

## A journey of institutional change

Extending water services to Nairobi's informal settlements



**Cover image:** Residents using a pre-paid water dispenser in Nairobi. **Credit:** Brian Otieno

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## Executive Summary

This Topic Brief sets out the process of institutional change undergone by Nairobi City Water & Sewerage Company (NCWSC) to extend services to the informal settlements of Nairobi. Beginning with the creation of an Informal Settlements Department (ISD) in 2009, the utility has implemented a set of structural reforms, strategies and service delivery approaches which have engendered significant progress towards citywide service provision, and which can be instructive for utilities facing similar challenges across Sub-Saharan Africa.

### A process of institutional change

Over a period of nine years, NCWSC has undergone a process of institutional transformation in its structure and approach towards service provision in informal settlements, also referred to as low-income areas (LIAs). Figure 1 presents the key milestones in this process. Driven by the dual purpose of extending services to LIAs and reducing high levels of Non-Revenue Water (NRW) in these areas, ISD was initially created as a skeletal department of only 2 employees, anchored in the technical directorate of the utility. The responsibilities of the department gradually increased, in line with the utility's understanding of the functions ISD could perform, leading to the expansion of the department to 15 staff in 2012. That same year, the utility Managing Director and ISD Manager made the critical decision to develop a 3-year departmental strategy. Strategy development involved consultation with all levels of utility management and governance; the resulting document set out a more ambitious trajectory for service provision to LIAs, and the contribution the department could make to the overall growth of the utility. This process contributed to the

decision in 2015 to assign the ISD full commercial Region status (Figure 2), with associated commercial, technical and social responsibilities for service provision to LIAs, underpinned by the introduction of Key Performance Indicators (KPIs) to drive accountability and performance. As of 2018, the Informal Settlements Region (ISR) has over 200 employees distributed across the Region's head office and in 4 zonal offices, the most recent of which opened in Kibera in October 2018.

### A win-win situation: better outcomes for Nairobi's low-income customers, more revenue for the utility

The ISR faces a challenge on a different scale to any other utility in Kenya. The Region's jurisdiction covers 80 settlements comprising of 140 villages, with an estimated population of 1.3 million people. The creation and expansion of a dedicated utility department with responsibility for LIAs has already resulted in large-scale service improvements to these areas. Table 1 provides a snapshot of the key achievements of the ISD and

Figure 1: Milestones in NCWSC's journey of institutional change.



Table 1: Key achievements of the ISD/ISR to date. Source: ISR.

Direct beneficiaries of new connections supported by ISD/ISR	Total population served by ISR (2016/7)	Water network in informal settlements (m)	Annual total revenue of the ISR (actual data for FY 2017/8)
85,600	219,825	330,383	KES 156 million [USD 1.53 million]

ISR, indicating over 200,000 people served in FY 2016/7, and 80,000 direct beneficiaries of new household or yard connections supported by the department to date (ISR is still in the process of documenting and mapping all the available water installations in the region).<sup>1</sup> Many of these customers would have previously paid exorbitant rates for an informal supply from one of the many cartels in the LIAs; following the utility's intervention, they now have a supply that is both safer and more affordable. The total number of people who have benefitted from the utility's transformation, through network improvements, water leakage reductions and other activities, will be much larger: since 2007, the utility's partnership with WSUP alone has resulted in over 220,000 direct beneficiaries of an improved water supply, and an estimated 306,000 indirect beneficiaries.<sup>2</sup>

These vastly improved outcomes for the residents of Nairobi's informal settlements also equate to the expansion of the utility's customer and revenue base. As of 2018, the ISR is contributing over US\$ 1.5 million in annual revenues to the utility.<sup>3</sup> Again, the aggregate contribution of ISR activity to the utility's bottom line will be far higher, notably through reductions in Non-Revenue Water (NRW) due primarily to water leakage reduction: in the low-income settlement of Dandora alone, NRW reduced from nearly 100% to 27% as a result of ISR activities between July 2014 and March 2018.<sup>4</sup>

In the process of learning to serve LIAs effectively, the ISR has overcome a specific set of challenges and acquired a unique set of capabilities, including the development and maintenance of effective customer relations; a flexibility of approach to wide-ranging technical and commercial challenges; and an understanding of the critical importance of network management and NRW reduction. In developing these skillsets through the prism of serving LIAs, NCWSC has strengthened its

overall capacity, positioning the utility to provide better services for all.

### Critical drivers of success

A wide range of factors have contributed to the progress made by NCWSC in extending services to informal settlements. Interviews with NCWSC and WSUP staff, closely involved in supporting the process of institutional change, identified the following factors as being critical to success:

- **Kenya water sector reforms:** The foundations for NCWSC's current position were laid by the enactment of Water Act 2002, which introduced comprehensive changes to the legal framework for the management of the water sector in Kenya. Previously, all functions in the water sector had been performed by the Ministry of Water Development; the Water Act provided for the separation of functions, leading to the creation of the Water Services Regulatory Board (WASREB), Water Service Boards, and Water Service Providers, including NCWSC<sup>5</sup>. Water supply in Nairobi, previously a function of the city council, now sat with an autonomous utility. Although since replaced by the 2016 Water Act<sup>6</sup>, the 2002 legislation greatly improved the policy environment within which the newly-formed NCWSC would operate.
- **Sector financing:** The ISD was formed at a time where the development challenge posed by low-income urban areas had begun to receive greater global attention. This trend impacted significantly on countries like Kenya: a wide range of local and international actors were dedicating greater resource to improving the situation in Nairobi's informal settlements, including (for example) the Water and Services Trust Fund (WSTF), WASREB, African Development Bank, UN-Habitat, World Bank, KfW, Deutsche Gesellschaft für Internationale

<sup>1</sup> Source: NCWSC Informal Settlements Region (ISR), 2018

<sup>2</sup> Source: WSUP

<sup>3</sup> Source: ISR (2018)

<sup>4</sup> Source: WSUP

<sup>5</sup> Mumma A (2007) 'Kenya's New Water Law: an Analysis of the Implications of Kenya's Water Act, 2002, for the Rural Poor' in Community-based Water Law and Water Resource Management Reform in Developing Countries (eds. van Koppen B, Giordano M & Butterworth J).

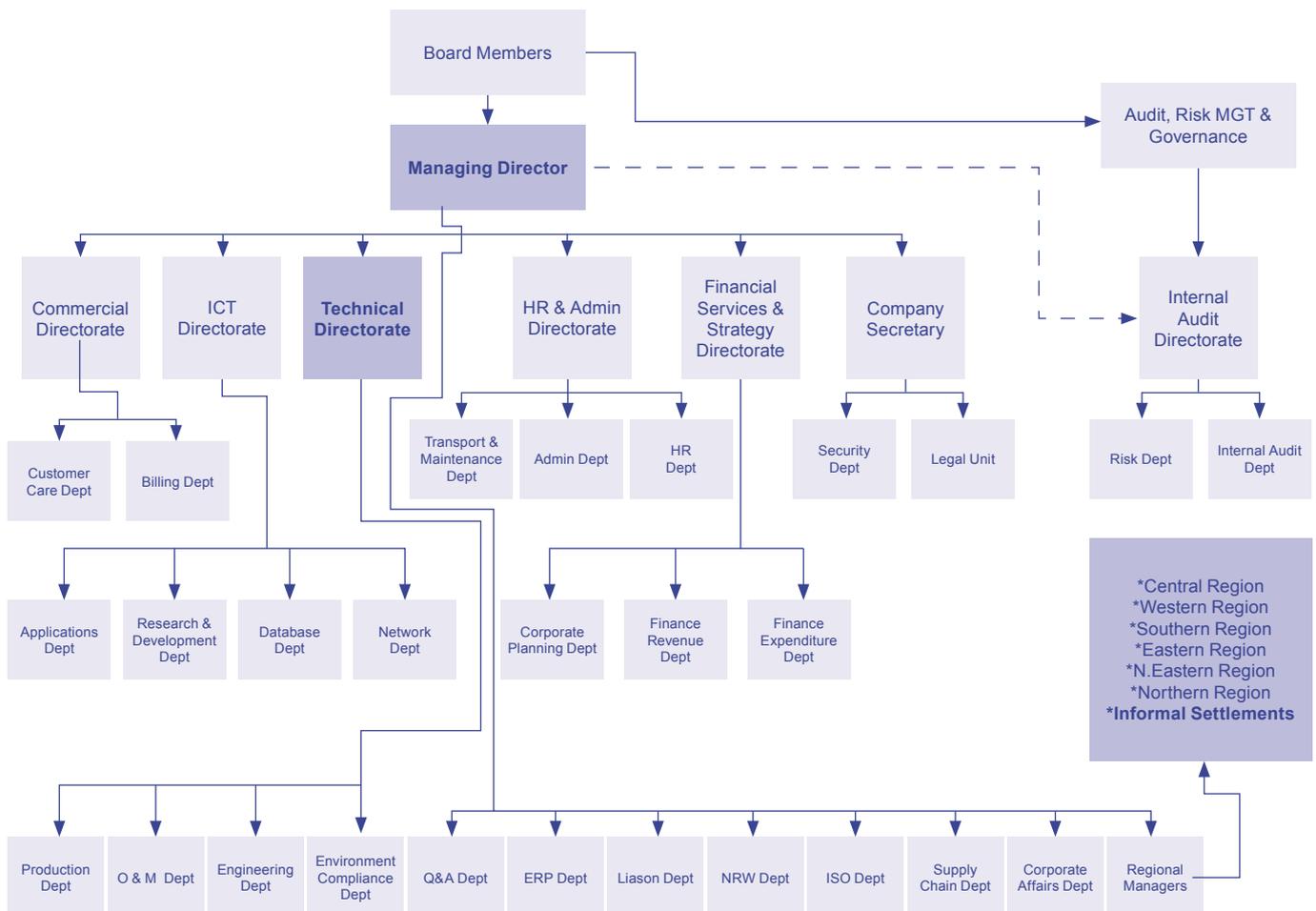
<sup>6</sup> The Water Act 2016 transferred water and sanitation provision to the County Governments: NCWSC now has to sign a performance contract with the City County Government of Nairobi for provision of services.

