

Informal settlements' vulnerability mapping in Kenya

FACILITIES AND PARTNERS' MAPPING IN NAIROBI AND KISUMU SETTLEMENTS



The Case of Kisumu Settlements

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OVERVIEW

Globally, cities are and have recorded the highest number of covid-19 cases. In sub-Saharan Africa and many other developing regions with more presence of slums in cities, covid-19 is likely to spread faster and also take longer to control once it crosses into the slum and informal settlements' populations. With high tenure insecurity, low-quality housing, limited access to basic services, and poor sanitation, informal settlements offer the perfect settings for risk factors to accelerate the spread of any infectious disease. Informal settlements are also classified as highly vulnerable to numerous risks including climate change impacts, disasters, and socio-economic shocks. This is because they are densely populated, and households have inadequate access to water and sanitation, little or no access to waste management, public transport and limited access to formal employment and health care facilities.

In Kenya, informal settlements vary in size, character and their levels of need vary among and within settlements. Governments and numerous agencies work in informal settlements, each addressing a specific felt need in line with its organizational goals, often with little coordination. Consequently, access to services has not been evenly distributed across settlements, resulting in pockets of spatially disadvantaged communities.

In this mapping exercise, the UN-Habitat sampled 3 settlements in Nairobi and 7

in Kisumu and comprehensively mapped all the key facilities and development partners operating in those informal settlements. This was done with a goal to identify gaps and limitations in service provision, access to services and support by development partners. The mapping outputs identified critical gaps that can be helpful when planning for responses to covid-19 or any other emergency response in these slums. The newly collected data on sample of informal settlements advances the discourse and policy dialogue on how to improve the lives of people who live in informal settlement, and ensure that no one is left behind in COVID-19 response.

The mapping approach

The mapping exercise, which was carried out between 20th May and 10th June 2020, involved field data collection on more than 18 facility types, including water and sanitation facilities (water points, handwashing facilities, solid waste disposal sites, communal toilets, and bathrooms), health facilities, including chemists and pharmacies, community spaces (halls and public spaces) and institutional spaces such as schools, local NGO offices, administrative offices and religious institutions.

Data collection utilized a mobile phone application hosted on an open source data collection toolbox (KoboToolbox). Field data collection was done by youth

community volunteers, who were trained by UN-Habitat experts over a period of one day. Community volunteers were drawn from the targeted slums which allowed them to work longer hours and require no transport costs to undertake data collection during the strict covid-19 lockdown. In addition, UN-Habitat ensured that there was gender-balance among the volunteers who participated in this exercise.

Survey limitations

The survey focused on communally shared facilities; therefore, facilities within the settlement that are accessed at the household level (e.g. toilets and water points), if any, are not included in the survey. Such facilities exist in some mapped settlements such as Kawangware in Nairobi and Manyatta in Kisumu. These settlements exhibit mixed formal and informal characters, and for any survey generalizations to be made on them, there is need for complementary household level data collection. Data collection for this survey was at the community level rather than at the household level.

Presentation of Mapping Outputs

The mapping outputs are presented in 4 parts, each presenting settlement specific findings. This report presents findings for **Kisumu** informal settlements, covering 7 small settlements.



KISUMU SETTLEMENTS

The informal settlements in Kisumu spread out across many parts of the city. The city centre is surrounded by the informal settlements of Nyalenda A and B to the southeast, Manyatta A and B to the east, Obunga and Nyawita areas to the north and Bondeni/Kogony and Bandani to the west. It is estimated that 64%

of the City's urban population (approx. 461,000) resides in informal settlements.¹

Most settlements in Kisumu that are characterised as informal exhibit a mixture of formal and informal settlements' attributes. Their spatial coverages extend

to peri-urban areas, making it difficult to crisply demarcate their boundaries. Compared to settlements in Nairobi, the settlements in Kisumu have lower populations and built up densities, and have slightly higher proportions of green areas (Figure 1).

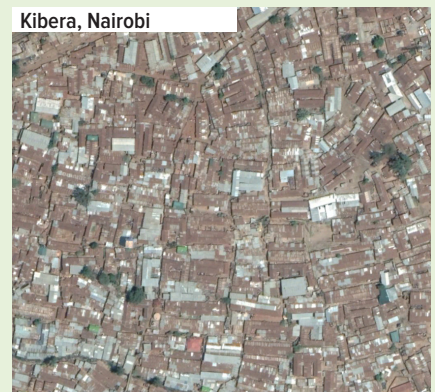
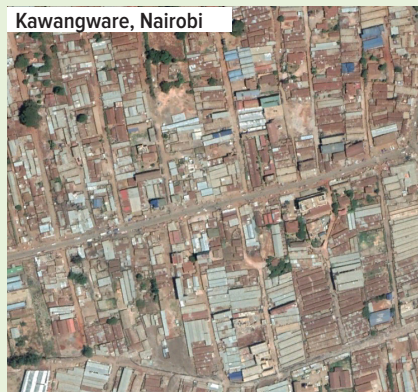
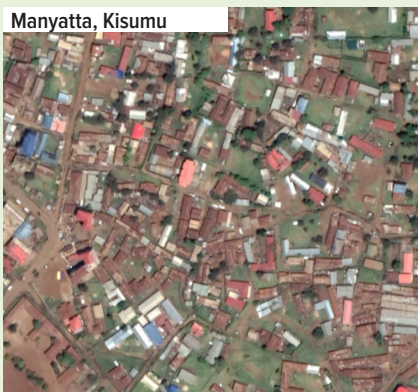


Figure 1: Comparing informal settlements spatial character

Scope of Facilities Mapping

The facilities mapping exercise in Kisumu targeted 7 informal settlement areas: Bondeni, Obunga, Nyawita, Kaloleni, Nyalenda, Manyatta A and Manyatta B.

A total of 1,683 data points were mapped within the informal settlements areas of Kisumu county as shown in Figure 2.

The extents of the mapped settlements were defined based on visual image interpretation complemented by local knowledge. It is to be noted that these spatial extents do not match administrative boundaries.

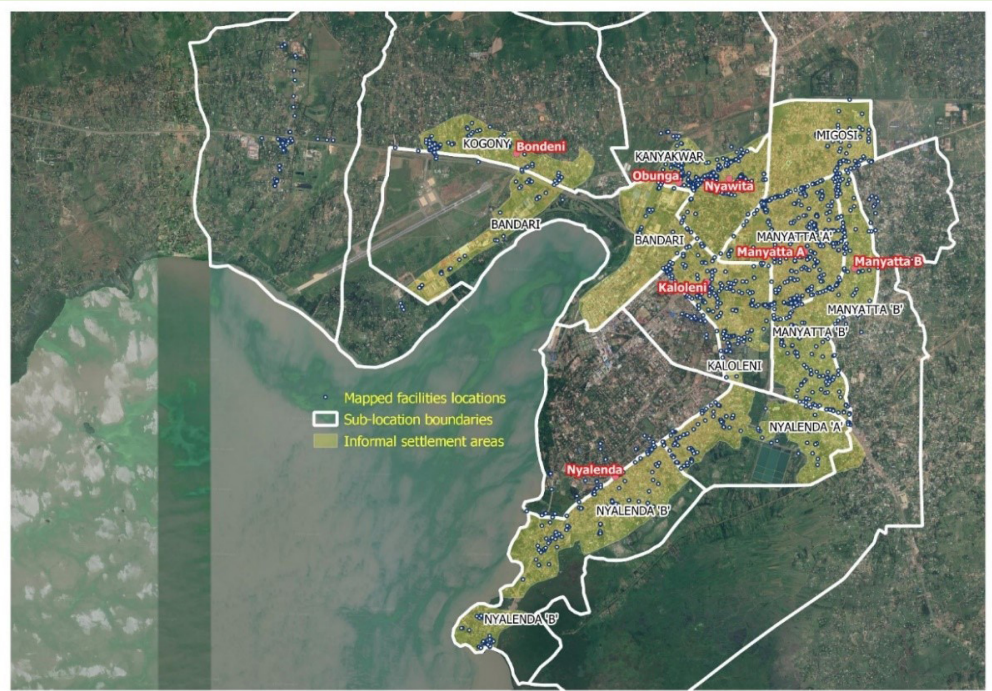


Figure 2: Informal Settlements areas and survey data points

1. Jaramogi Oginga University of Science and Technology, Urban SDGs Targets and Indicators: The case of Kisumu (2015)

1. The General State of Mapped Facilities and Locations



Overall, facilities mapped in Kisumu settlement are reliable, with over 85% of them operating or functioning as desired.

