out in the rural Districts of Suba and Homa Bay, both being administratively located in Nyanza Province, in western Kenya, along the shores of Lake Victoria (Figure 2). The total area of Homa Bay is 1,169.9 Km^2, out of which 30 Km^2 is surface water. According to the 2009 census, the population is estimated at 366,620, and the district's density averages 313 persons per km^2. With regard to Suba, the district comprises sixteen islands, the biggest in size being Mfangano and Rusinga. Mainland and islands cover an area of 1,062.7 km^2, with the surface water accounting for 11.3% of the total district area. The total population is about 214,463, and the district's density stands at 202 persons per km^2.

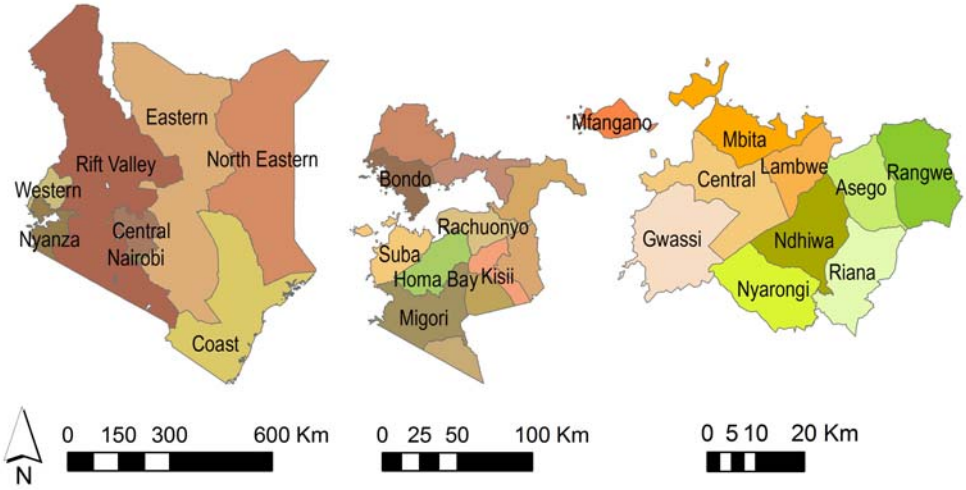

Figure 2. Location and Administrative Units of Kenya, Nyanza Province, and Suba and Homa Bay Districts.

Table 1. Indices used for planning

Index	Definition	Formula	Threshold for prioritization	Action
INDICES RELATED TO WATER SERVICE COVERAGE				
Coverage index	% of covered population by improved waterpoints(IWP) in a location, according to the Kenyan standards of service level (1 waterpoint / 250 people)	$\frac{\text{Number of IWP}}{\text{Population}} * 250$	25% / 50%	Construction of New waterpoints
INDICES RELATED TO THE MANAGEMENT OF THE SERVICE				
Functionality Index	% of functional improved waterpoints (FIWP), compared to the total number of improved waterpoints	$\frac{\text{Number of Funct IWP}}{\text{Total IWP}} * 100$	50% / 75%	Rehabilitation of existing waterpoints
Management Index	% of functional improved waterpoints (FIWP) with declared income and expenditure in the year before the survey	$\frac{\text{Number of Man FIWP}}{\text{Total FIWP}} * 100$	50% / 75%	Management supporting activities, particularly those related to creation / establishment of water entities or to financial issues (tariff collection systems)
Maintenance Index	% of functional improved waterpoints (FIWP) with good / acceptable access to technical skills and spare parts	$\frac{\text{No. of Maintained FIWP}}{\text{Total FIWP}} * 100$	50% / 75%	Management supporting activities, particularly those related to technical issues. Improve spare parts accessibility
Accountability Index	% of functional improved waterpoints (FIWP) in which at least 1 meeting was held during last year to discuss income and expenditure (either within the community or with local authorities)	$\frac{\text{No. of Accountable FIWP}}{\text{Total FIWP}} * 100$	25% / 50%	Management supporting activities, particularly those related to improve transparency and accountability
INDICES RELATED TO THE QUALITY OF THE SERVICE				
Seasonality Index	% of functional improved waterpoints (FIWP) that are year-round	$\frac{\text{No. of Year-Round FIWP}}{\text{Total FIWP}} * 100$	50% / 75%	Actions to increase reliability of the source (catchment protection actions, regulation of different uses) and/or finding of additional sources
Water Quality Index	%of functional improved waterpoints with acceptable bacteriological quality	$\frac{\text{No. of Safe FIWP}}{\text{Total FIWP}} * 100$	50% / 75%	Actions to improve quality of water: catchment protection, protection of WP, water treatment, etc. If salinity is high and becomes dangerous, check other alternative sources WP