Zusammenarbeit (GIZ), and Swedish International Development Cooperation Agency (SIDA), in addition to WASH-implementing organisations and a wide range of civil society organisations (CSOs). The proliferation of these actors created a momentum towards improved service provision in the LIAs and further incentivised NCWSC to act. The increased availability of grants for small-scale investments was particularly significant; although it soon expanded beyond this role, an important part of ISD's initial remit was to coordinate these projects.

- **Leadership and senior management buy-in:** Structural reforms of the type implemented by NCWSC cannot be achieved without the sustained support of senior utility management and the Board of Directors. In

the case of NCWSC, the ISD and later the ISR have maintained strong links with the highest levels of utility management: the initial Manager of the ISD, Eng. Nahashon Muguna, is now Acting Managing Director of the Utility, while his successor as manager of ISD, Eng. Lucy Njambi, now heads the utility's technical directorate. The sustained presence of these internal champions has been fundamental to the formation and progression of the ISR. Their rise suggests the skillsets required to oversee service delivery to LIAs are regarded highly by utility management; and bodes well for the continued development of the ISR. NCWSC senior management commitment to the ISD was evident at an early stage, reflected in the decision in 2014 to internally allocate the Department its own budget and to grant access to investment funds and human

**Figure 2: Organogram of NCWSC.** At the time of writing, former Managers of the ISD occupy the positions of Managing Director and Head of the Technical Directorate. The current ISR Manager reports directly to the Managing Director. Source: NCWSC.



resources. Significantly, the ISR Manager reports directly to the Managing Director, accelerating the decision-making process for ISR projects.

- **Strategic planning:** The evolution of the roles and responsibilities of the ISD have been underpinned by the development of multiple strategy documents, including the draft 3-year departmental strategy (2014-2016) and the NCWSC corporate strategic plan (2014-2019). The strategies set ambitious targets for service provision to LIAs and provided a framework for the commercial, social and technical activities required to achieve them. The process of strategy review and formation helped to crystallise the potential role and importance of the ISD to senior utility management, contributing to the creation of KPIs and acquisition of Commercial Region status.

In what follows we set out NCWSC's nine-year journey to embrace the challenge of citywide service provision. We begin by outlining the scale of the challenge faced by NCWSC in providing citywide services (Section 1), and in overcoming the challenges specific to service provision in informal settlements (Section 2), the first step towards which was the inception of the ISD. Section 3 outlines the internally-driven process of strategy review to shape ISD's future role and responsibilities, culminating in the expansion of the Department to Commercial Region status. In Section 4 we detail the diverse approaches adopted by the utility to extend services to informal settlements, from network extension, tariff setting and promoting connections to sustained community mobilisation and customer relations. Notwithstanding the progress made to date, NCWSC remains at the beginning of a long journey – Section 5 provides closing reflections on next steps, challenges and opportunities.



Image: Residents filling water. Credit: Brian Otieno

# 1. Context: the scale of the water supply challenge in Nairobi

Nairobi City Water and Sewerage Company (NCWSC) is mandated to serve the entire city. This section places the activities of NCWSC within their national context and outlines the scale of the task facing the utility.

## 1.1 Water supply in Kenya

Since its inception in 2002, the activities of NCWSC have taken place within an evolving and broadly supportive policy framework. Key features of this framework and national-level progress to date are summarised below:

**The rights of Kenyan citizens to be provided with water and sanitation services is enshrined in article 43 (1) of the Constitution of Kenya, 2010.** The responsibility for delivering this constitutional guarantee primarily rests with the institutions set up by the Water Act 2002, such as the Water Service Boards (WSB), established to license and oversee the operations of all water and sewerage utilities (also known as Water Service Providers - WSPs) in their areas of jurisdiction. For example, Athi Water Services Board (AWSB) oversees Nairobi City Water and Sewerage Company (NCWSC), and Lake Victoria South Water Services Board (LVSWSB) oversees Kisumu Water and Sewerage Company (KIWASCO).

**The Water Act 2002 was repealed and replaced by the Water Act 2016 to reflect the newly devolved structures of Kenya's political framework.** WSPs are now the responsibility of the new County Governments and are granted licenses by the national water regulator, the Water Services Regulatory Board (WASREB).

**Kenya's Vision 2030 serves as the country's economic blueprint until the end of the Sustainable Development Goal period, with the explicit aim of transforming Kenya into a middle-income country whose citizens enjoy a high quality of life.** Vision 2030 includes the specific aim to improve and increase accessibility to safe water and sanitation services by 2030: 100% safe water coverage and 100% access to basic sanitation. A key strategic pathway for the achievement of this aim is to develop water and sanitation facilities that support the growing urban population.

**Medium Term Plans guide sector stakeholders towards the eventual achievement of the long-term aims of Vision 2030 and the Sustainable Development Goals.** The 2018-2022 MTP is currently being finalised, but the previous MTP 2014-2017 included a sub-programme dedicated to urban water supply, which targeted Nairobi, Mombasa, Kisumu and Nakuru, and a nationwide informal settlements programme.

**The Joint Monitoring Programme estimates that just under 60% of Kenyans had access to basic drinking water by 2015.** The number of urban Kenyans using safely managed water actually decreased from 2000 to 2015, from around 63% to 55%. Almost 17% of those living in cities in 2015 were drinking surface, unimproved or limited water<sup>7</sup>. If it is to achieve its ambitious national water supply target by 2030, Kenya will need to pay US\$ 12.9 billion per annum. The current financing gap is estimated to be US\$ 7.3 billion<sup>8</sup>.

## 1.2 Water supply in Nairobi

**Nairobi is one of Africa's largest cities and the centre of East Africa's regional economy. It is also one of the world's fastest growing cities - with a swelling population that is expected to reach 14 million by 2050<sup>9</sup>.** Nairobi's population growth is primarily

<sup>7</sup> See <https://washdata.org/data#/ken>

<sup>8</sup> Sanitation and Water for All (2017) Kenya overview: Water, sanitation and hygiene. Available at [http://sanitationandwaterforall.org/wp-content/uploads/download-manager-files/2017%20Kenya%20Overview\\_final.pdf](http://sanitationandwaterforall.org/wp-content/uploads/download-manager-files/2017%20Kenya%20Overview_final.pdf)

<sup>9</sup> Global Environment Technology Foundation, The Nature Conservancy and WSUP (2018) Growing Nairobi, flowing Nairobi. Available at: <https://getf.maps.arcgis.com/apps/Cascade/index.html?appid=a18818ec2f1a4c8f939a606e0dd1aa83>

happening in pockets throughout the city, as seen in Figure 3; these pockets are largely low-income settlements. Figure 4 demonstrates that in addition to being overcrowded, these settlements also have the lowest access to water.

Figure 3: Population density in Nairobi (Source: Image: GETF and WSUP, 2018. Data: Ledant, M, 2013).

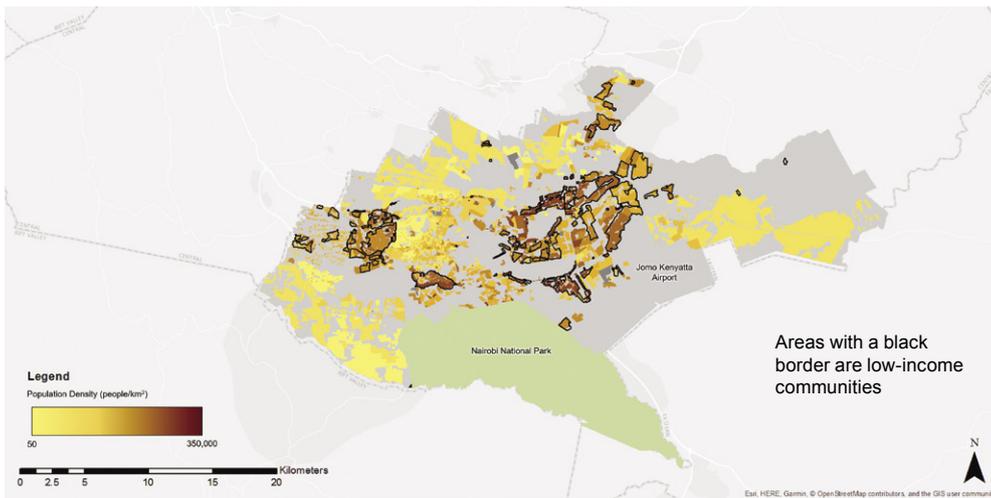


Figure 4: Water access in Nairobi (Source: Image: GETF and WSUP, 2018. Data: Ledant, M, 2013).

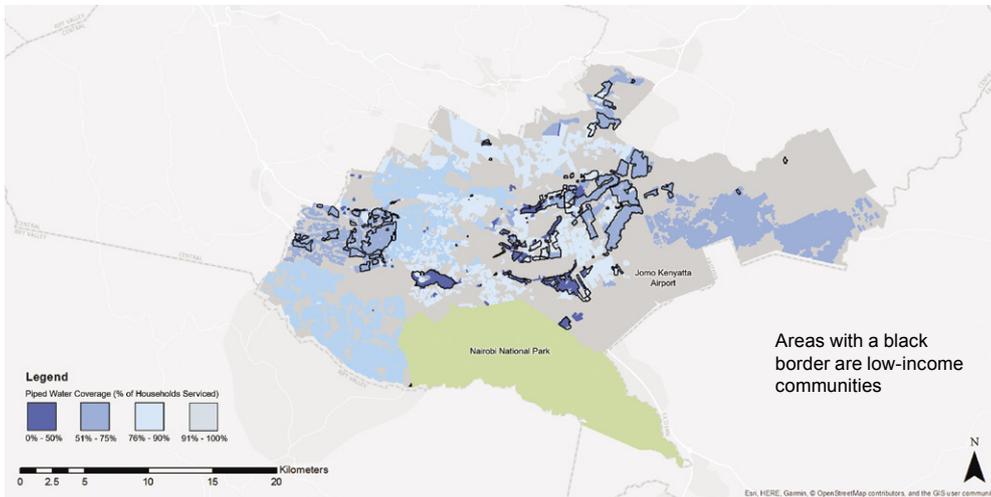


Figure 5: NCWSC mandate, vision and values. Source: NCWSC (2015).