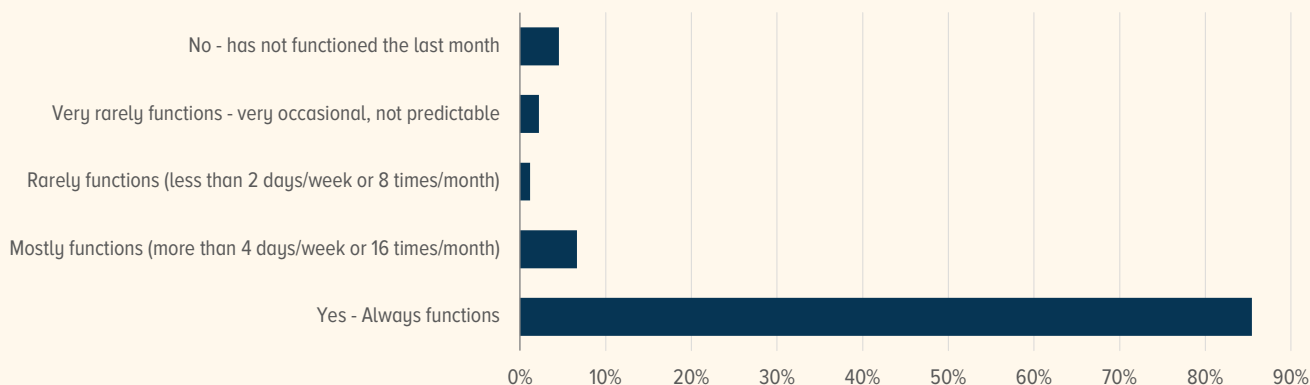


Figure 3: General reliability of services

In terms of cost of accessing facilities, water points, social halls and toilets form the majority of facilities accessed at a cost. The cost of accessing social halls range between 'no cost' to Kes. 2,000, depending on the client and their activities in the hall. Toilets and bathrooms cost on average between Kes. 3 and 10 per use. Stadiums were identified as public spaces being accessed at a cost, particularly during sporting events.

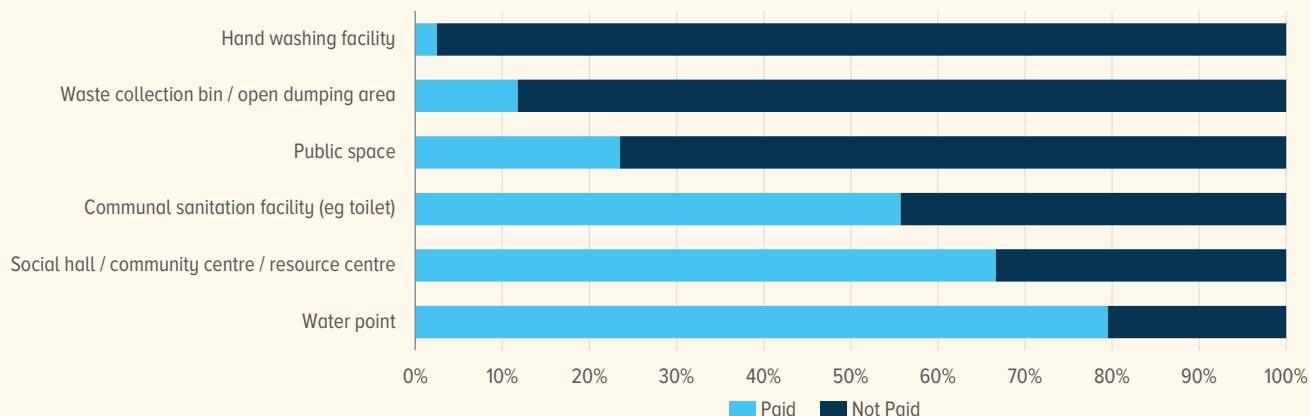


Figure 4: Proportion of facilities accessed at a cost

Kaloleni, Bondeni and Manyatta B settlements have a higher share of facilities that are categorized as unreliable (not functioning well);

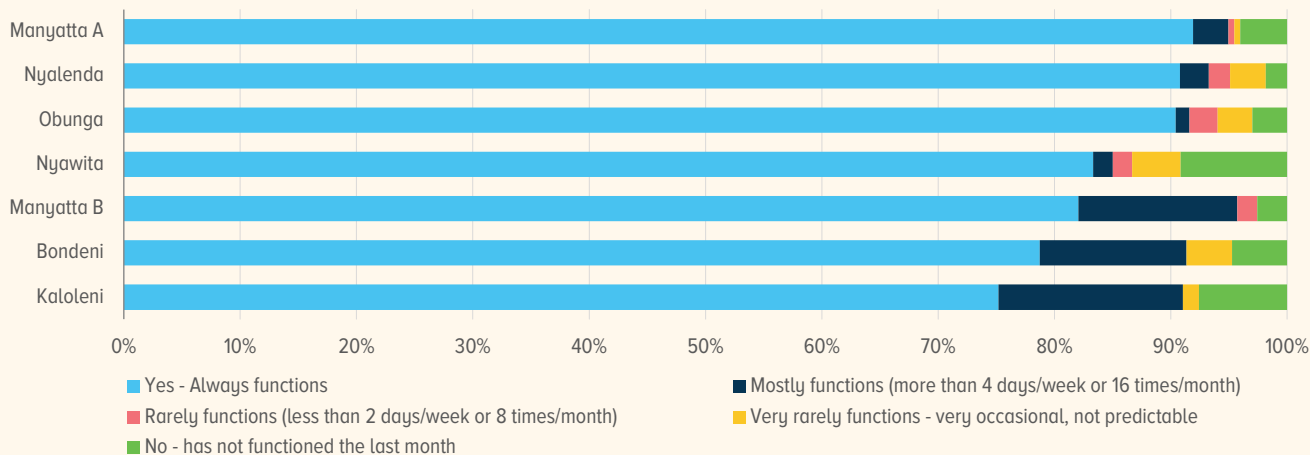


Figure 5: Comparing facilities reliability by settlements

Interventions are required on floodlights and sanitation facilities to improve their functionality.

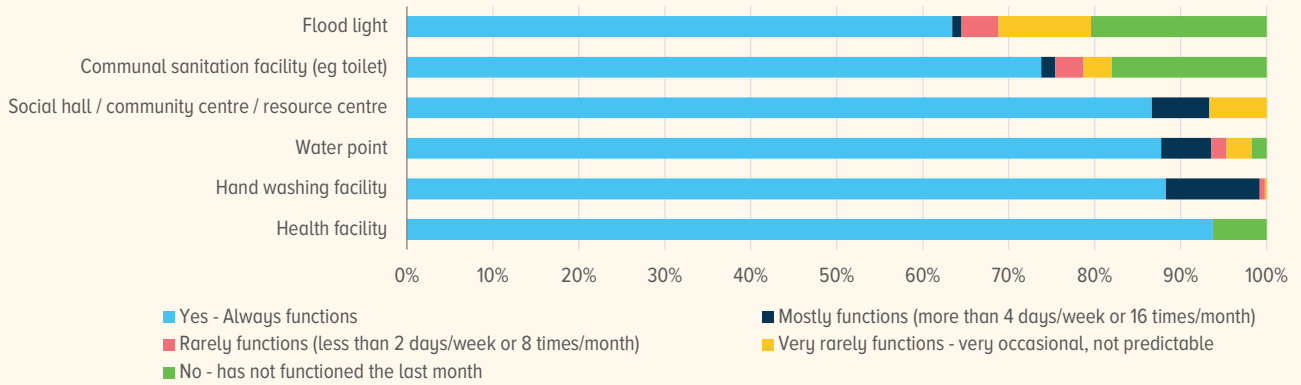


Figure 6: Comparing facilities reliability

The survey reveals that the private sector/ individuals have a huge role in facilities' management. For the fact that most actors in the private sector are profit oriented, this mode of operation has an impact on cost and affordability of services.