INDICES RELATED TO SANITATION SERVICE				
Coverage Index	% of covered households by improved sanitation facilities in a division, according to the JMP standards.	$\frac{\text{No. of HH with ISF}}{\text{Total HH}}$	25% / 50%	Construction of new facilities
Open Defecation Index	% of households that practice open defecation	$\frac{\text{No. of HH practicing OD}}{\text{Total HH}}$	50% / 25%	Community-led Total Sanitation
INDICES RELATED TO HYGIENE				
Latrine Sanitary Conditions Index	% of latrines that are maintained in adequate sanitary conditions. Risky conditions might prevent an adequate use	$\frac{\text{No. of Sanitary Latrines}}{\text{Total Latrines}}$	25% / 50%	Hygiene promotion campaigns
Handwashing index	% of adults with appropriate handwashing knowledge	$\frac{\text{No. of Adults with HW}}{\text{Total Adults}}$	50% / 75%	Hygiene promotion campaigns, particularly focused on handwashing

Administratively, Homa Bay is divided into five divisions, namely Rangwe, Ndhiwa, Riana, Asego and Nyarongi, and the divisions are further sub-divided into 25 locations and 63 sub-locations. The district has two towns, Homa Bay Town and Ndhiwa, where roughly one third of the total population live. Suba is also made up of five administrative divisions, namely Mbita, Lambwe, Central, Gwassi and Mfangano, 20 locations and 52 sub-locations. It has two major urban centres i.e. Mbita and Sindo, although proportion of urban population does not even reach 8%.

RESULTS AND DISCUSSION

This section presents situational analysis of WASH issues and highlights major constraints to development, as well as those regional sectors which require urgent policy attention. On the basis of the indices listed above, it then suggests various approaches to mitigate these emerging development challenges, and proposes strategies and initiatives to steer development in the region. In order to support formulation of tailored interventions, the discussion groups planning indices and related remedial actions based on their nature, i.e. i) water supply, and ii) sanitation and hygiene.

As regards data exploitation and dissemination, each group has been assessed at different administrative scale based on the information source employed. To assess water-related indices, waterpoint data offer many advantages over household data in terms of statistical precision and data update routines, so this information source is the one proposed for planning and performance evaluation. WPM data is exhaustive and can be meaningfully analysed at all levels; the location scale has been opted for in this study since it is the last step of the institutional ladder in which planning decisions are made. In contrast, HH data is only statistically representative at division level, and analysis of sanitation and hygiene-related indices has thus been performed at this scale.

Water supply, sanitation and hygiene issues in Homa Bay and Suba Districts

The mapping shows that availability of improved sources in both districts is by and large low. More specifically, water coverage stands at 12.2% in Homa Bay and at 26.8% in Suba, which seriously constraints service level. A considerable percentage of households (14.7% and 25.4% respectively) spend more than half an hour per round trip to collect water. And since distance shows a negative association with water consumption (the larger the distance, the smaller the consumption), it is not rare to observe that almost two thirds of households (61.9% in Homa Bay and 57.9% in Suba) do not meet their minimum daily drinking-water needs, i.e. 20 litres per capita per day (WELL, 1998).

In terms of sanitation coverage, data also show an alarming situation, averaging only 13% in Homa Bay and 11.2% in Suba. Among those who do not use an improved facility, latrine sharing is to certain extent common in Suba (27.7%) although the vast majority of households opt to defecate in the open (49.6% in Homa Bay and 54% in Suba). The most commonly cited reason for not accessing a latrine has been lack of economic resources (75.7%), which emphasises a consistent pattern with usage of basic sanitation by wealth.

With regard to personal and domestic hygiene, the survey reveals that household water treatment is common throughout the area of intervention, since more than half of households (70.2% in Homa Bay, 53% in Suba) treat water before consumption employing an adequate method. Another hygiene behaviour which is of greatest likely benefit to health relates to handwashing. In the area of intervention almost everyone washes their hands, and while knowledge related to handwashing method is adequate (83.6% in Homa Bay and 77.6% in Suba); it is not in terms of handwashing frequency, 63.9% of households in Homa Bay and 44.2% in Suba fail to know when to wash their hands (critical times).

Water Supply Planning[2]

Access to water is determined primarily by distance to the source or time spent in fetching water, but quantity of water that will be collected for domestic purposes may reduce where water supplies

are seasonal, water quality is not adequate or tariffs are unaffordable (Howard & Bartram, 2003). Therefore, water coverage can be categorised in terms of service level, and provision of a basic level of access should consider a combination of aforementioned requirements. However, where optimal access is provided but the supply is not functional, other unimproved sources might become a temporary solution, which seriously hinders the achievement of health-related impact (Hunter *et al.*, 2009). This draws attention to the issue of service management.

Access to water. The common method to estimate water coverage is based on standard assumption on the number of users per water source, i.e. the source:man ratio, which in Kenya stands at 250 people per public tap. First index depicts the number and geographic distribution of waterpoints in terms of the population living in the area, and thus identifies those locations most in need of new waterpoints' construction. It is gleaned from the coverage map (Figure 3) that current availability of improved sources is not only low, i.e. 12.15% of population are properly covered by improved waterpoints, but marked regional disparities also hamper equity criterion. For instance, North Kabuoch and North Nanyamwa (0%) show the lowest coverage values, while West Kagan (56%) and North Kanyikela (69%) present the highest estimates.