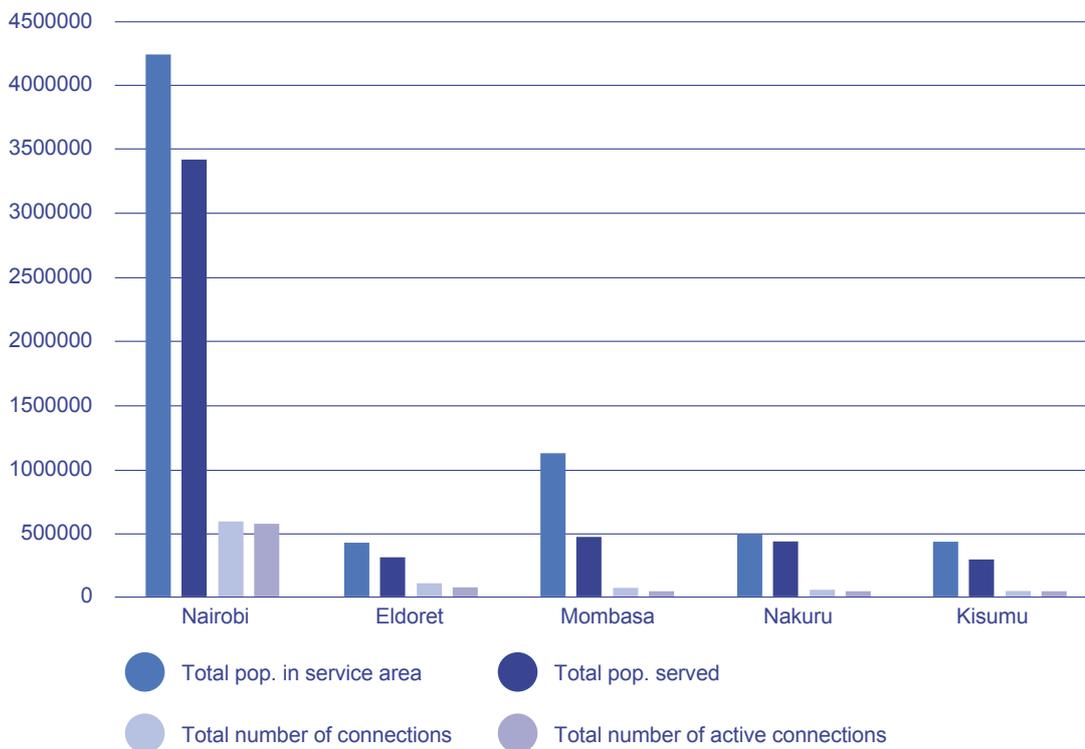
<b>MANDATE</b>	Provide water and sewerage services to the residents of Nairobi County, in a financially sustainable manner and within government regulations.						
<b>VISION</b>	To be a world class provider of water and sewerage services						
<b>VALUES</b>	Accountability	Customer focus	Commitment	Creativity and innovation	Integrity	Professionalism	Teamwork

As the mandated water service provider for Nairobi, NCWSC is responsible for providing water to all residents in the city, including the residents of informal settlements. NCWSC divides the city into six administrative Regions: Northern, Eastern, North Eastern, Central, Southern and Western. Each of these are then sub-divided, making 25 zones in total. Since 2015, Nairobi’s informal settlements have been grouped together as a seventh administrative Region – the Informal Settlements Region (ISR) – reflecting the unique challenges of serving these areas (see Section 3). NCWSC’s commitment to providing high-quality water supply services to all citizens of Nairobi is reflected in the utility’s statement of official mandate, vision and values, presented in Figure 5.

With a service area of 4.25 million people and counting, the challenge faced by NCWSC in providing water services at scale is incomparable to that encountered by other urban utilities in Kenya; Mombasa is the only other utility responsible for serving more than 1 million people (Figure 6). As of 2017, the proportion of Nairobi’s population served by NCWSC stood at 81%; within informal settlements this figure has grown from 12.8% in 2015 to 17.4% in 2017<sup>10</sup>.

As with other urban water utilities in Africa, climate change represents a significant threat to the long-term sustainability of the services NCWSC provides. The utility’s ability to fulfil its mandate is dependent on efforts to protect and conserve water resources in Kenya.

Figure 6: Largest Kenyan utilities (by population served), 2016/7. Source: WASREB (2018) Impact: A performance report of Kenya’s Water Services Sector 2015/16 and 2016/17.



<sup>10</sup> Source: ISR

## 2. Laying the foundations: creation of the Informal Settlements Department (ISD)

The formation of the Informal Settlements Department (ISD) provided the catalyst for NCWSC's ongoing journey towards citywide service provision. This section documents the socio-economic reality of the informal settlements at that time, and the initial steps taken by the utility to improve the situation.

### 2.1 Nairobi's informal settlements, 2006 - 2009

#### 2.1.1 Socio-economic characteristics

In the years before the ISD's creation in 2009, Nairobi's informal settlements (also referred to as Low-income areas – LIAs) were regarded as immensely challenging locations in which to work, irrespective of the sector. A 2006 study found these areas differed markedly from other parts of the city across a range of socio-economic factors. Characteristics of the settlements as summarised by Gulyani (2006) are listed below<sup>11</sup>:

- **Income:** 73% of the LIA population were classified as poor, living on less than US\$ 42 per month.
- **Housing:** the vast majority of residents – 92% – described themselves as tenants. Renters made up 82% of Nairobi's populace as a whole, but in informal settlements there are particularly high rates of absentee landlords - only 5% of those who formally own land or collect rent lived in the area. LIAs were (and remain) densely populated, with an average of only 1.2 rooms per household and 2.5 people in each room. The dwellings themselves were not well constructed – 88% of walls were classed as 'impermanent' and nearly every structure had a tin roof (98%). Despite this, the average resident had spent nine years living in a slum area and half felt that their tenure in their home was secure.



Image: Street scene, Nairobi. Credit: Brian Otieno

- **Employment:** Unemployment in the LIAs stood at 26% overall; 46% of young people and 49% of women were unemployed. However, households in the LIAs were found to be highly entrepreneurial: 31% of households in the LIAs ran an enterprise, employing 19% of the LIA population.
- **Safety (crime):** 63% of LIA residents felt unsafe in their own settlement; 27% were victims of a criminal incident in the previous 12 months.
- **Enfranchisement:** LIA residents were found to be politically active: 82% voted in the 2002 Kenyan national elections.

#### 2.1.2 Water supply

Water ranked as a top priority for slum dwellers in 2006, together with sanitation, health and electricity. Only around one quarter had access to a private toilet, and far less had access to piped water. Those who did have access to piped water found that the supply was intermittent; 40% of utility customers did not receive 24 hours of supply and 10% received water only once a week<sup>12</sup>. More than half of the water that NCWSC treated was unaccounted for after entering the network – this was mostly due to poor

<sup>11</sup> Gulyani S (2006) Inside informality: Poverty, jobs, housing and services in Nairobi's slums.

<sup>12</sup> Water and Sanitation Program (June 2005) Rogue No More? Water Kiosk Operators Achieve Credibility in Kibera. World Bank.

infrastructure and subsequent leakage, but water theft and inadequate billing also contributed to high NRW rates.

Less than 60% of Nairobi households owned a legal water connection provided by the utility. In the gap left by inadequate public provision of safe water, residents of informal settlements grew used to poor access to sub-standard services<sup>13</sup>. The significant section of the population (most of whom were lower income) that did not have a legal connection to the network had to access water through other means. This included water purchased from informal vendors (such as kiosk owners or water deliverers) or through illegal connections. The vendors themselves tended to resell water from the network. In 2005, there were more than 650 water vendors in Kibera alone<sup>14</sup>. The costs of running an informal kiosk were passed on to residents – in Kibera in 2005, kiosk customers were paying four times the national average per cubic metre of water. This extortionate pricing would increase during water shortages. Overall, this meant that lower-income Nairobi residents paid more per unit of water than their better off counterparts.

Collectively the socio-economic characteristics and existing water supply situation presented a unique set of challenges. The ISD was formed to improve the situation for residents of the informal settlements, and in recognition that a different approach would be needed to serve these areas effectively.

## 2.2 Formation of the ISD

Prior to the formation of ISD, NCWSC had a limited presence in the LIAs, and was involved in several ad hoc projects. Nonetheless, the formation of the ISD – initially two staff, a Manager and Social Development Officer – represented a step change in the utility's commitment to improving the water supply situation for residents of the LIAs, providing the institutional foundation for sustained and structured engagement in service provision to these areas.

The formation of the ISD was preceded by the development of 'Strategic Guidelines for Improving Water and Sanitation Services in Nairobi's Informal Settlements', developed by NCWSC and Athi Water Services Board (AWSB) with support from Water and Sanitation Program – Africa Region (WSP-AF). The Guidelines committed NCWSC to promoting and facilitating the increase of basic sanitation facilities to informal settlements; the construction of improved kiosk structures to facilitate a higher-quality service by individual or community operators; a review of procedures and charges for house or plot connections; and the launch of a social connection program to facilitate more affordable access to piped water by poor households<sup>15</sup>. The initial activities of the ISD broadly aligned with these areas, with particular emphasis on service delivery improvements. This reflected priorities of the wider sector in Nairobi at the time, where NGO-led community development models predominated, and only limited support was available to provide holistic institutional-strengthening activities.

### Box 1: Drivers behind the formation of the Informal Settlements Department.

The following aims were identified by NCWSC staff as contributing to the formation of the ISD:

- Improve service delivery to LIAs, in accordance with national-level policy and NCWSC mission to provide citywide services
- Empower communities through water supply-related time, cost and socio-economic savings
- Increase revenue collection from LIAs to promote financial viability and sustainability
- Reduce levels of Non-Revenue Water (NRW) in LIAs
- Increase visibility of the company in LIAs
- Curtail the activities of cartels in LIAs by supplying residents with a safer, cheaper water supply
- Enhance coordination of NGO and CBO-led water supply projects in the LIAs

<sup>13</sup> Huchzermeyer M (2008) Slum upgrading in Nairobi within the housing and basic services market: A housing rights concern. *Journal of Asian and African Studies*, vol. 43: 1, 19-30

<sup>14</sup> WSP (June 2005)

<sup>15</sup> NCWSC & AWSB, 2009



**Image:** Pre-paid water dispenser installed in the community. **Credit:** Brian Otieno

Box 1 presents the factors which informed NCWSC's decision to create the ISD. Improved service delivery to LIAs was identified by NCWSC respondents as the overriding driver – in the judgement of senior utility management, this could only be achieved through the creation of a specialist team that could respond to the specific challenges of serving informal settlements. In addition, it was hoped that the ISD could respond to a wider set of interconnected objectives, notably a reduction in the high levels of NRW arising from illegal connections, leakages and infrastructure vandalism in the LIAs; increasing revenue collections from the LIAs; and more effective coordination, regulation and oversight of the many formal and informal actors involved in water supply to these areas.