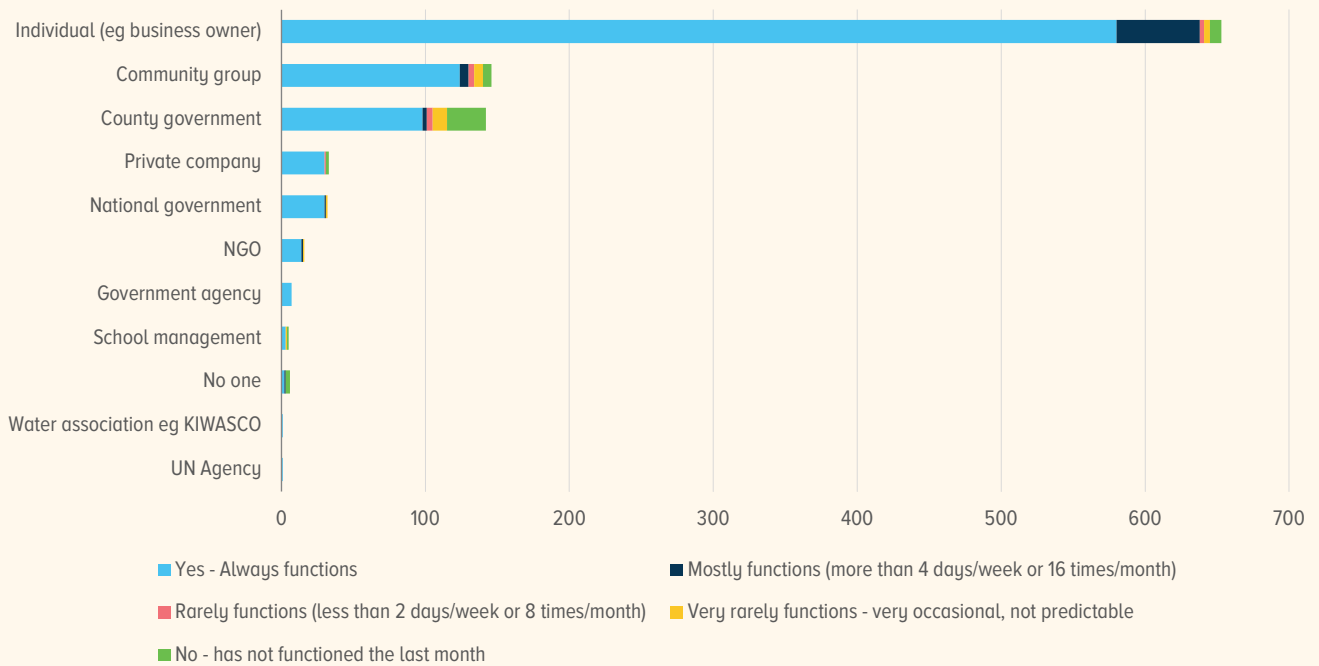


Figure 7: Actors in service provision and facility management

2. Summary findings in WASH



i) State and Access to Water

A total of 171 water points were mapped. Majority of water points (74%) are managed by individuals, with county government and national government managing only 5%. Only 20 (11%) of the 171 mapped water points are 'not always functional'. Mapping shows some locations as having very few water points, and while this is a pointer into a key action area by actors, there is need to compliment mapped data with household level data to capture the full extent of this deprivation.



Figure 8: Reliability of mapped water points

There are numerous actors in WASH; 22 organizations were mapped as being involved in the management of water points; at least 15 water points' donors were mapped.



Figure 9 & 10: Water points managing organizations and donors respectively

Water is mostly accessed at a cost across the settlements; while the water supplied by NGOs is acquired free of charge, the proportional share of water points managed by NGOs is small.

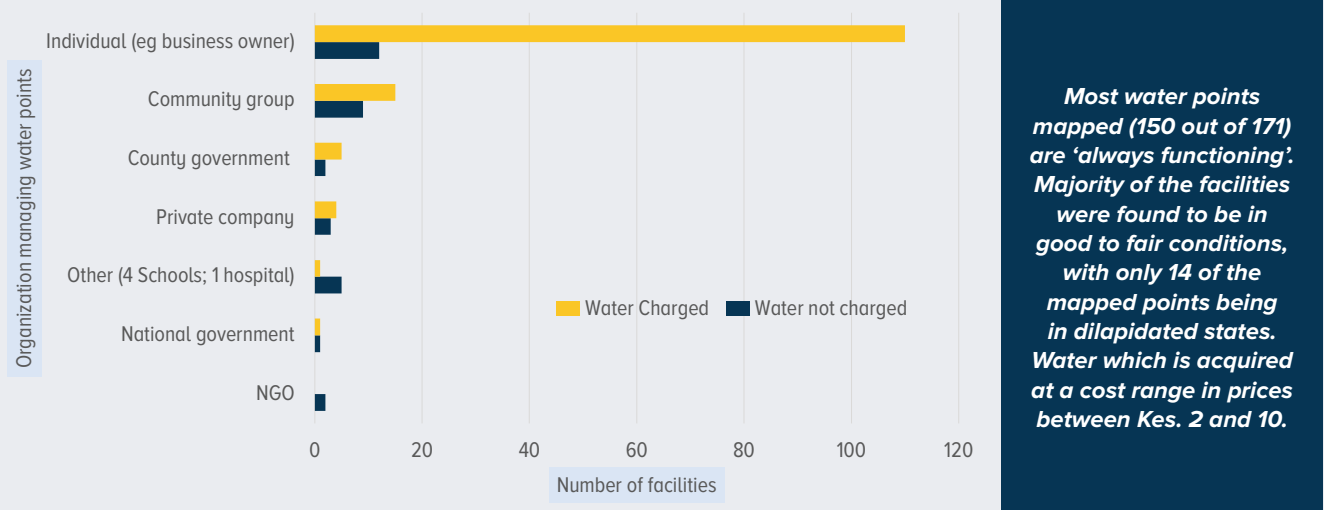


Figure 11: Water points facilities managers by costing

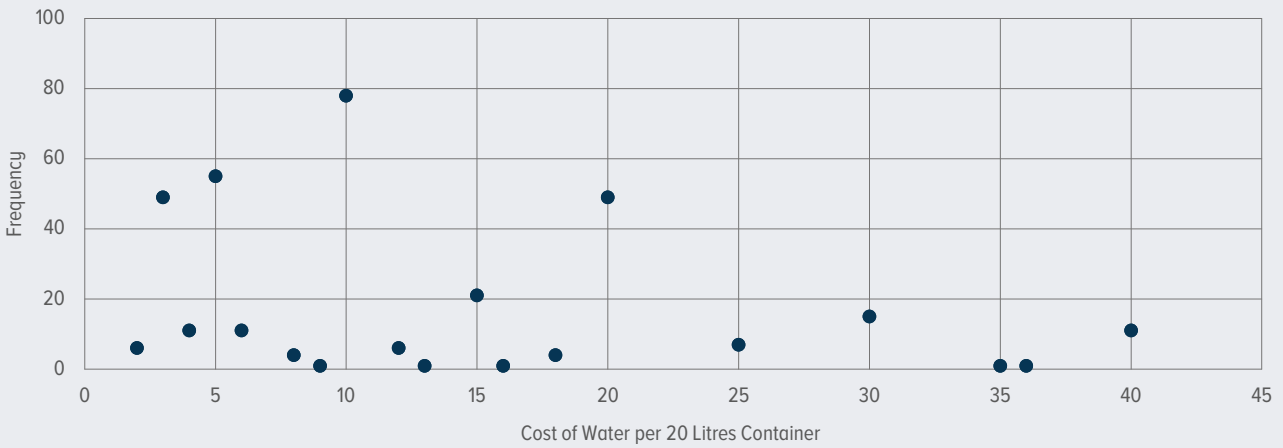


Figure 12: Recorded costs of water at different water points

At least 50% of the mapped water sources have high levels of reliability, with limited gaps noted on water sourced from boreholes and county water networks (KIWASCO). It is notable that 80% of the water used in the settlement is sourced from the county water supply.