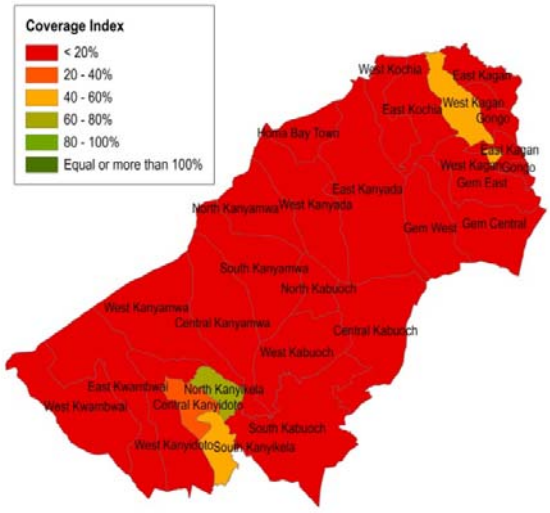

Figure 3. Coverage Index

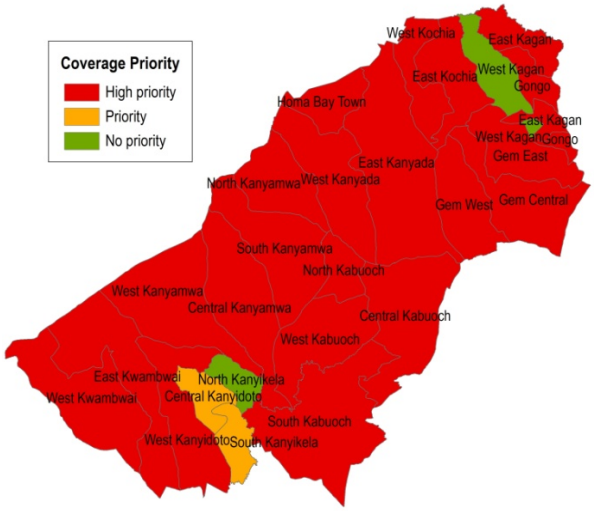

Figure 4. Coverage Priority Locations

To tackle water shortages, two different approaches can be adopted when defining list of priorities. In terms of regional equity, the goal is to reach a minimum coverage threshold in every location. But based on an efficiency criterion, those locations with highest number of potential beneficiaries are first targeted, regardless of coverage. A combination of both criteria is also feasible. In this planning exercise, first approach has been opted for (Figure 4), since vulnerability is probably higher in total absence of improved sources (Jiménez & Pérez-Foguet, 2010), and any combination of criteria would result in a complex indicator.

It can be seen in Table 2 that one different ranking is produced depending on each abovementioned criteria, showing both ranks poor correlation (Figure 5). For example, it is observed that North Kabuoch has been prioritized as its coverage index stands at 0%, although in terms of potential beneficiaries, only roughly 5,000 people would beneficiate from the construction of new waterpoints. On the other hand, coverage index of East Kwambwai averages 19%, while beneficiaries from a hypothetical intervention would be raised up to 13,809. As mentioned, the territorial equity criterion has been employed for planning purposes, in order to emphasize those underserved locations with lowest source:man ratios. Similarly, a comparison of the equity-based rank with the prioritisation list available and currently used at the LVSWSB confirms one of the flaws cited above. Such list, which is not regularly updated and WASH-nonspecific, apparently tackles neither equity nor efficiency (Figure 6).

Table 2. Priority List for Construction of New IWPs

Rank (equity)	Rank (efficiency)	Rank (LVSWSB)	Location	Estimated Population 2011	Coverage Index	Unserved Population	Required No. New IWP
1	19	No priority	North Kanyamwa	9.749	0%	9.749	39
2	21	No priority	North Kabuoch	5.342	0%	5.342	21
3	2	No priority	Homa Bay Town	37.601	5%	35.601	142
4	4	No priority	Gem Central	23.146	5%	21.896	88
5	7	No priority	Central Kanyamwa	16.004	5%	15.254	61
…							
18	10	1	West Kwambwai	16.112	16%	13.612	54
19	8	No priority	West Kanyada	17.560	17%	14.560	58
20	9	7	East Kwambwai	17.059	19%	13.809	55
21	13	No priority	South Kanyamwa	14.862	19%	12.112	48
22	22	No priority	Central Kanyidoto	6.407	27%	4.657	19
23	24	No priority	South Kanyikela	3.339	45%	1.839	7
24	23	5	West Kagan	9.419	56%	4.169	17
25	25	No priority	North Kanyikela	3.258	69%	1.008	4

Note: In red colour, locations with risky coverage (<25%). In orange, locations with poor coverage (25 – 50%). In green, locations with acceptable coverage (>50%)

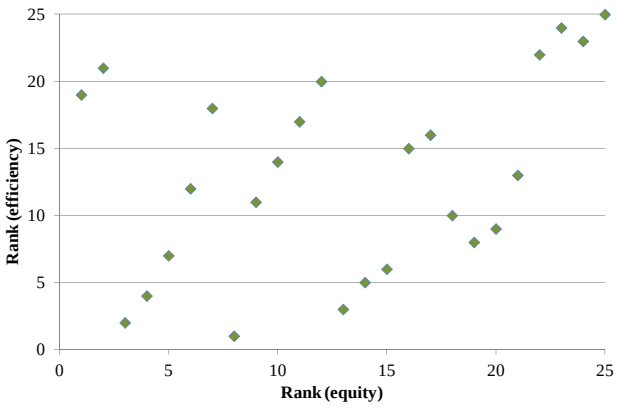

Figure 5. Coverage Ranks (equity versus efficiency)