Although a long-term strategy for the department was yet to be developed, creation of the ISD represented a clear indication of NCWSC's commitment to serving low-income customers, as well as providing a window of opportunity for stakeholders committed to supporting long-term pro-poor institutional reform. The existing high level of interest in improving conditions in Nairobi's LIAs, from a wide range of local and international actors, was itself significant in driving the creation of the ISD; because of these activities, ISD was positioned to adopt and support proven community-based service delivery models, and to leverage and coordinate increasing levels of donor investment. In the next section we explore how ISD expanded its role beyond project coordination, adopting a holistic approach to service provision to low-income customers.

## 3. A process of institutional change: ISD transformation over time

The Informal Settlements Department (ISD) began with two employees, anchored in the utility's technical directorate. It is now established as a fully-fledged commercial Region, with over 200 staff performing diverse financial, commercial, social, security and technical functions. This section details the process of institutional reform undertaken by the ISD from 2009 onwards.

### 3.1 Evolution of the Informal Settlements Department: 2009 – 2012

As outlined in Section 2, the establishment of ISD was a key turning point for NCWSC. Initially skeletal in size, the department was anchored in the technical directorate, with the core purpose of enabling the utility to manage services in low-income areas. In addition, the ISD was tasked with the coordination of numerous donor-funded projects being implemented by local and international development organizations on behalf of community groups. Although well-intentioned, these investments were further stretching demand for services by extending unplanned networks, providing an additional foothold for illegal connections and as a result, increasing non-revenue water and exposing low-income residents to further exploitation by cartels. To improve services at scale, ISD needed to expand its role beyond coordinating donor-funded projects and towards a holistic and proactive approach to service provision to low-income customers.

WSUP and other actors worked closely with ISD in the period 2009-2012 to bring about this shift in approach. A challenge in the initial stages of the ISD was the low level of engagement between the department and other functional structures of the utility: projects implemented by ISD were undermined by the utility's inability to perform core functions critical to the sustainability of services in LIAs, including meter reading, billing, connection and leak repairs. It became

apparent that improving services to low-income customers could not be sustained without a minimum level of supportive institutional and commercial structures, financial and human resource capability, as well as adaptive staff skills; and that it would be necessary to recruit or deploy staff of various competencies for the Department to meet its mandate. This led to NCWSC restructuring the ISD in 2012, positioning it to become a functional department: the team expanded to 15 staff members, widening the profile and skillsets of ISD staff to include departmental engineers and sociologists. An important step during this period was the development of a draft ISD departmental strategy. In discussions between WSUP and NCWSC, it was agreed that ISD was at a critical point in its growth: the timing was right to take stock of experience to date and to strategize for a more ambitious and focused operation. As part of ongoing business development support to the utility, ISD and WSUP managers suggested development of a departmental strategy - a proposal that was fully backed by ISD senior management.

### 3.2 ISD Strategy Review

The ISD strategy review was conducted in 2012 through a consultative process which sought to involve all staff in the utility, including middle and senior management teams. Through intensive consultation, the review aimed to promote proactive decision-making at the highest levels of utility management and governance. A CIPP Model of program evaluation (Context, Input, Process and Product) was applied to assess the development, application and results of the 2009 strategic guidelines. This was conducted in a series of interviews, focus group discussions, workshops and meetings, followed by a SWOT analysis to establish the status of the external and internal business environment of ISD; a stakeholder analysis was also conducted to better understand stakeholder expectations regarding the role and function of the ISD, with inputs from partners including World Bank, Water Services Trust Fund (WSTF), Athi Water Services Board (AWSB),

Umande Trust and Pamoja Trust.

### 3.2.1 ISD Review Findings

The review analysed 1) ISD's key achievements to date; and 2) ISD's internal and external contextual environment. Aside from the pervasive realities of Nairobi's informal settlements – including unemployment, low service coverage, affordability, illegal connections, informality of services and land tenure (see Section 2) – the political context had evolved significantly since the ISD's inception. Under the new Constitution of Kenya 2010, water and sanitation had been elevated to become a basic human right; there was mounting pressure from the government leadership, local politicians and citizens to improve services, and acknowledgement within NCWSC that existing structures within the utility could not support required levels of service delivery to informal settlements.

The review included several important findings that could be leveraged to elevate service delivery by ISD, presented in Table 2. ISD had received an internal annual budgetary allocation

of KES 25 million – a significant amount which indicated a level of prioritisation from utility senior management, but which was nonetheless insufficient for ISD to fulfil its mandate. The review also revealed internal weaknesses that inhibited ISD in performing its role effectively.

### 3.2.2 ISD strategy 2014-2016

The ISD strategy review revealed barriers inhibiting growth and performance, as well as opportunities for transformation. The next step was to develop an ambitious growth strategy to propel ISD to a more prominent role in the overall business operations of NCWSC. Championed by Eng. Lucy Njambi, acting Manager of the ISD, a new 3-year departmental strategy was developed for 2014-2016 through a consultative process with leadership at all levels of the utility. The strategy was characterised by four core overarching goals and four key pillars of activity, conceived to enable ISD to meet its obligations and transition to a stronger functional unit within the utility.

Table 2: SWOT analysis of the ISD. Adapted from NCWSC (2013) Sustainable strategies for informal settlements, 2014 – 2016.

Strengths	Weaknesses	Opportunities	Threats
Proven ability to diversify the Company's external funding base	Insufficient number of employees (12) and vehicles (2)	Evident potential to grow the Company customer base in the informal settlements	Lack of internal coordination and alignment of the ISD to other departments, making it a subservient arm of the company
Established track record of improving relations between NCWSC and communities in the LIAs, leading to reductions in vandalism and illegal connections	Insufficient budget (KES 25 million annually)	A supportive policy environment, including a commitment from the Kenyan government to achieve universal coverage	Political interference in investment planning within LIAs
Strong relationships with external stakeholders	Perception among utility staff that working for the ISD was a low-profile position and represented demotion; unclear procedures for staff secondment	Emerging technologies such as pre-paid meters	The presence of cartels in LIAs, which frustrates effective service delivery
Increasing support from the top management of NCWSC, already manifested in greater human resource capacity and internal facilitation of ISD operations	Poorly coordinated initiations and handovers between ISD the commercial regions/departments	Interest from a wide range of development partners	High unemployment in LIAs, which contributes to the commoditisation of water
Significant existing infrastructure (water and sewer networks) in the LIAs	Weak internal capacity in areas including procurement, systems and project management	Supportive external initiatives (for example the Maji Data Initiative led by WSTF)	Complications in the land tenure system within LIAs
Committed workforce adapted to the demands of working in LIAs	Lack of platforms for sharing information and resources within the wider Company	Abundance of research and documentation on Nairobi's informal settlements	Poor community perceptions of public utility companies

Figure 7: Strategic goals and associated targets for the ISD, 2014 – 2016. Adapted from NCWSC (2013).



### 3.2.3 Core Strategic Goals of ISD

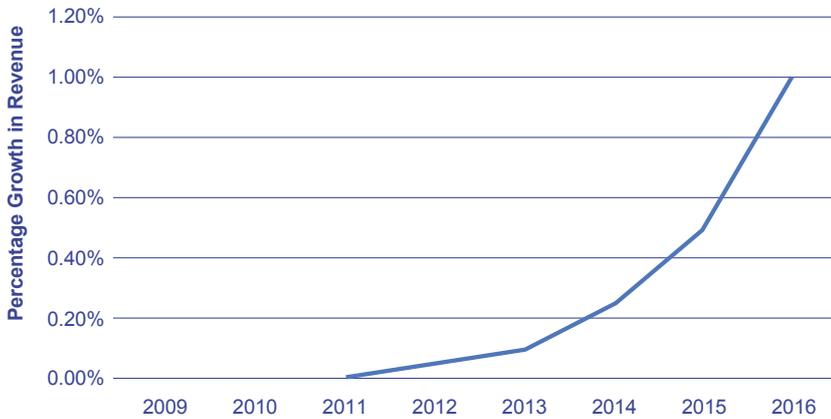
- i To provide access to adequate water and sanitation services for all in the informal settlements of Nairobi:** ISD was mandated to ensure that the entire 1.4 million people living in Nairobi's informal settlements were adequately served with water and sanitation services. A baseline survey was conducted to establish how many people were benefitting from the services provided by the company. The strategy acknowledged that given the enormity of the task, universal access within LIAs could not realistically be achieved within a 3-year period; the target was set to improve services for 200,000 customers (representing 14% of the total LIAs population) from 2014-2016.
- ii To ensure infrastructure and business sustainability:** With support from development partners, NCWSC had already channeled sizeable capital investments in infrastructure to facilitate the delivery of commercially viable services to informal settlements. While seeking to enhance the safety of the company's infrastructure, ISD would endeavor to ensure revenues reached

KES 60 million annually by end-2016, increasing the department's contribution to total company revenue from 0.25% per month in 2012 to 1% in 2016 (based on 2012 total company water revenues); although KES 60 million appeared a modest initial target, revenues were expected to grow exponentially after the three-year transition period (2014-2016) when most of the planned water supply network would be rolled out in LIAs<sup>16</sup>.

- iii To ensure proper visibility of the company in the informal settlements:** ISD recognized that enhancing customer relations in the LIAs would be central to achieving its goals. The strategy proposed to ensure proper visibility of the company in LIAs through community outreach programs and active engagements with all CBOs and other water and sanitation

<sup>16</sup> Following the expansion of the ISD to Commercial Region status, the Department greatly exceeded these revenue targets, achieving total revenues of KES 156 million in 2016/7 (see Section 4.6). A concomitant increase in total utility revenues means the Departmental share of total utility revenue has not increased; however, the setting of these targets was symptomatic of the level of ambition within NCWSC for service growth within LIAs, and influential in driving the utility to apportion Commercial Region status to the ISD.