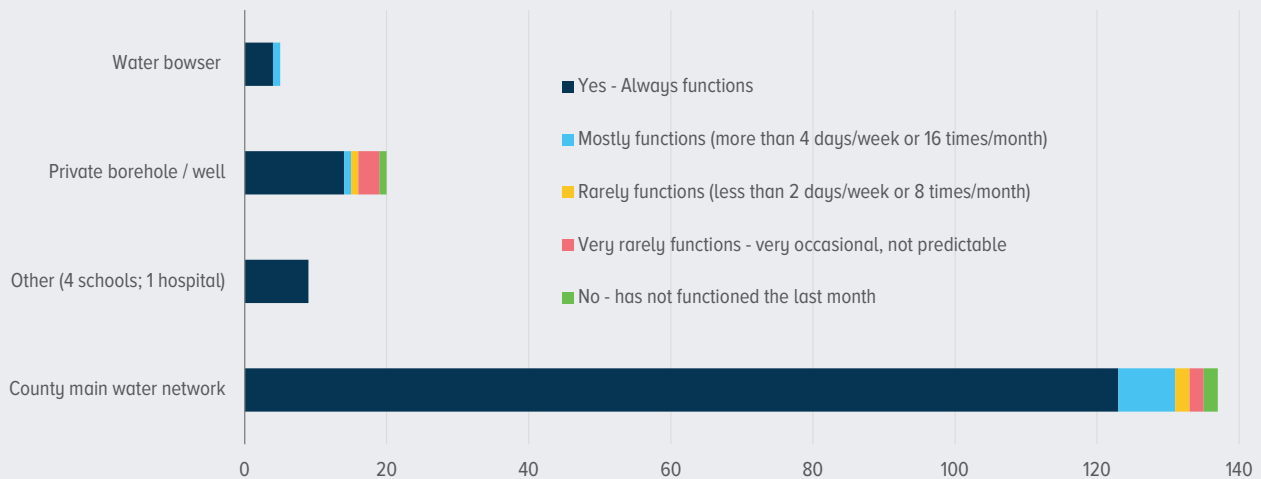


Figure 13: Sources of water and their reliability

ii) State and Access to Handwashing Facilities

A total of 486 handwashing facilities were mapped, with higher facility densities observed in Manyatta A, B and Nyawitta. Locations along transportation networks/ bus stops and markets have more handwashing facilities than residential informal areas. Nyalenda has fewer facility per area than other settlements.

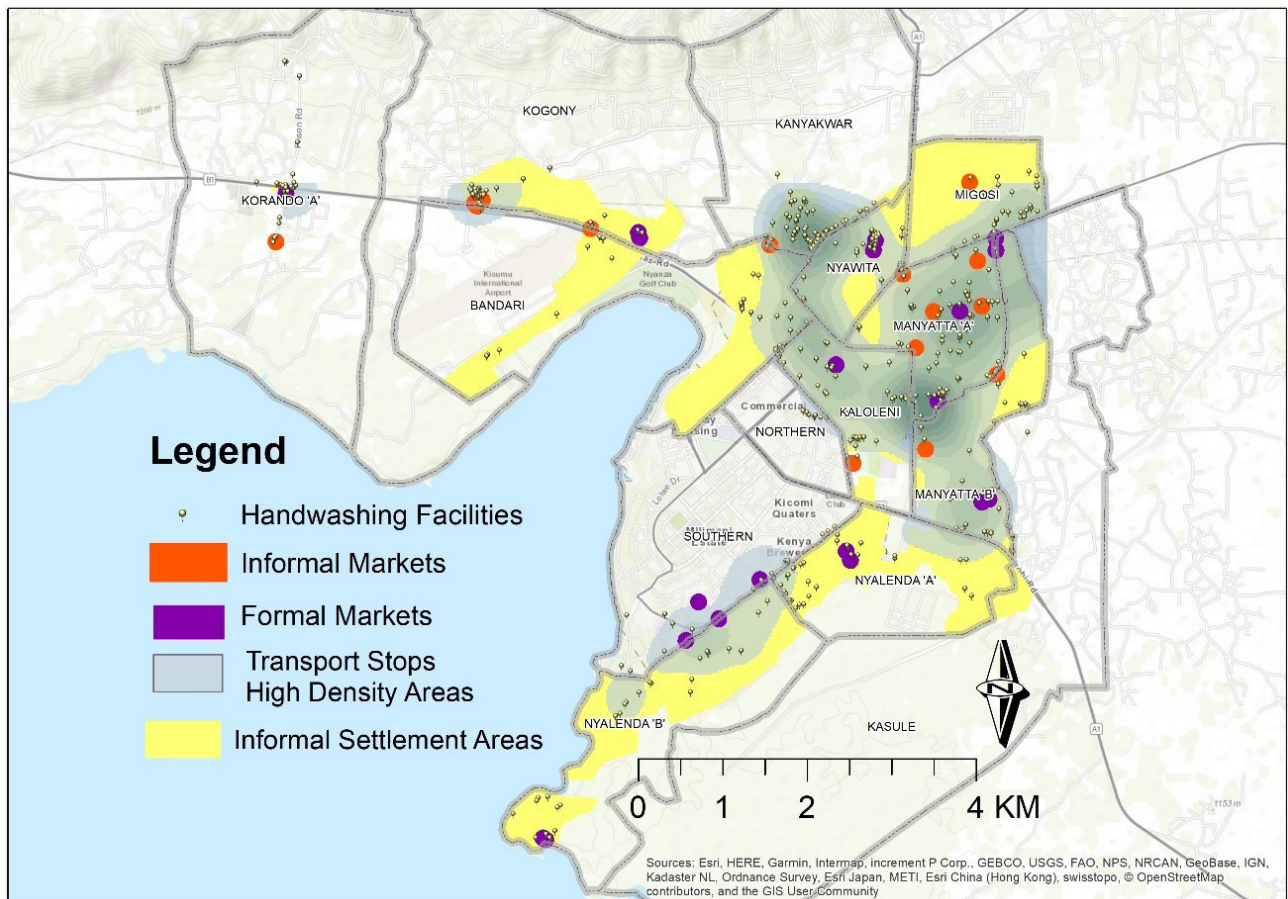


Figure 14: Spatial relationship between markets, handwashing facilities and informal settlement areas

Handwashing facilities are mostly managed by individuals, and water for handwashing is acquired at a cost for more than 70% of the facilities. There is high likelihood that this will, in the long run, negatively impact on the sustainability of handwashing facilities in the settlements.

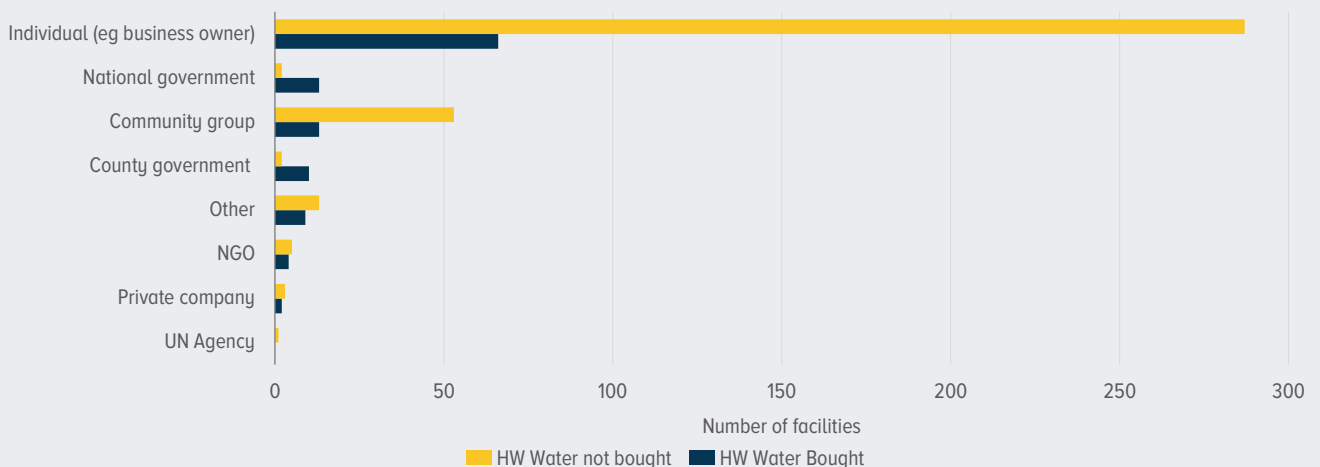


Figure 15: Sources of water for handwashing and associated costs

For the handwashing facilities relying on water acquired at a cost, majority have their water bought by individual business owners, mostly for the interest of their business environments. There is need for more activities by non-profit organizations in order to improve sustainability of the handwashing practise in the settlements.