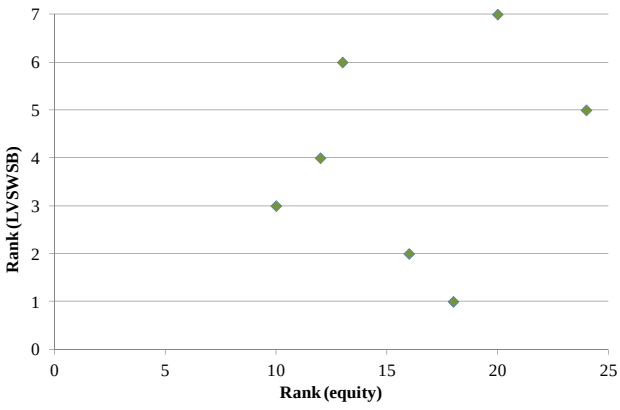

Figure 6. Coverage Ranks (equity versus LVSWSB)

In sum, a total number of 1,306 new waterpoints would be required to reach threshold coverage of 25% in all locations, which highlights the risky situation of Homa Bay District in terms of water accessibility.

Functionality of waterpoints. This second group of indices aims to analyse those key aspects that enable a water scheme to remain operational over a long period of time, and therefore identify the facilities in need of soft-based support. A water supply can be interrupted because of functionality / management reasons or seasonality issues. Regardless the cause, lack of continuity may lead to prolonged periods without supply, obliging households to search for alternative sources, often of inferior availability and poorer quality. Service continuity is therefore essential in benefiting health.

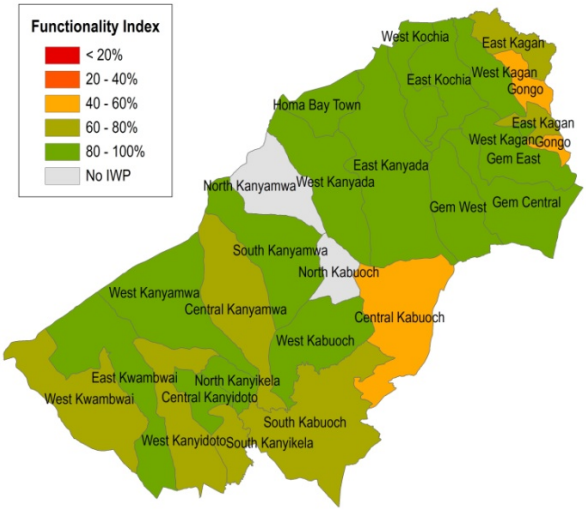

Figure 7. Functionality Index

In this exercise, functionality is defined as the percentage of improved sources that are functional at the time of spot-check, and from the map (Figure 7) it is observed that functionality rates are surprisingly high in comparison with other sub-Saharan countries (Harvey & Reed, 2004; WaterAid, 2009; Jimenez & Perez-Foguet, 2011). The mapping reveals that 84.5% of audited sources were found operational despite regional disparities, showing Gongo (50%) and Central Kabuoch (56%) the lowest functionality rates. In these locations, as an alternative action to the construction of new infrastructure, the strategy should include the rehabilitation of those waterpoints that are not functional. In parallel, and in order to reduce recidivism, management and operation capacity gaps should be properly identified and priority needs outlined for improving sustainability of rural water supply, including the preparation of an O&M framework. Overall, eight different locations would be prioritized based on this criterion, and a total number of 29 non-functional waterpoints would require rehabilitation works.

To further the analysis on functionality issues, it is known that the ability of a community to keep a waterpoint operational depends on a complex mix of managerial, environmental, social, financial, and technical issues (Sugden, 2001; Harvey & Reed, 2004). Figure 8 is aimed at highlighting these linkages, but the figures cited above are apparently too high to identify any consistent pattern. According to the graph, functionality of waterpoints would not correlate with key operational principles. It is believed, though, that reporting on functionality should be related to regular O&M follow-up tasks, and requirements for information about functionality rates should include other operational indicators. They might help gain some insight in defining an adequate strategy to provide sustainable waterpoints.

For this purpose, three additional indicators have been analyzed, one related to management, another one related to maintenance and the last one to assess accountability issues. To evaluate service management, a financial criterion has been employed, and the proportion of functional waterpoints with declared incomes and expenditures has been taken as proxy. From the map in Figure 9, it can be seen that a considerable number of water entities do not have an appropriate payment system in place, therefore hindering their ability to meet ongoing O&M costs. In order to draw attention to maintenance needs, a complementary index estimates the percentage of sources that are operational and have easy access to spare parts and to qualified technicians. It is gleaned from Figure 10 that access remains elusive in some locations, where neither technical skills nor a reliable supply chain are locally available. Finally, in terms of accountability and transparency, the indicator employed assesses whether the water entity holds regular meetings with villagers or with local authorities to discuss management-related issues. Achieved results show an alarming situation (Figure 11), where not even one single location reaches the minimum threshold.