Figure 8: Projected ISD revenue, expressed as a share of total company revenue: 2009 – 2016. Source: NCWSC (2013).



actors. In addition, ISD would establish satellite offices in the majority of LIAs to take services closer and build stronger relationships with low-income customers. This would be further cemented through implementation of the Social Connection Policy, now in the process of implementation following an initial pilot.

**iv To identify partners to fund technology investments:** NCWSC aimed to identify and mobilize external finance from private and not-for-profit stakeholders to fund hardware and software investments in the LIAs; ISD would play a key role in identifying investment priorities and requirements and tabling proposals for new partnerships.

The strategic goals of the ISD were supplemented by four key pillars of activity, detailed below.

#### **Pillar: Enhanced Service Delivery**

The strategy acknowledged the challenges of providing adequate water and sanitation services to informal settlements. ISD undertook to enhance its service delivery through more proactive community engagement; development of an investment masterplan, through which every stakeholder could contribute to serve LICs; and developing a strong stakeholder engagement mechanism to facilitate active participation by the different actors. It was imperative that ISD develop closer working relationships with all departments in the Company, especially the commercial Regions; to achieve this, ISD would seek management support to develop



**Image:** Community consultation as part of service extension in a Nairobi LIA.  
**Credit:** Brian Otieno

LIC-service Key Performance Indicators (KPIs) for the Regions, to make explicit their responsibility for services in LIAs<sup>17</sup>. The introduction of KPIs would strongly incentivise regional managers to enhance service provision in the informal settlements within their jurisdiction.

#### **Pillar: Revenue Growth**

It was evident that informal settlements presented the next frontier of growth through which NCWSC would increase its customer base. Increased revenue would come through greater water sales to existing customers and onboarding of new customers. Reductions of NRW were integral to the strategy, both to increase water availability to

<sup>17</sup> This proposal was superseded by the introduction of KPIs for the newly formed Informal Settlements Region (ISR): see Section 3.3.1.

Figure 9: Pillars of ISD Departmental Strategy 2014 – 2016. Adapted from NCWSC (2013).



meet expected greater demand and to boost revenue. It was also important that NCWSC gave greater priority to individual water connections, only adopting communal sources (kiosks and yard taps) where this was not possible.

**Pillar: Non-Revenue Water Reduction**

Non-Revenue Water (NRW) was considered an independent strategic pillar because of the vast amount of water-loss experienced in LIAs. It was then estimated that NCWSC lost around 40% of its water through illegal connections, leakages and administrative losses; in some LIAs the figure was close to 100%. Under the new strategy, ISD would conduct regular surveys and work with the commercial Regions and the

communities to detect and reduce leaks and illegal connections in the informal settlements. Reducing NRW would lead to savings on operational expenditure and losses, which could then be allocated to support wider business objectives; enhance affordability of water supply to low-income customers; and increase the amount of water available for sale in LIAs and other areas of the city.

**Pillar: Security of Infrastructure**

In the years preceding strategy development, NCWSC had made significant infrastructural investments that traversed key informal settlements. Due to the rampant nature of illegal water vending - the main method of water access

Table 3: Corporate Strategic Theme 5. Source: NCWSC Strategic Plan 2014/15 – 2018/19.

Corporate Strategic Theme 5: Revenue Growth and Customer Loyalty	
Pro-Poor Objective	Strategy
To grow the sales volume from 60% to 84% of the production by June 2019	Implement token based pre-paid meters in the informal settlements
To increase the customer base from 280,000 to 400,000 by June 2019	Develop business marketing/development units Implementation of social connection policy in the informal settlements Review and adopt effective contracting processes to the last mile

Table 4: KPIs for ISR, 2017 – 2018. Source: ISR.

Performance Area	Indicator	Benchmark	Target	Weight
Billing	Reduction of NRW: -Installation of 31 Bulk meters by December 2017 -Reduction of NRW to 34% by June 2018	0.38	0.34	15
	Billing on actual readings as a % of total billing(CMS)	72%	80%	10
Revenue Collection	Monthly collection from current billing(CMS)	77 %	85%	9
	Monthly collection from Jisomee-80% of billing		80%	8
	Monthly collection from old debts	KES 4.3 million	KES 6.5 million	8
Staff Productivity	Compliance to meter reading calendar	-	100%	5
	Attendance to leak within TAT	52 %	75%	5
	Attendance to sewer blockages within TAT	65 %	80 %	5
	Attendance to Supply fail within TAT	37 %	50%	4
	Replacement of stopped meters	-	932	2
	Replacement of meters older than 10 years	-	1201	2
	Customers' complaint resolved within TAT	56%	90%	3
Increase access to supply	Casual workers engaged for operation work	-	<2%	2
	Increase communal connections by installing 20 No. dispensers per month		20	9
	Contract and distribute 400 new tokens per month			4
	Increase individual connections by metering and contracting 16,000 customers under the OBA project by December 2018; To meter 5,300 per year.		100%	9

in LIAs - vandalism of the laid infrastructure by cartels to facilitate illegal connections was widespread. Theft of ISD infrastructure was also common. It was determined that Regions would have responsibility for maintaining and protecting infrastructure in LIAs within their geographical coverage with operational assistance from ISD.

### 3.2.4 Integration of ISD strategy with NCWSC corporate strategic plan

The 2014-16 ISD draft strategy provided a new direction for growth of the department and built a more ambitious trajectory for LIC services contribution to utility revenue. WSUP's initial intention was to support the ISD team in lobbying senior management and the board of directors to adopt the strategy as a standalone initiative for the ISD; however, the ISD strategy process was concluded just as preparations were beginning for the 2014 - 2019 NCWSC corporate strategic plan. In a series of consultations, ISD and utility corporate management concluded it would be more beneficial to use the draft strategy developed for the ISD to influence the corporate strategic process, ensuring the integration of ISD business plan targets with wider utility strategy. In the resulting corporate strategic plan, one of the key thematic areas – strategic theme 5 – aligned

to the draft departmental strategy, placing service provision to low-income customers at the core of utility strategy for the coming 5-year period.

## 3.3 Transition of ISD into a commercial Region

The development of ambitious strategic objectives for service provision to LIAs, referenced in the ISD departmental strategy and corporate strategic plan, prepared the ground for a hugely significant institutional reform: the expansion of the ISD to full commercial Region status, becoming the Informal Settlements Region (ISR).

Through the process of developing the draft ISD strategy, it had become apparent that the ISD required a substantial increase in financial and human resources to fulfill its mandate effectively. Acquisition of Region status would position the department to fulfill the wide-ranging financial, commercial, social, security and customer-relations functions set out in the strategic goals and pillars of the ISD draft strategy, and later implied in the utility's corporate strategic plan. The Manager of the ISD at the time, Eng. Lucy Njambi, played a central role in

championing the reform, which was viewed as a necessary step for scaling operations in LIAs. Sustainability concerns were central to the creation of the ISR: utility management recognized that residents in the informal settlements required “a different approach from the other customers”;<sup>18</sup> above and beyond the technical aspects of service delivery, sustainable service provision to these areas would require continuous social engagement.

ISD and NCWSC senior management concluded that LIAs would be more effectively served if operations in these areas were integrated under one commercial Region, rather than diffused across multiple regions with the ISD providing (relatively low-capacity) technical support. The decision was taken by the Board of Management and ratified by the Board of Directors.

### 3.3.1 Introduction of Key Performance Indicators (KPIs)

A key recommendation arising from the ISD strategy review was the introduction of commercially-oriented Key Performance Indicators (KPIs), to be developed at corporate level and cascaded to the rRegions to enforce responsibility for LIAs. Following the acquisition of Region status, it was now possible to develop KPIs with direct application to the ISR. KPIs were introduced in 2016 to drive accountability and performance of the ISR - including billing, revenue collection and staff productivity targets (Table 4) - and in accordance with a government directive requiring performance contracts to cover all staff. Since their introduction, approximately 70% of KPIs have been met by ISR.

### 3.3.2 The ISR in 2018

The transition of the ISD to a commercial Region was a hugely significant step forward for service provision to LIAs, positioning the utility to develop specialized knowledge and approaches of service provision to LIAs. The structure of the enlarged ISR came to mirror that of other Regions within NCWSC, with the important difference that the customer base is distributed across the city. As of October 2018, the ISR has over 200 staff distributed across its management office and 4 zonal offices, including meter readers, Operations and Maintenance (O&M) staff, commercial officers, sociologists and customer relations personnel. A complete

organogram of the ISR is provided in Annex 1. NCWSC staff identified wide-ranging positive impacts resulting from the ISD’s transition to a commercial regional unit, detailed below:

#### Enhanced financial and commercial capacity

When first created, the ISD was exclusively a social and coordination support unit. The Manager of the ISR now has access to key technical and commercial staff; s/he is positioned to collect own revenue, which is reported as part of the region’s KPIs. Of critical importance is ISR recourse to its own dedicated budget with commercial costs for the region – previously the department received minor internal allocations and was largely dependent on donor supported investments.

#### Streamlined operations and responsibilities for service provision to LIAs

Structural reforms to the ISD have streamlined utility operations in LIAs. Responsibilities for service provision to this very sizable customer base are now consolidated in one regional department, with staff having the express purpose of improving services to LIAs, and zonal offices to bring operations closer to low-income customers. As one WSUP respondent noted, allied to the region having its own budget, this means the utility “has people that wake up with the mandate to serve LICs”. ISR staff have a set of revenue and infrastructure-related challenges specific to working in LIAs, and which they must respond to in order to meet targets; as a result, they are incentivized to expose the challenges they are facing to utility management, and “problems get identified and acted upon”.