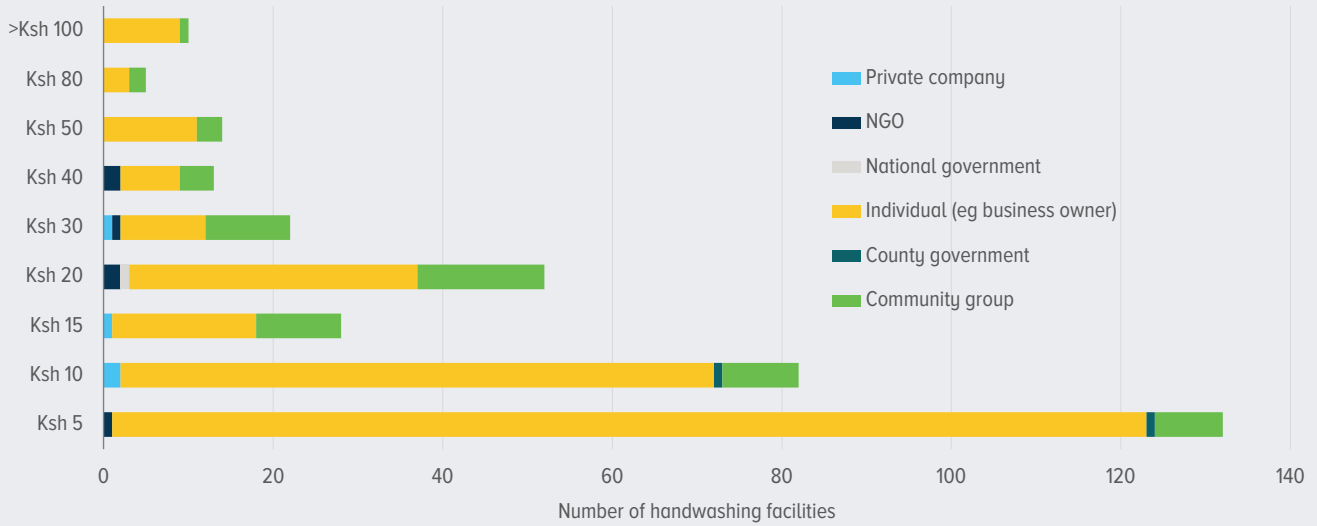


Figure 16: Actual daily costs of water by handwashing facility managing organizations

It is notable that handwashing facilities in the settlements are generally small and manually fed with water; a few facilities (about 5%) serving huge populations of over 100 are connected to the water mains. A sustainable model would involve more facilities connected to piped water supply, and this calls for coordinate action by partners and stakeholders.

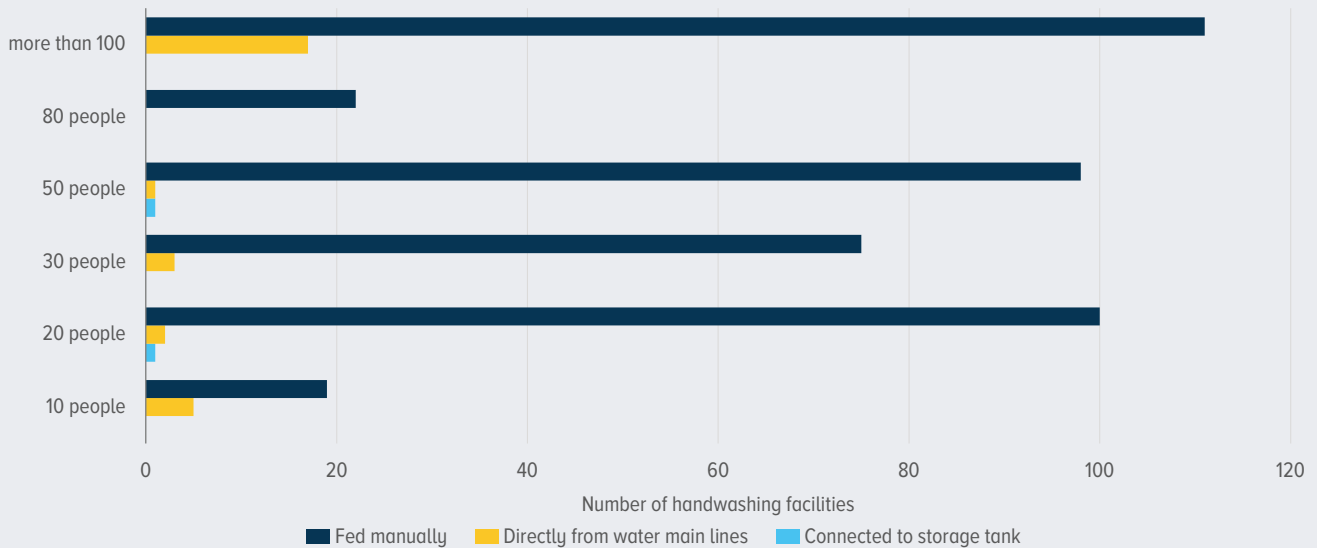
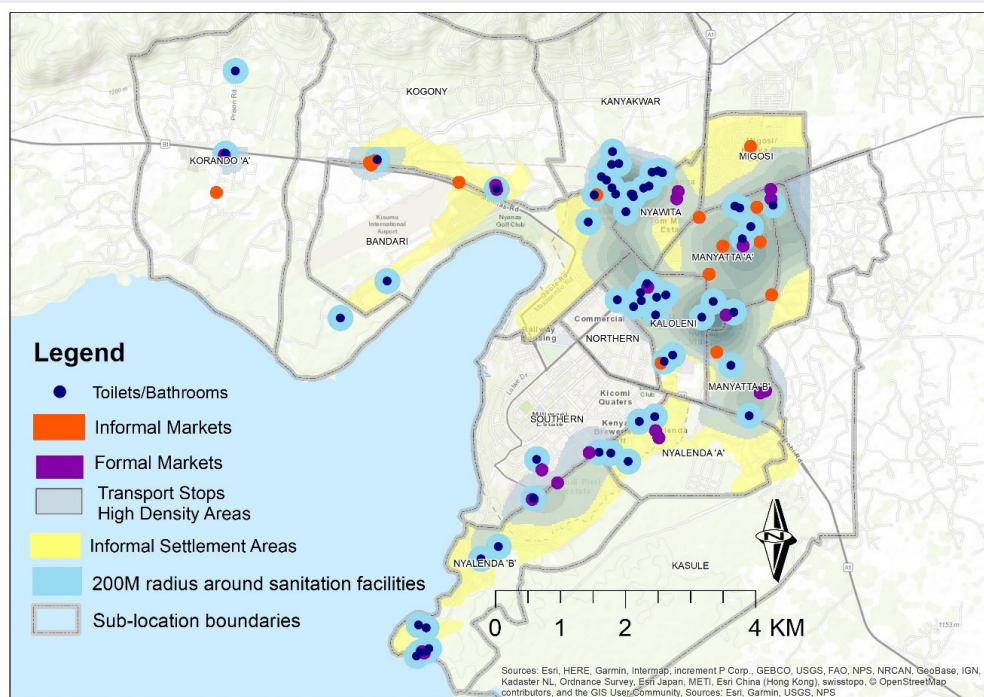


Figure 17: Sizes of handwashing facilities (by number served) and their sources of water

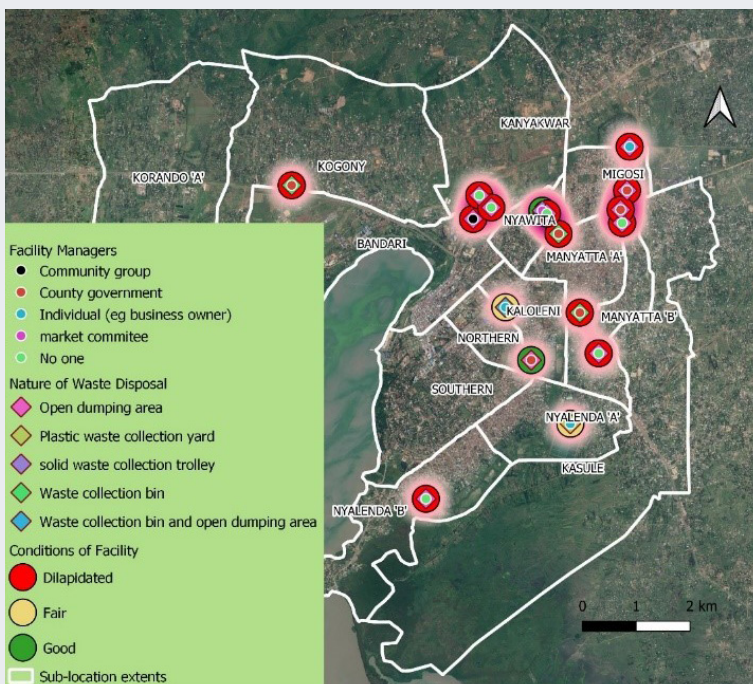
iii) State and Access to Sanitation services (Toilets and Bathrooms)



A total of 62 facilities were mapped, with higher facilities' densities noted in Manyatta A and B, and lower densities in Nyalenda and Bandani. Furthermore, there is significant clustering of facilities around areas with bus stops and markets, particularly formal markets. This is desirable as it shows facilities are located nearer to location of high human interaction. Incidentally, informal markets are not well served with communal sanitation facilities. Policy dialogue on service provision in markets and settlements situated at locations not formally recognized by authorities is necessary in this regard.