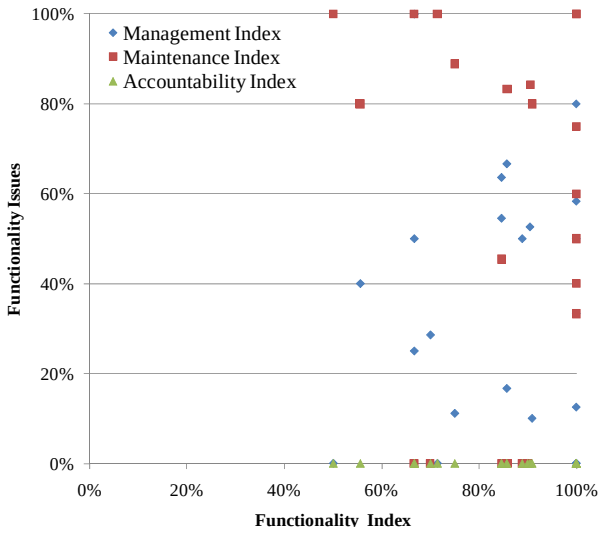

Figure 8. Functionality issues

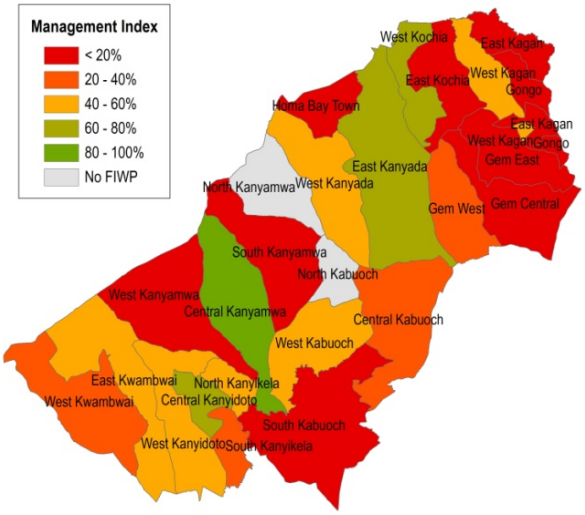

Figure 9. Management Index

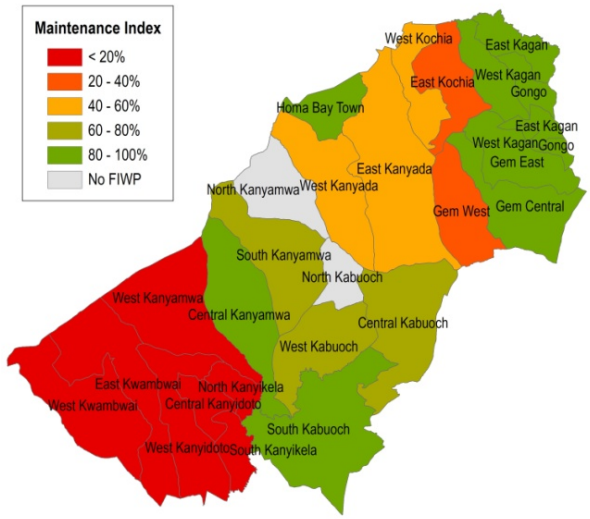

Figure 10. Maintenance Index

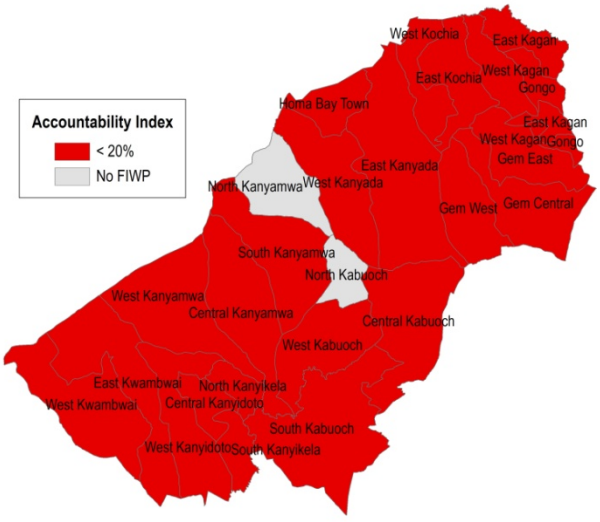

Figure 11. Accountability Index

In all, it is noted that adequate O&M of schemes remains the biggest challenge to promote long-term sustainability of water services: 16 locations have been prioritized because of management issues, 11 locations require maintenance supporting activities, and 7 locations are in need of both O&M-related assistance. To this end, soft-based support initiatives to water user entities emerge as cost-effective solutions, such as promotion of their legal registration, financial and technical support to build up capacities of managers and technicians, etc.

Seasonality of water sources. Service reliability also depends on seasonality issues; and where seasonality of water resources is high, people often need to search for alternative sources during dry season. This planning indicator estimates the percentage of functional waterpoints that are year-round (not seasonal), where seasonality is defined as more than one month of water shortage. It can be observed from the map (Figure 12) that 84% of supplies are year-round. Therefore, and though this figure slightly varies across the locations, seasonality is not an issue in Homa Bay.