#### Evolution of staff attitudes towards working in informal settlements

A key impact of ISD’s transformation has been a change in the way utility staff view working for the department. Initially, utility staff perceived that a placement in the ISD denoted underperformance in previous postings – staff members working in informal settlements were internally perceived as rejected, making the posting feel like a covert form of punishment. The elevation to regional status largely changed this perception, especially with enablement equivalent to other commercial regions. The ISR is now regarded as a place where utility staff can plan large-scale service

<sup>18</sup> Source: ISR

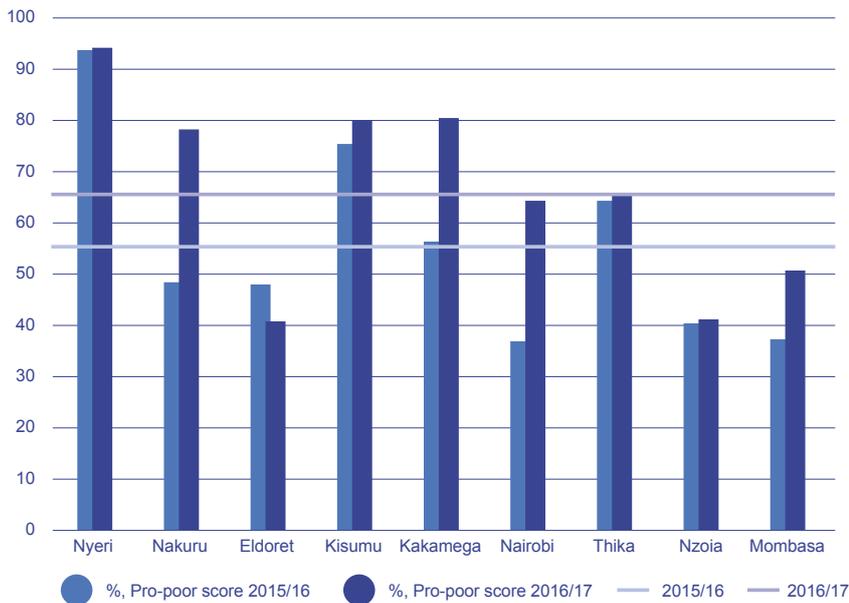


Figure 10: Pro-poor baseline comparison for large WSPs in Kenya. Source: WASREB (2018).

improvements, generate valuable revenue and contribute to the overall wellbeing of the company, not only its social image.

### 3.4 Conclusion

The ISD has evolved from being a relatively small department within a wider utility structure to a fully-fledged Commercial Region with over 200 staff. The foundations for this transformation were created through a 3-year process of strategic review and restructure undertaken through a series of consultations within all levels of utility management. Through this process, aspirations for the role and potential impact of the ISD shifted significantly; new strategic goals were established with the primary focus of delivering services at scale, accompanied by a commercial outlook focusing on modest and incremental revenue generation and NRW reduction, in addition to social considerations for water and sanitation services delivery. It became apparent that the skills, knowledge and capacity of the department would need to expand in parallel with the unit's broader strategic remit: the department would need closer alignment with wider utility strategy, greater status within the company to motivate staff, and KPIs to drive accountability and performance. Together, this presented a compelling case for the expansion of the department to commercial regional status.

The transformation of the ISR is ultimately a product of corporate commitment and senior management buy-in. In terms of aggregate customer base, the acquisition of regional status was emphatically justified: the ISR is now

responsible for an estimated population of approximately 1.3 million people living across the city. NCWSC senior management commitment to the department was evident at an early stage, reflected in the decision in 2014 to internally allocate the Department its own budget and to grant access to investment funds. A number of individuals played a central role in this progression, but it is important to acknowledge the role of two internal champions in particular, both of whom managed the ISD and continue to hold leadership positions within NCWSC – the utility's Acting Managing Director, Eng. Nahashon Muguna, headed the ISD in its formative stages, while Eng. Lucy Njambi, instrumental in championing regional status for the ISR, now heads the utility's technical directorate.

The transformation of ISR's structure and mandate is still evolving. The 2018 annual performance report of Kenya's water services sector, produced by the water and sanitation regulator, WASREB – Impact Report 10 – shows there is still clear room for improvement in aspects of ISR performance (see section 5). However, there are indications that the evolution in the roles and responsibilities of the department has already translated into improved outcomes, with NCWSC's pro-poor score increasing markedly from 2016 to 2017 (see Figure 10). In the next section we detail the key aspects of NCWSC's approach to serving informal settlements which are driving these improvements.

## 4. Serving the unserved: ISR approaches to service provision in informal settlements

Service provision to informal settlements brings with it a specific set of commercial, social and technical challenges. The resolution of these challenges provides an opportunity for utilities to develop new capabilities and significantly enhance their overall capacity. This section sets out key steps taken by ISR to bridge the service gap and expand the low-income customer base.

### 4.1 Extending the water network

An important initial aim of the ISD was to improve infrastructure within informal settlements. Many LIAs lacked secondary or tertiary networks to facilitate uptake of connections. ISR has helped to channel significant investment into network extension in LIAs and this continues to be a critical function of the region. As of October 2018,

over 330,000 metres of pipeline have been laid in Nairobi's informal settlements; there is significant variance in the length of network within individual LIAs (Figure 11), with the most extensive network in Kibera, Nairobi's largest informal settlement with an estimated population in excess of 300,000. A number of further improvements are underway, for example the installation of 2km of water pipe in Biafra, a community on the edge of Nairobi river, which will benefit 20,000 residents when completed in 2019.

### 4.2 Promoting water connections

Even where the networks are in place, uptake of water connections in informal settlements cannot be taken for granted. Utilities must overcome multiple challenges to stimulate demand, including striking the right balance between affordability and financial viability in setting tariffs; engaging with landlords (including absentee landlords) to promote investment in new

Figure 11: length of water network in Nairobi's informal settlements. Source: ISR.

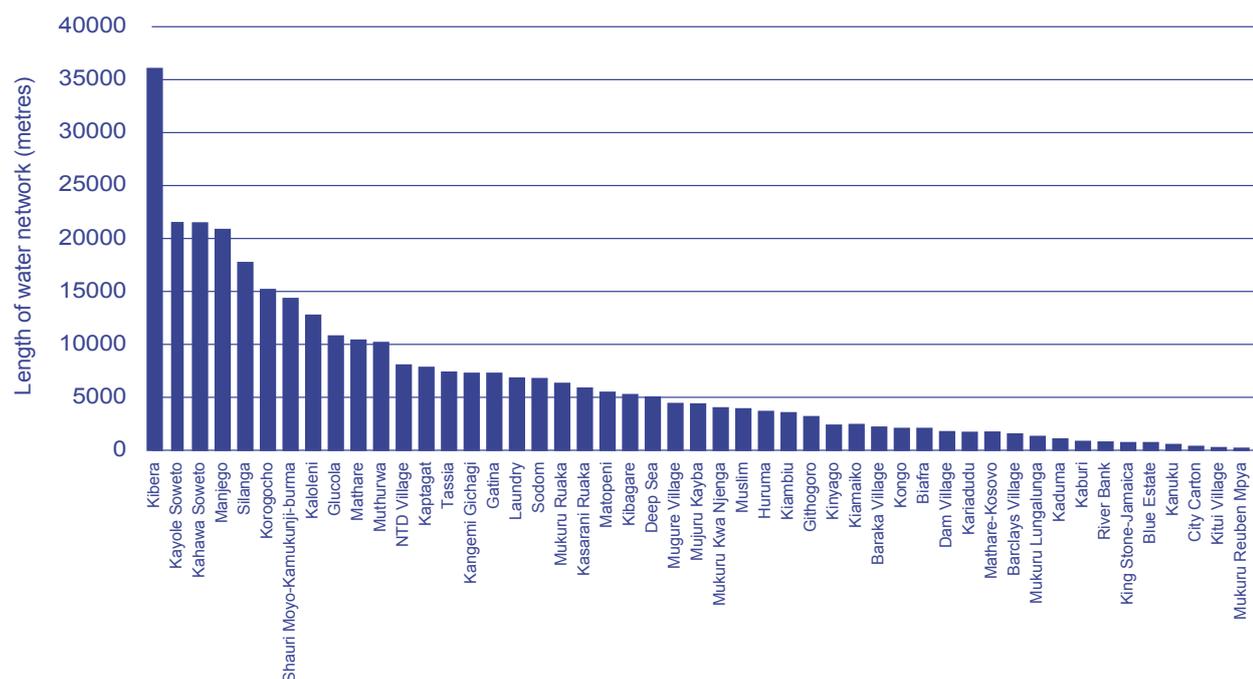


Figure 12: NCWSC water connections promotion model. Adapted from WSUP (2014) Water connections promotion strategy.

<p><b>Community mapping to enable detailed planning for landlord engagement</b></p>	<ul style="list-style-type: none"> <li>• GIS referencing of plots</li> <li>• Community map developed with data on landlord name, contact, plot number, GPS coordinates, number of households on plot, current water source</li> </ul>
<p><b>Awareness creation and community engagement</b></p>	<ul style="list-style-type: none"> <li>• Community-level consultative sessions targeting landlords and residents within the project catchment</li> <li>• Project Task Team formed comprising of village elders, local administration, local elected leaders and representatives of vulnerable groups</li> <li>• Local sales promoters and NCWSC sociologists engaged in identifying potential connection points and issuing application forms to landlords</li> <li>• Clarification of modalities and requirements for formalising connection to NCWSC network</li> </ul>
<p><b>Promotion of connections</b></p>	<ul style="list-style-type: none"> <li>• Establishment of local office to coordinate demand creation, accelerate application processing, enhance customer care and utility brand building</li> <li>• Potential water connection points identified from existing secondary and tertiary lines; planned network extension and intensification</li> <li>• Identification of existing dormant and active connections; illegal connections</li> <li>• Promoting connection uptake to metered water supply by dispatching serialised NCWSC application forms to targeted households/plots; assisting prospective customers in completing forms</li> <li>• Responding to customer complaints specific to water connections in the area</li> <li>• Disconnection of emergent illegal connections and prosecution of offenders</li> </ul>

connections; and building trust in the utility among the low-income customer base. Since 2012, NCWSC has implemented a strategy for promoting water and sewer connections across the city, with support from partners like World Bank and WSUP. In Maili Saba area of Dandora, water supply network extension was accompanied by a connections promotion model which emphasised a formative process of community engagement (Figure 12). The model utilised a team of locally hired sales promoters, NCWSC sociologists and customer care personnel to trigger landlord applications and investment in formalising water connections, and to ensure landlord responsiveness to water bill payments. Once initiated, application status was tracked at the respective NCWSC regional office and ISD to ensure that the applications were processed within the seven days stipulated in the NCWSC service charter; following completion of the connection, ISD and regional customer care staff worked together to monitor the service provided to newly connected customers. Under this model, supported by WSUP under the SWIFT project consortium, the focus on promoting connections built on back-end technical support to landlords and residents by NCWSC. These activities were accompanied by

reduction of informal water vending and massive disconnection of illegal connections; an accelerated connection process; enhanced revenue collection and NRW management; enhanced customer care; and operation and maintenance of the water network. The SWIFT project, which took place between year July 2014 and March 2018, resulted in 52,000 direct beneficiaries from an improved service; reductions in NRW from 100% to 27%; and a monthly revenue collection from the settlement of KSH 423K whereas previously it had been zero. This is a powerful example of the gains that can be made in service provision to informal settlements within a relatively short project lifespan.