Figure 18: Locations of sanitation facilities visualized against areas of high human interaction/ activity

iv) State and Access to Solid Waste Management



The settlements have notable challenges dealing with solid waste, with 12 of 17 facilities mapped having the nature of unmanaged open dumping. There are better functioning facilities in Nyalenda and Kaloleni; the one in Kaloleni is managed by a market committee and the one in Nyalenda is managed by an individual.

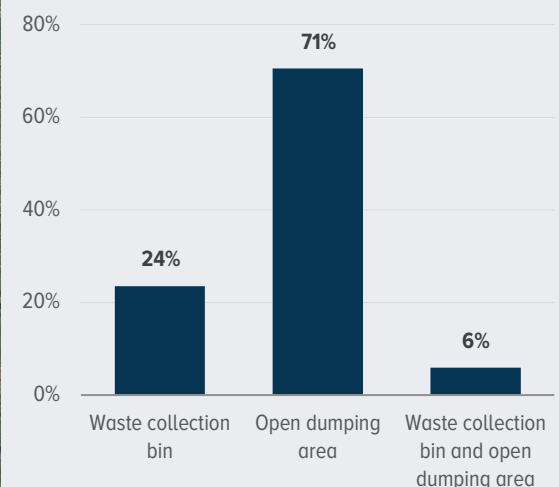


Figure 19 & 20: State of solid waste facilities

Of the 17 facilities mapped, 5 are managed the county government, 2 by Obunga market, one by a church organization, one by an individual, and the rest by no one.

3. Access to Health Facilities and Services



A total of 47 health facilities were mapped, majority of them being dispensaries and clinics (12 hospitals; 6 health centres, 28 dispensaries/clinics, 1 government chemist). There are higher facilities' densities in Manyatta A and lower densities in Nyalenda.

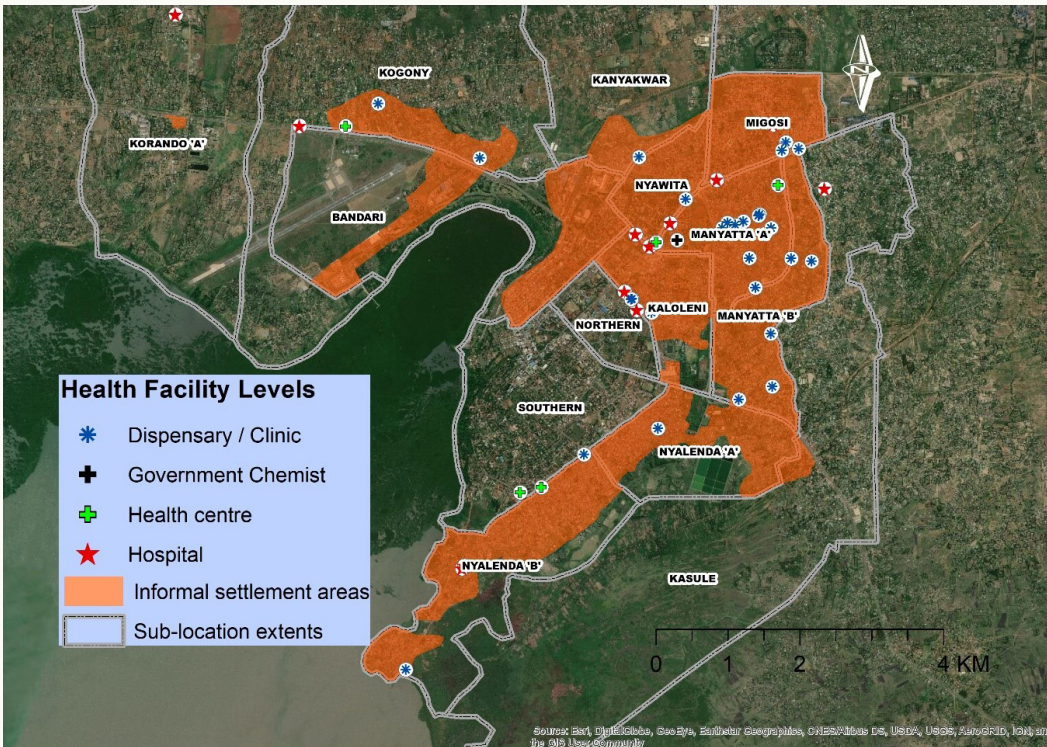


Figure 21: Location of health facilities against informal settlement locations

Individual business owners/ private actors are in charge of management of most of the health facilities, including for both inpatient and outpatient facilities; this is likely to be having an impact on cost and affordability of health services. There is need for a detailed health survey to check the relationship between health service providers, costs of health services and affordability within informal settlement areas.

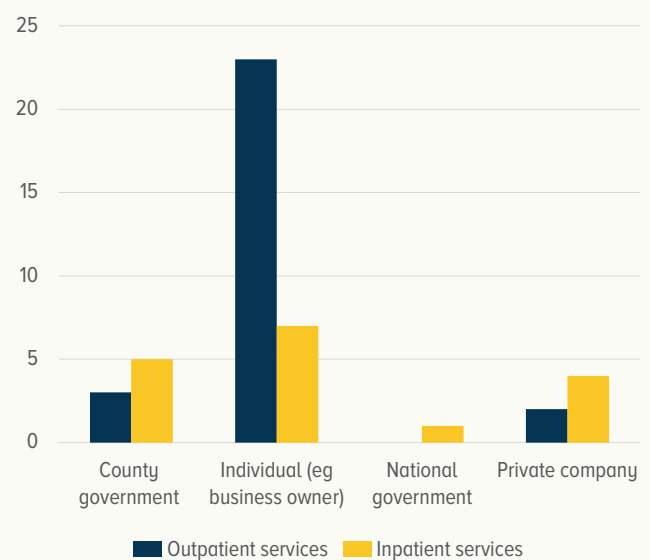
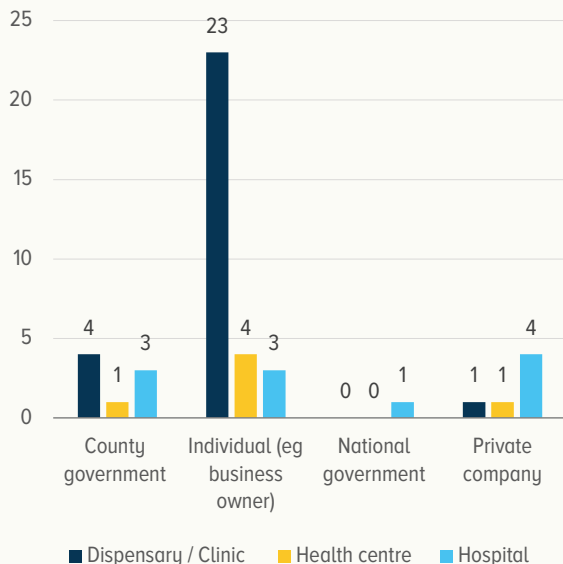


Figure 22 & 23: Health facilities' management by facility level and services

The analysis shows that health facilities are more equipped with services than education facilities and social halls. Most facilities have access to electricity and sanitation facilities, but lack solid waste management system and sewer connections.