However, it is important for sector-related stakeholders to follow-up performance of this indicator. The institutional framework delegates responsibility of preserving water resources at the watershed level to Catchment Areas Advisory Committees, who generally lack the capacities to adequately protect existing water resources from contamination or overexploitation. Consequently, any remedial action that could be undertaken at district level in all prioritised locations would help to

maintain or increase service reliability, such as catchment protection, improvement of water storage, research on seasonality issues to reveal suitability of water technologies in dry areas, etc.

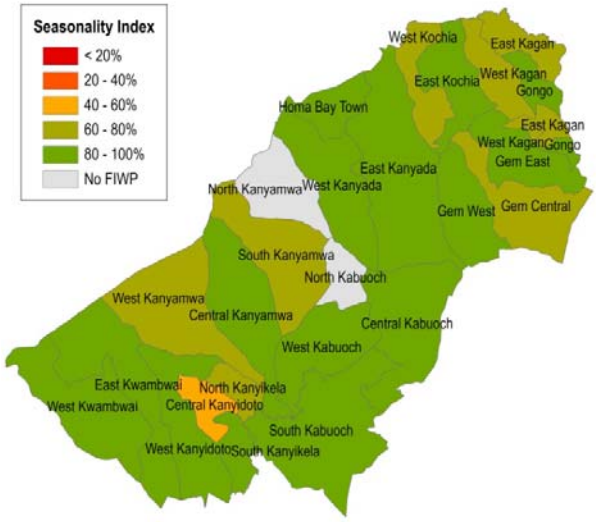

Figure 12. Seasonality Index

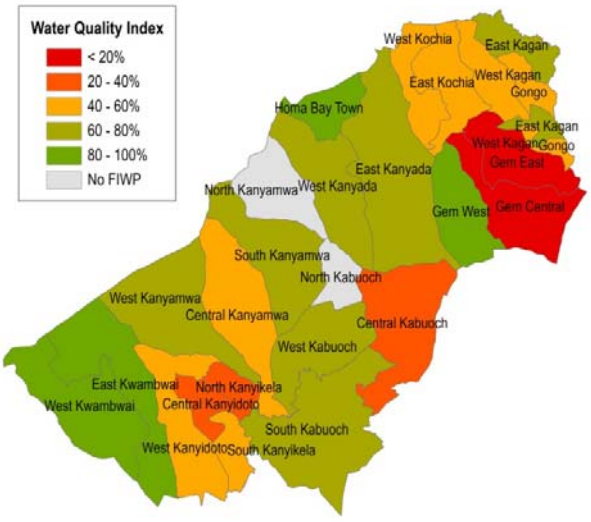

Figure 13. Water Quality Index

Water quality. Water quality surveillance should be a required activity in the monitoring framework, since the relevance of accessing safe water for disease prevention is widely recognized. To define safe water, contamination is herein understood as presence of faecal coliforms (E. coli); i.e. the planning index informs about the proportion of operational sources with a coliform count of more than zero. It can be seen in Figure X that three out of ten (30.8%) water sources present microbiological contamination, which emphasizes the fact that improved waterpoints do not always supply safe water. Again, regional differences are pronounced. And interestingly, the map depicts that those areas showing faecal contamination are to certain extent geographically clustered.

Water sources may be contaminated because of poor sanitary protection measures due to inadequate design, sitting, construction or operation and maintenance. Therefore, in those prioritized locations, interventions are required in the form of engineering interventions to improve the protection or the environmental hygiene around the source; or actions to promote good community management. The design of abovementioned activities could be supported by regular sanitary inspections (Howard, 2002).

Sanitation and Hygiene Planning[2]

In much the same way as with water supply, a technology-based approach has been proposed as a proxy when estimating the sanitation figures, since this is the information that can be consistently collected at a large scale. More specifically, coverage is presented as a four-step ladder[3] that distinguishes between open defecation, unimproved, shared, and improved sanitation (Joint Monitoring Programme, 2008). This definition, though, presents some important drawbacks. First, it does not take into account sanitary conditions of the facility or safety issues, which in many cases constraint a continued use of the infrastructure. Second, coverage figures do not distinguish between open defecation and latrine sharing, since both practices are categorized as unimproved. Third, sanitation services should be available at a price that everyone can access them, and affordability issues are not properly dealt with in previous categorization. And forth, the definition does not include the promotion of household hygiene. It is thus believed that for planning purposes sanitation needs to be defined in a broad and more holistic sense, which clearly requires an adequate monitoring framework.