### 4.3 Tariff setting

Urban WASH service provision requires ongoing revenues to facilitate cost recovery for the service provider. At the same time, it is critical that services remain affordable for low-income households and reach the city's most vulnerable residents. This tension is fundamental and must be addressed by all utilities aiming to extend services to low-income areas. ISR staff recognise that revenue generation is an

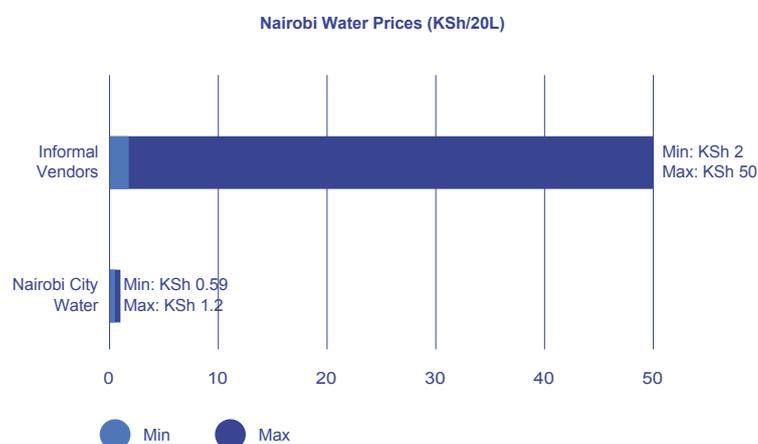
important driver for service provision to LIAs; however, it was emphasised that service provision is the overriding justification – even more so in the Kenyan context where universal access is enshrined in the constitution. This is reflected in the NCWSC social tariff of 50 cents per 20-litre jerrycan charged to customers in informal settlements – well below the upper limit of 2 Kenyan shilling (KES) stipulated by the Kenya water and sanitation regulator, WASREB, and less than neighbouring utilities in Kenya. Tariffs were set following internal studies to assess the cost of providing connections to LIAs: the tariff reflects the actual cost of production but does not take account of additional operational costs (e.g. the cost of labour).

The situation in Nairobi reflects WSUP's wider experience of inequities in water access. In low-income urban areas without a piped utility supply, low-income consumers are likely to be paying above the odds to an unregulated informal supplier; in many cases they pay more than the resident of a neighbouring high-income community with a piped utility supply. Prior to the intervention of NCWSC, this was certainly the case in Nairobi's informal settlements, where residents could be paying between 2-5 KES to a cartel for an informal water supply (Figure 13): the service now being provided by ISR is both safer and more affordable.



**Image:** NCWSC staff member in the community.  
**Credit:** Brian Otieno

**Figure 13:** water prices charged by informal vendors and NCWSC respectively. Source: GETF, The Nature Conservancy, WSUP (2018). Data: Africa Check.<sup>19</sup>



An important mechanism for safeguarding affordability to low-income customers is the provision of flexible payment models. In Nairobi's informal settlements, poorer households who want to connect are given the option of a no-interest loan to cover the connection charge which can be paid back in up to 30 monthly instalments (60 months for connections to the sewer line). "Little and often" flexible billing options are also provided – customers with shared or household water connections can use mobile platforms to send a meter reading and pay through their phone whenever is convenient for them, rather than being restricted to a monthly payment model.<sup>20</sup>

#### 4.4 Service delivery models for informal settlements

From its inception ISR recognised that service provision to informal settlements would require a "menu" of service delivery options, each with different characteristics and different cost-benefit equations for the customer and utility.<sup>21</sup> The unique nature of low-income urban areas requires a flexible approach: although household connections are the target water supply option for urban customers – providing the most convenient way for households to purchase water – shared connections can provide a valid alternative in densely populated settlements with cohesive community structures. ISR aimed to provide a mix of services, with the type of connection influenced by property ownership, population

<sup>19</sup> See <https://africacheck.org/reports/nairobis-water-2-claims-losses-high-cost-slums-evaluated/>

<sup>20</sup> For more on balancing affordability and financial viability in water services provision, see WSUP (2017) Balancing financial viability and user affordability: An assessment of six WASH service delivery models; WSUP (2014) The Urban Water Supply Guide: Service delivery options for low-income communities.

<sup>21</sup> See WSUP (2014a) The Urban Water Supply Guide: Service delivery options for low-income communities.

density of the area, flexibility of the local distribution network, and other factors.

#### 4.4.1 Pre-paid dispensers

An important innovation by ISR has been the introduction of pre-paid dispensers (PPDs) with defined user groups. PPDs function as standposts or inbuilt systems which dispense water in accordance with the credit the customer has pre-loaded on to their card or token. In the view of ISR staff, PPDs provide “a far better mode of serving” than conventional metered group connections: PPDs remove the need for meter reading and billing, ensuring collection efficiency of 100% and positive cash flow; provide more accurate data on water usage; and require less human intervention than other systems, making them ideally suited to serving informal settlements.<sup>22</sup>

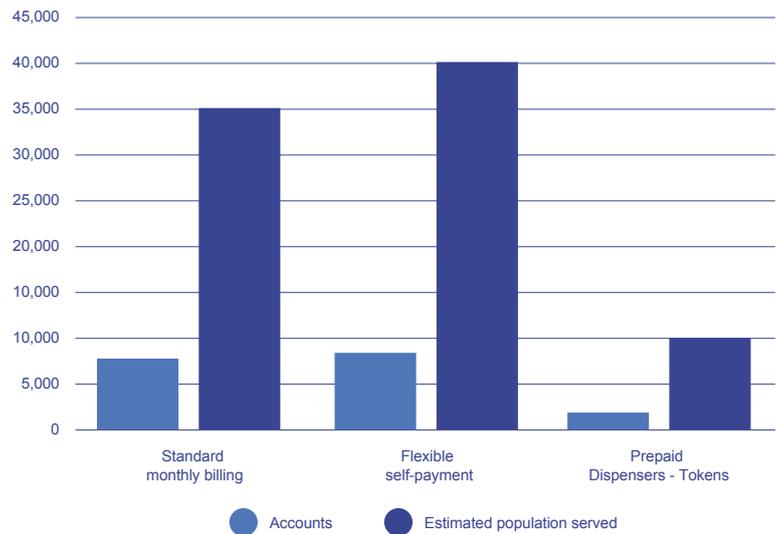
Security challenges are commonly cited as a drawback of PPD systems (together with the need for upfront utility investment in complex IT systems). To prevent damage or theft of the equipment, ISR is currently working with CBOs and church groups to support them in hosting the dispensers. Under the scheme, the host adopts responsibility for the security of the dispenser and is compensated with 40% of sale revenues. When the planned installation of a further 800 PPD systems is complete, ISR will oversee over 2,000 PPD systems in total, serving approximately 10,000 people (Figure 14).

#### 4.4.2 Gradual sewerage

Multiple actors are involved in urban sanitation service provision in Kenya, including county, city and municipal governments, utilities and the private sector. The ISD strategy outlined NCWSC’s supporting role in on-site sanitation, referencing the need to work in partnership with other stakeholders to construct sanitation facilities; and to promote private sector initiatives to improve sanitation and hygiene in the informal settlements.

NCWSC has institutional responsibility for the provision of sewerage services in Nairobi. A number of informal settlements have developed in areas already criss-crossed by sewer mains, presenting the possibility to connect households in accordance with the Strategic Guidelines for Improving Water and Sanitation Services in

**Figure 14: ISR customers with household or yard connection by payment option. Customers with a metered connection have the option of 1) monthly payment with meter reading performed by a member of NCWSC staff; or 2) self-reading their meter and processing payments as and when convenient using MPESA, the mobile money platform. NCWSC’s customer billing processes are totally paperless: all bills are delivered via SMS and paid through bank transfer or MPESA. Source: ISR.**



Nairobi’s Informal Settlements – published in 2009 by NCWSC – which formalise the utility’s commitment to providing sanitation services for informal settlements, using onsite and sewerage models as appropriate, and including the possibility of sludge disposal to sewers.

In an example of a service delivery model adapted to the specific context of informal settlements, WSUP worked with NCWSC to develop an integrated approach to sewer connections in Kibera. The ‘gradual sewerage’ approach accepted the cost to low-income households of connecting to the sewer lines was prohibitively high; instead the aim was to connect public toilets, and communal toilets where possible (beginning with near 100% subsidy, then encouraging landlord investment in a second phase); and to encourage local pit-emptiers to tip sludge directly into public toilets or directly into the sewer line.<sup>23</sup> Aspects of the pilot revealed challenges, including landlord sequestration of communal toilets, and pit-emptier commitment to using authorised disposal points; however connections to public toilets have functioned effectively.<sup>24</sup>

<sup>22</sup> WSUP (2014a).

<sup>23</sup> NCWSC was initially unwilling to authorise this, because of perceived risks of sewer blockage. This was overcome by carefully designing the system to reduce these risks, including through provision of screens at disposal points to prevent ingress of garbage.

<sup>24</sup> WSUP (2014b) Sewerage or FSM? Sometimes both: ‘gradual sewerage’ in Nairobi.



Image: Street scene, Nairobi. Credit: Brian Otieno

## 4.5 Strengthening utility-customer relations

As detailed in the above sections, service provision in informal settlements requires continual engagement with various members of the community; significant investment of time and resources into specialist staffing and training; and a willingness and ability to adapt context-specific solutions for different areas. NCWSC has demonstrated a commitment to these principles, solidifying the presence of the utility in areas previously considered too costly or difficult to work in, while at the same time ensuring that interventions have been (for the most part) welcomed by the various communities. Below we provide further context on the challenges specific to strengthening utility-customer relations in informal settlements, and how NCWSC have worked to address them over time. The continued maintenance and strengthening of customer relations will be critical to sustaining and building on the progress made to date.