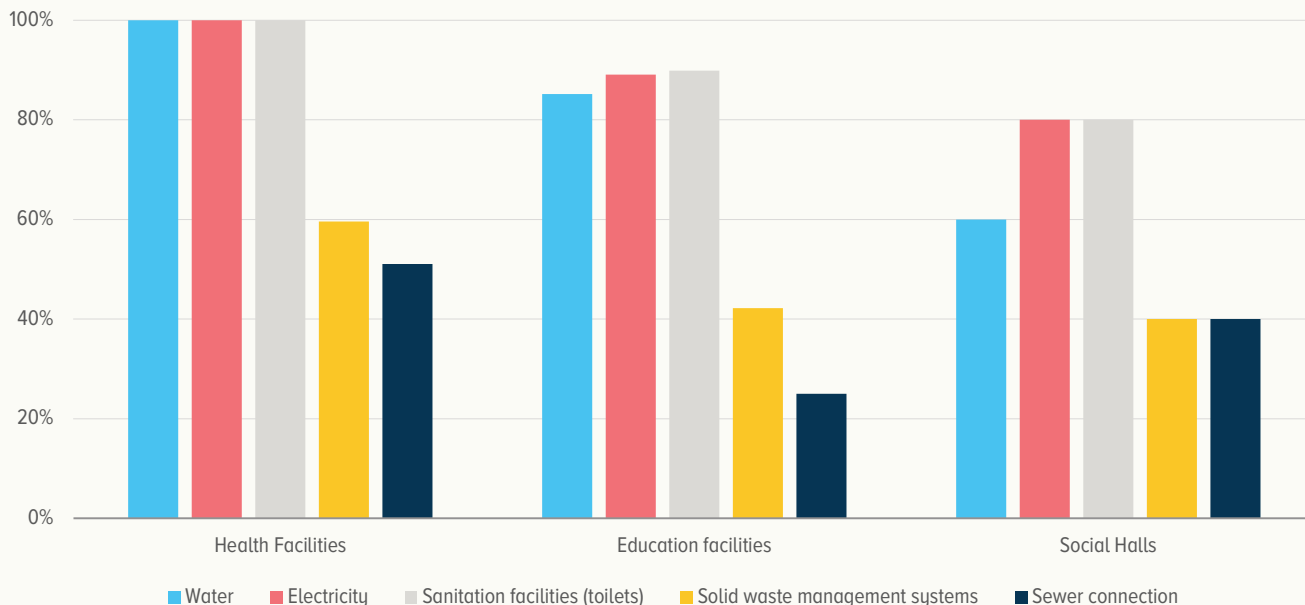


Figure 24: Comparing level of services available for different facility types

4. State of Social Halls and Religious facilities



The settlements have numerous religious facilities (189 mapped) and a number of social halls (15 mapped).

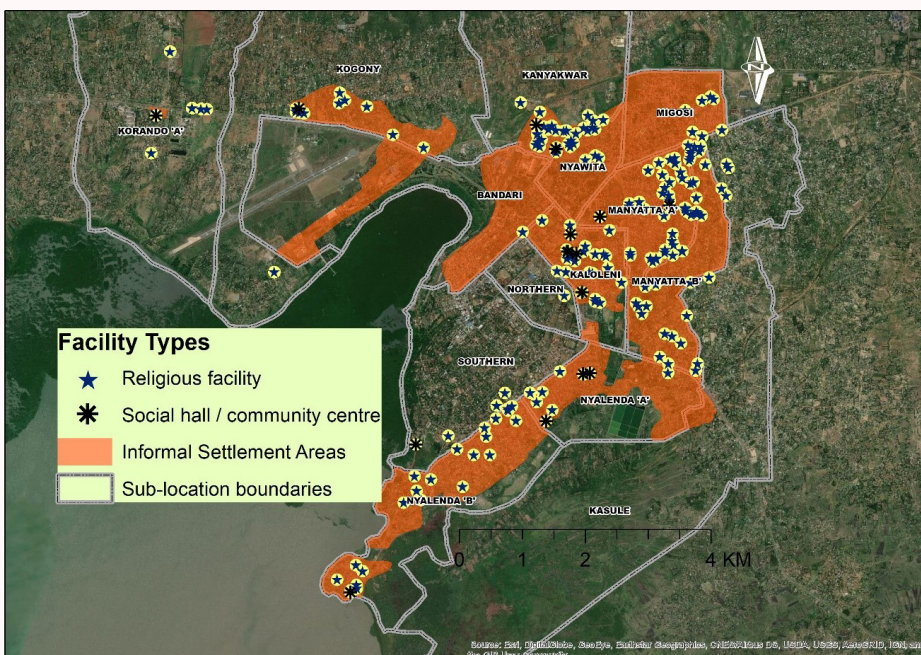


Figure 25: Spatial distribution of social halls and religious facilities

Most of the mapped religious facilities have access to water, electricity and sanitation facilities (toilets). Only about one quarter of them have solid waste management systems or sewer connection. There is need to have religious facilities connected to reliable WASH systems that can ensure sustained levels of hygiene, particularly consistent with COVID-19 hygiene guidelines.

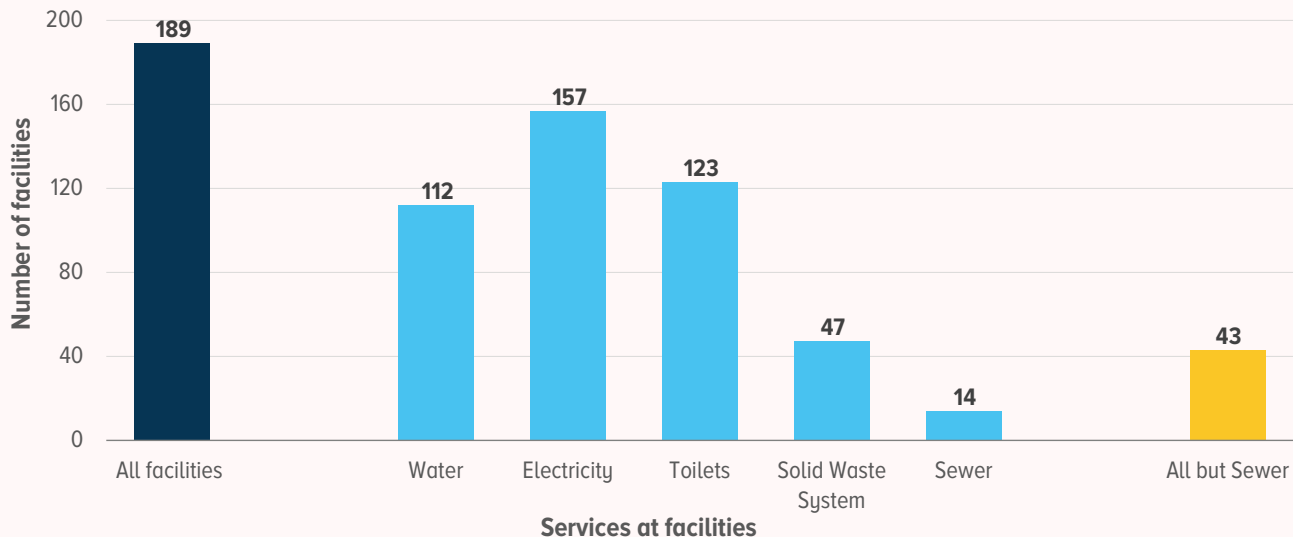


Figure 26: Services available at religious facilities

For the 15 community halls mapped, 6 are managed by community groups, 3 by NGOs, 3 by the County Government, 2 by a community group, 1 by a private company.

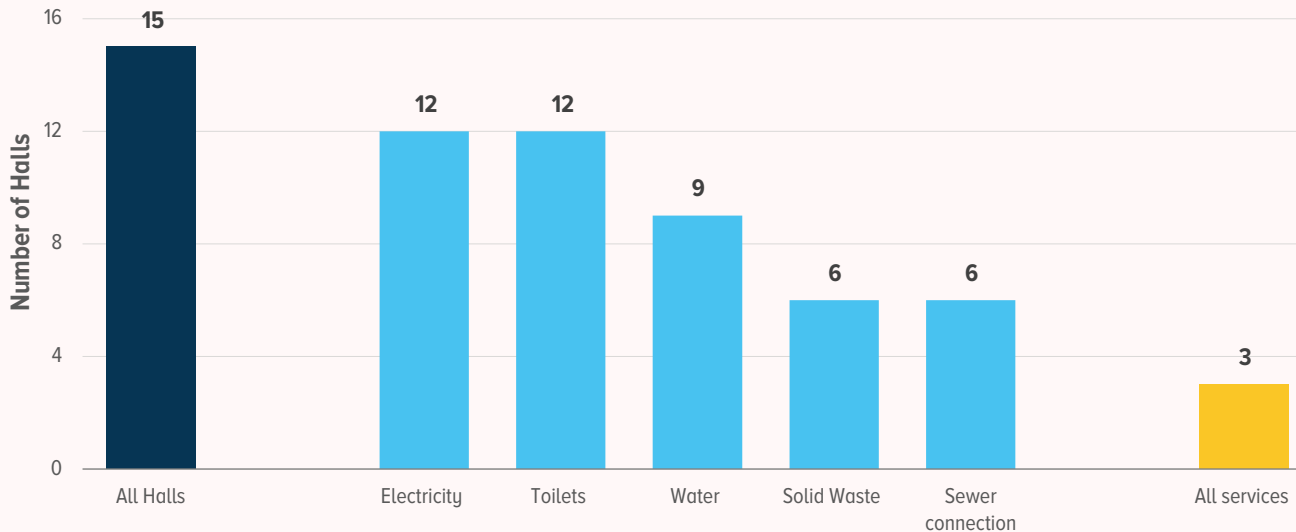


Figure 27: Services available in social/ community halls

In terms of social/community halls management, 7 community organization, majority being community groups, are involved; they include Community Media Trust, Dunga BMU, Kisumu Yatch Club, KUAP Pandpieri, Nyaweri Youth Group, Makasembo Self Help Group, Mission of Love Support and United Destiny Shapers CBO.