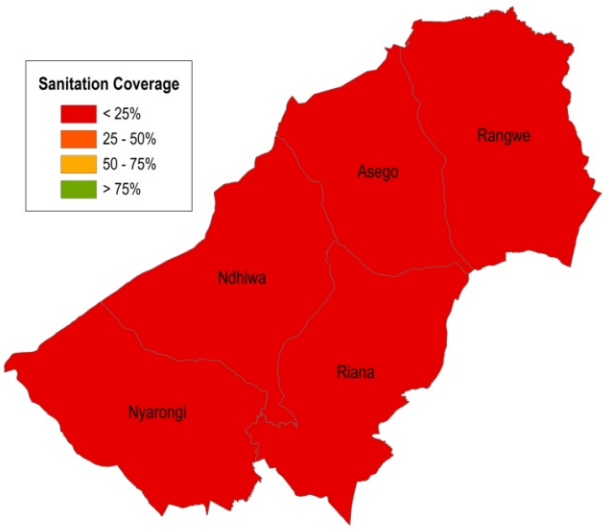

Figure 14. Sanitation Index

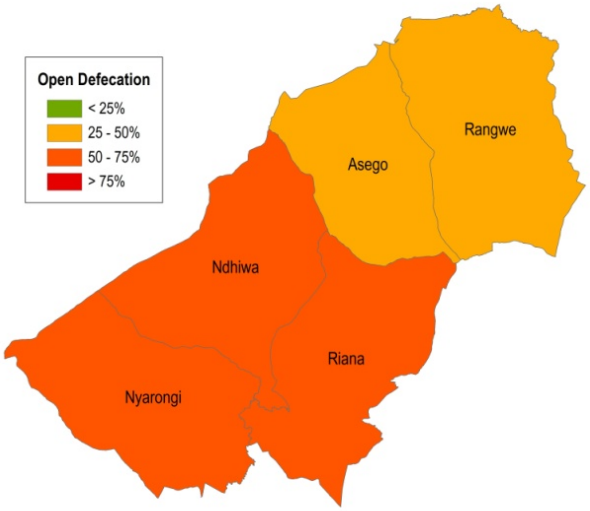

Figure 15. Open Defecation Index

Access to sanitation. To assess coverage, the sanitation ladder has been adopted as core reference when determining the type of facility used in the household. As visualized in the maps (Figures 14 and 15), the situation in Homa Bay is alarming. Use of improved infrastructure stands at 13%, and half of households (49.6%) have no access to sanitation at all, thus defecating in the open. In addition, disparities exist by divisions, and for instance population in Asego (coverage of 17.16%) is two times as likely to use an improved sanitation facility as the population in Riana (7.28%). On the other hand, a large majority of households practise open defecation in Riana (66.7%) and Nyarongi (63%), while this percentage is almost halved in Asego (35.78%).

To help end this appalling situation, in those areas where sanitation coverage is lowest and practice of open defecation is widespread, the coordination of sanitation campaigns to support new construction of facilities or the implementation of social sanitation marketing strategies would emerge as appropriate initiatives. For instance, the Community Led Total Sanitation (CLTS) approach could be adopted as cost-effective intervention (Kar & Chambers, 2008). The improvement in basic sanitation accessibility would trigger a movement on the sanitation ladder.

Latrine sanitary conditions. Lack of latrine maintenance might result in a focus for the transmission of diseases, apart from hindering a continued use (Scott *et al.*, 2003). In consequence, sanitary condition of toilet facilities has been visually evaluated through four different proxies (inside cleanliness, presence of insects, smell and privacy). It is gleaned from Figure 16 that only 14.6% of latrines are kept in adequate sanitary conditions, although in divisions such as Rangwe this index averages 5.26%.

These poor figures confirm that sanitation strategies should not only focus on the provision of the infrastructure, but on ensuring that it is safe, physically acceptable and hygienically maintained. Therefore, the district would do wise to facilitate and support countrywide campaigns for safe hygiene practices in the vicinity of the latrine, particularly in those highly prioritized divisions.

Handwashing knowledge. It is well established that general improvements in personal hygiene are of greatest likely benefit to health, and particularly handwashing with soap is one of the most effective ways to break the faecal-oral route of disease transmission (Curtis & Cairncross, 2003). As a result, an index for planning is proposed to assess the proportion of adults with adequate handwashing knowledge[4]. It is observed from Figure 17 that the index scores relatively high in all divisions, i.e. seven out of ten adults know how to wash their hands. However, an evaluation (not shown here) of handwashing devices around the toilet points out that on average, a waterpoint is only found in less than 5% of facilities; and soap is available in 2.1% of inspected latrines

(GRECDH - UPC, 2011b). This spotlights that while handwashing knowledge is adequate, handwashing behaviour is not.

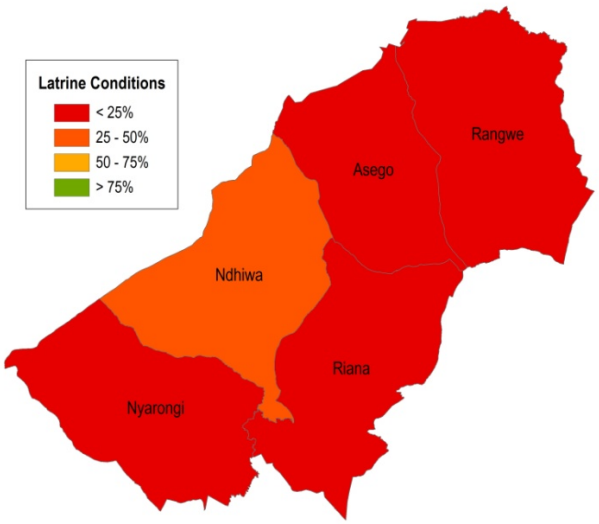

Figure 16. Index of Latrine conditions

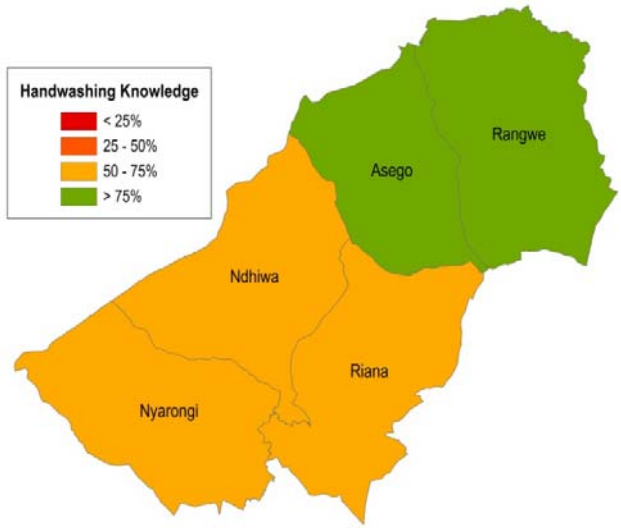

Figure 17. Index of Handwashing knowledge

Thus, and regardless of achieved results, the launch of handwashing campaigns and other hygiene-related initiatives to promote hygiene education might become adequate remedial activities.

Summary of Priority Actions

In sum, it is observed from Table 3 that most urgent priority interventions that should be carefully planned related to water supply include the construction of new waterpoints, as well as soft-based supporting initiatives to water user entities. As regards sanitation and hygiene (Table 4), neediest interventions include the improvement in access, primarily through latrine construction or community approaches to total sanitation. Moreover, it has been highlighted that it is not only an issue of infrastructure, so the launch of campaigns for safe hygiene practices is also required.

Table 3. Summary of priority actions and number of prioritized locations / IWPs

	Coverage	Functionality	Management	Maintenance	Accountability	Seasonality	Quality
High Priority	21	1	16	11	23	1	9
Priority	2	7	5	2	0	3	9
No priority	2	17	4	12	2	21	7
No. IWPs requiring intervention	1.353	29	101	75	158	22	59

Table 4. Summary of priority actions and number of prioritized divisions / potential beneficiaries

	Improved Sanitation	Open Defecation	Latrine Conditions	Handwashing knowledge
High Priority	5	3	4	0
Priority	0	2	1	3
No priority	0	0	0	2
No. of Beneficiaries	334.883	191.337	---	117.515

Thanks to league tables developed per each index, to identify which locations / divisions are most in need is straightforward.

CONCLUSIONS

The delivery of water and sanitation services has shifted to decentralised approaches, where control over management and implementation activities moves to local governments. It is built on the assumption that decentralised decision-making will favour local needs and priorities. Any prospect to develop more pro-poor policies, though, depends upon real efforts to strengthen the capacity of decentralised authorities. Against this background, the aim of this paper is to present an evaluation framework for sound planning and decision-making at local level. Major findings follow:

- An integrated WASH approach for data collection provides decision-makers with adequate baseline data to support planning, targeting and prioritization, which are fundamental to poverty alleviation efforts. The methodology presented here offers an improvement on other similar methodologies. The approach adopted i) includes "golden indicators" considered by the sector for monitoring purposes (WHO/UNICEF, 2006), to allow for comparison with data collected elsewhere, ii) combines data from two different information sources (waterpoints and households) to provide a more precise picture of sector constraints and challenges, and iii) produces representative estimates at local level.

- A set of simple aggregated indicators is useful to define criteria for identification of communities in need of further investment. First, the criteria are objective and transparent, and therefore improve accountability to local citizens. Second, they highlight areas for improvement, and ultimately guide appropriate action and policy-making towards better service delivery. For the purpose of planning and targeting, achieved results have been disseminated and presented in a number of different ways that are easily understood by non-technical stakeholders, such as league tables and priority maps.

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NOTES

[1] The types of waterpoints considered as improved are consistent with those accepted internationally by the WHO/UNICEF Joint Monitoring Programme (WHO/UNICEF, 2006), where definition of improved is technology-based. More specifically, an improved waterpoint is a place with some improved facilities where water is drawn for various uses such as drinking, washing and cooking (Stoupy & Sugden, 2003).

[2] In this section and to keep the paper concise, results are only discussed for the Homa Bay case, although a more detailed description of both districts is available elsewhere (GRECDH - UPC, 2011a, c).

[3] Sanitation technologies are considered as providing adequate access to sanitation as long as they are private (but not shared / public) and hygienically separate human faeces from human contact (improved). Based on these two requirements, sanitation coverage is presented as a four-step ladder that distinguishes between: i) open defecation; ii) unimproved sanitation; iii) shared improved sanitation; and iv) improved sanitation. Only last step is considered as "coverage" (Joint Monitoring Programme, 2008).

[4] Assessment of handwashing behaviour requires specific evaluation techniques, which were out of the scope of this study.

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