Besides the government, 5 facility donors were identified; they include Catholic Mission, Kisumu Yatch Club, Lions Club of Milimani, Mill Hil Missionaries and World Fair Trade Organization. Enhanced coordination of these actors and other partners and stakeholders is required in ensuring that all social facilities get access to essential services.



5. State and Access to Markets

The survey mapped 35 markets; 13 are formal markets, managed by the County Government, except 2 which are under community groups; the rest are informal, 11 being roadside markets and under no one's management. Mapping shows that locations near markets and transportation stops have better access to handwashing facilities; apparently, there are more facilities around formal markets than informal markets. The survey notes that policy actions that would result in improved access to services to both formal and informal markets are desired.

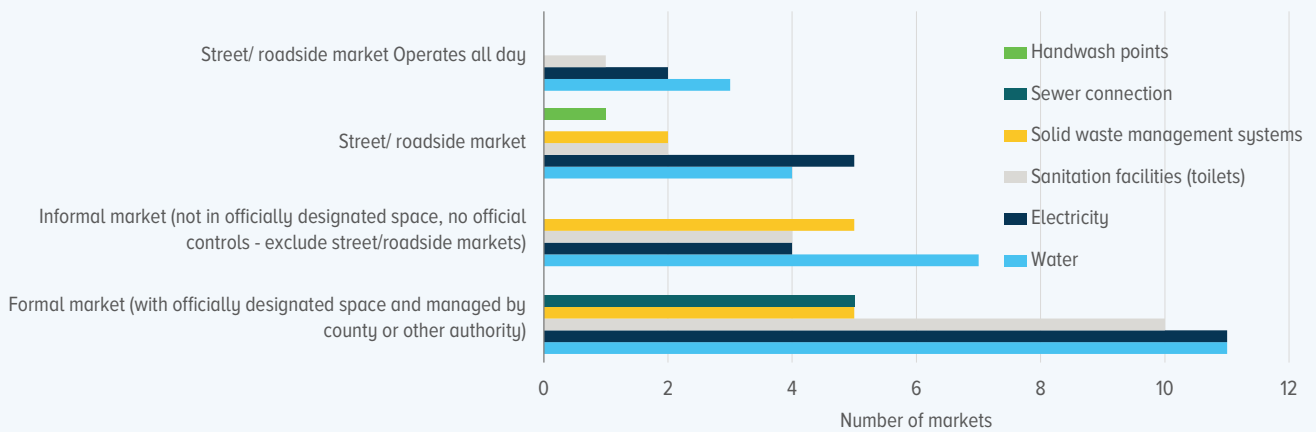
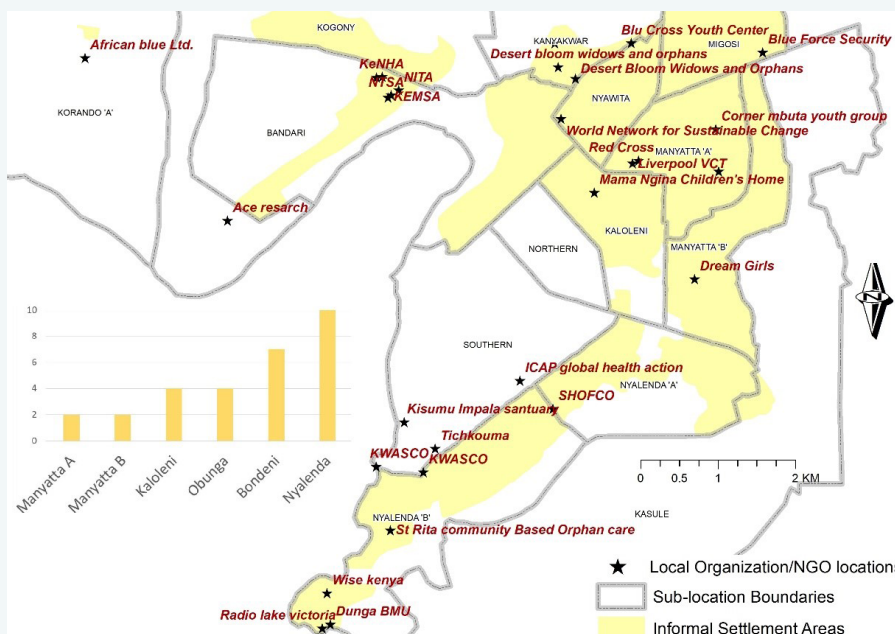


Figure 38: Locations of organizations with offices in the settlement

6. Development Partners' Services and Reach



The mapping identified 27 organizations with physical locations in the settlements. Majority of the offices are in Nyalenda and Bondeni settlements.



Additionally, the survey mapped 21 organizations having programmes in the settlements but their offices were not picked within the mapped locations. They include:

1. **Bandani:** 3 organizations, all CBOs dealing with children and orphans;
2. **Kaloleni:** 2 organizations, dealing with health, youth programmes and distribution of sanitizers and masks in response to COVID-19
3. **Manyatta A:** 7 organizations, dealing with WASH, COVID-19 awareness, sewer and water piping, savings and loans for girl child's health, and shelter and human rights.
4. **Manyatta B:** 2 organizations dealing with girls' education and WASH
5. **Nyalenda:** 3 organizations dealing with WASH, and climate change adaptation.
6. **Nyawitta:** 2 organizations dealing with youth empowerment, E-learning and COVID-19 sensitization.
7. **Obunga:** 2 organizations dealing with WASH (including distribution of soap), and COVID-19 awareness.

Out of the 48 mapped organizations, 28 have at least one WASH component in their programme activities. The rest have overlapping activities covering youth empowerment, girl child education and welfare, and financial empowerment and among others.

Key observations

The following are key observation from the mapping, and their associated action areas:

1. The informal settlements in Kisumu largely exists within areas of formal-informal settlement character; this poses a limitation in generating informal settlements' specific statistics;
2. Water points, social halls and sanitation have at least 50% of mapped facilities accessed at a cost; there is need to assess their affordability, these being among the vital facilities of the settlement
3. Overall, facilities in Kaloleni, Bondeni and Manyatta B recorded lower levels of reliability compared to other facilities in other settlements; floodlights, communal sanitation facilities have the highest proportion of not-always-functioning facilities; this points to need for location targeted interventions.
4. Up to 80% of all mapped facilities are managed by individuals; this implies higher service cost which has an impact on affordability of services.
5. Existing water points are reliable; proposed intervention on water should focus more on having water points near household locations to reduce distances travelled in accessing water, and increasing affordability.
6. There is a general pattern on handwashing facilities where more facilities are located around market areas and transport stops; while this is a positive trend, facilities around informal markets are few and need to be increased;
7. More than 70% of the water running handwashing facilities is acquired a cost and by individual business owners; the facilities are manually fed which is not sustainable;
8. Majority (12 out of 17) of the mapped solid waste management sites are in dilapidated conditions; there is need to rethink solid waste management systems in the settlement;
9. There are high number (over 70%) of privately owned health facilities; while these facilities improve the patients per facility ratio, it has an impact on affordability of services.

10. There is better access to electricity and sanitation facilities in health facilities than education facilities and social halls;
11. Solid waste management and sewer services are weak in all major facilities, particularly in social halls and religious facilities; access to hygiene services in social halls, religious facilities require improvement.
12. Informal markets, including roadside markets, are less equipped with services than formal markets; they largely lack handwashing points and sanitation facilities; there is need for spatially targeted actions.
13. The survey mapped 48 partners with majority having some role in WASH facilities/sector management; their activities do not have an even geographical reach in all informal settlement areas; there is need for better partners' coordination.

Summarizing the Mapping

Studies in deprivation and access to services in Kisumu informal settlements indicate that deprivation is widespread at the individual and housing unit level, but the settlements are largely served with public services such as schools and health centres which residents can access.²

This survey validates part of these findings, and goes further to identify location specific interventions that will help in addressing the informal settlements' need for COVID-19 response, and long term planning.

2. Simiyu, S., Cairncross, S., & Swilling, M. (2019). Understanding Living Conditions and Deprivation in Informal Settlements of Kisumu, Kenya. *Urban Forum*, 30(2), 243–244.