### 4.5.1 Changing community perceptions of NCWSC

Low-income urban informal settlements are different to their rural counter-parts. There is commonly less space, land ownership may not be clear, tenancy turnover rates may be high, absentee landlords are common, and there is inherent weak community cohesion. Each informal settlement will have their own topographical and socio-economic dynamics. Kibera, for example, is made up of around nine different 'villages', each with their own social characteristics and spatial limitations.

One key variable that will have a significant impact on utility-community relations is whether there is already an existing supply of water in that area (safe or otherwise). Often, settlements where there has been no water supply system will be more receptive to engaging with the utility than those where an informal parallel water supply has already been established. In the case of the latter, cartels who control the neighbourhood's water supply will have a financial incentive to ensure that utilities gain little traction in a neighbourhood, and other members of the community will not see a need for

**Table 5: Improvements in water coverage in the Informal Settlements Region, 2014 – 2017. Source: ISR.**

Indicator	2014/15	2015/16	2016/17
Population Served by ISR	154,870	197,320	219,825
Projected Population within ISR	1,207,406	1,207,406	1,265,361
Water Coverage in ISR	12.8%	16.3%	17.4%
Additional Population Served in ISR	N/A	42,450	22,505
Water Coverage Improvement in ISR	N/A	4%	2%

government involvement. As many homes in these settlements are built illegally on government-owned land, residents may be nervous of any intervention that could be part of an attempt to formalize land tenure – including water and sanitation improvements initiated by NCWSC.

As reflected in NCWSC's connection promotion strategy (Section 3.2), these issues must be thoroughly addressed before initiating a new project in an informal settlement. The ISR undertakes intense outreach with communities to introduce the project, the service and the benefits before any construction work begins. Staff disseminate messaging about the importance of paying for safe, official water, sanitation and hygiene through 'clinics', and partner with community-based organisations, youth, church and women's groups, and local leadership. Trained sociologists employed by the utility and organisations with roots in the informal settlements (such as WSUP) are important intermediaries between these groups and the utility.

Because of this prolonged engagement process, new utility customers in informal settlements have become more willing to report problems, leakages and broken pipes to ISR's zonal offices. Constant day-to-day contact with community groups and utility staff means that the utility and residents of informal settlements can understand the issues that the other faces. Residents now know those working for the utility in the zonal offices, where they can be located, and that their problems will be addressed. In turn, the ISR can successfully communicate the importance of paying for services and not misusing infrastructure or resources if they are to be maintained and continually improved.

#### 4.5.2 Negotiating uncertain land tenancy

Land tenure in informal settlements is frequently contested. In Nairobi, 'landlord' is a catch-all term for anyone who has developed infrastructure on a plot of land, even if that land does not belong to them. Many informal settlements are built on government-owned land so cannot be privately owned, but those who invest in the development of that land (such as building temporary housing) claim de facto ownership. These landlords may then lease out any property that they have built to anywhere between 5 and 10 tenants and sub-letters. This is the case for most property in informal settlements in Nairobi – ISR estimate somewhere around 90%.

A land permit is required for a water connection, so by implication all those paying for connection to the water network will be a 'landlord', as defined above, rather than a tenant. However, absentee landlords are common, or tenants will move out and connections become redundant. In addition, some landlords may not want to pay NCWSC for water used by their tenants. In some cases, landlords have resorted to blocking off water to their tenants throughout the day to save money. In cases such as these, NCWSC staff engage with landlords and tenants, often with village elders acting as mediators.

Uncertain land tenure has wider implications. While ISR staff are aware of the complexities of land tenure within informal settlements, some donors are unwilling to fund projects where land tenancy is contested. Politicians may also be wary of supporting projects that could have implications for those living in their constituency, such as an extension of the sewer network or piped water network that could result in relocating those living on the land.

### 4.5.3 Confronting security challenges

Following years of neglect from governments and municipal bodies, residents of informal settlements have had to provide for themselves or rely on informal parallel services set up by others within their neighbourhoods. In many cases this means paying for water supplied by cartels, who access safe water from the NCWSC network illegally or from unsafe water sources.

Even following the community sensitisation sessions that now precede NCWSC's interventions, the ISR must closely monitor its infrastructure. For example, pipes bringing water into these neighbourhoods can be breached to make illegal connections, diverting water that can be sold by cartels. Sewers can also be deliberately blocked by residents who then earn money by clearing them. Frequent surveillance is performed by ISR security staff in some areas, and this has been seen to have a positive impact (although too heavy-handed a response can be counter-productive: taking residents to court can lead to the utility not being able to work in that area). Another important initiative in this area is the scheme to incentivise community-level responsibility for the safeguarding of pre-paid dispensers (see Section 4.4.1).

## 4.6 Conclusion

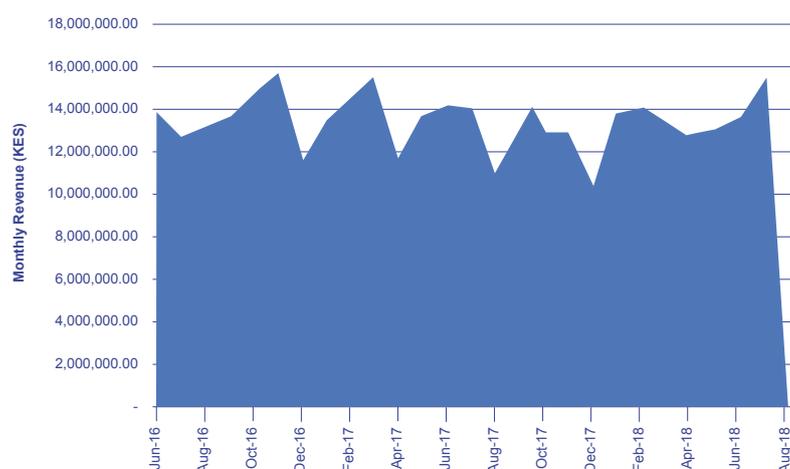
Service provision to informal settlements is uniquely challenging. Providing sustainable, financially viable services to these areas requires the development and testing of innovative, context-specific service delivery models; leakage detection, network management and other forms of non-revenue water reduction; flexible payment models, revenue collection processes and wider commercial acumen; negotiation of land tenure and security challenges; and sustained community outreach to promote ownership, engender positive customer relations and build trust in the utility.

ISR has already demonstrated its capacity to balance these diverse but overlapping responsibilities. The progress made by the department is encapsulated in two core metrics. Firstly, over 219,000 people in total were served by the ISR in FY 2016/7, representing an increase of 64,000 in a two-year period, equivalent to nearly 5% of the total service area population (Table 5); secondly, these service improvements have been combined with monthly revenue figures which greatly exceed the targets

set out in the ISD strategy, made possible in part by the acquisition of Commercial Region status: the strategy aspired to revenues of KES 60 million by end-2016; Figure 15 shows the ISR achieving revenues of KES 156 million for FY 2017-2018.

In WSUP's view, the capabilities a pro-poor unit must develop to serve low-income areas are of considerable wider benefit to the utility. The low-income customer base can be the most challenging demographic to engage: alternative, informal providers proliferate in these areas; dissatisfaction with the utility service may drive customers elsewhere, or result in vandalism of utility infrastructure, in a way that is unlikely to be replicated in middle or high-income areas of the city. A utility that has extended services to informal settlements will necessarily have developed a capacity for developing and sustaining strong customer relations; a flexibility of approach to wide-ranging technical and commercial challenges; and an understanding of the critical importance of non-revenue water reduction, with the resulting decreases safeguarding water and providing extra revenue for the utility to invest elsewhere (Eng. Muguna cited reductions in NRW as a core to the rationale of creating the ISD). In developing these powerful skillsets, NCWSC has strengthened its overall capacity, positioning the utility to provide better services for all.

Figure 15: Snapshot of ISR total monthly revenue (KES): June 2016 – August 2018. Source: ISR.



## 5. Opportunities, challenges and next steps

The institutional reforms undertaken by NCWSC and resulting improvement in services are already hugely significant. However, this progress is set against a long-term goal of citywide service provision that will take many more years to achieve. In this section we reflect on the challenges and opportunities ahead as NCWSC continues its journey.

### 5.1 Challenges

#### 5.1.1 Water security

Like many urban utilities in Africa, NCWSC faces considerable long-term challenges in preserving and improving Nairobi's water quantity and quality. Water production is currently insufficient to meet demand, an equation which worsens year on year as Nairobi's population continues to grow and water production stagnates. Initiatives such as the Upper Tana-Nairobi Water Fund – Africa's first Water Fund – will have a critical role to play in protecting and conserving the water resources leveraged by NCWSC at its source.<sup>25</sup>

#### 5.1.2 Continuity of supply

Linked to the wider challenge of water security, continuity of supply was described as “the elephant in the room” by one ISR respondent and is unacceptably low in parts of Nairobi's informal settlements. Longstanding challenges posed by ageing infrastructure have been exacerbated by drought in recent years, leading to a citywide reduction in average service hours of 18 to 6 hours in 2016/17.<sup>27</sup> NCWSC publishes supply hours online for most areas of the city, but many customers in informal settlements have to rely on word of mouth, causing further disruption; continuity of supply is also a particular challenge for the maintenance of pre-paid dispensers, which have a tendency to ‘sell air’ after a supply interruption. Table 6 presents a summary of utility performance from member countries of the Eastern and Southern Africa Water and Sanitation Regulators Association (ESAWAS), clearly highlighting that while NCWSC has become one of the strongest performers in areas including collection efficiency and metering, continuity of supply is markedly out of step with the utility's performance in other areas.

Table 6: Summary of utility performance by ESAWAS.  
Source: WASREB (2018).<sup>26</sup>

	Water Coverage, %	Sewerage Coverage, %	Water Quality, %	Hours of Supply, hrs/day	O+M Cost Coverage	Collection Efficiency, %	Staff Cost vs O&M Costs, %	Staff/1,000 W&S Connections	Metering Ratio, %	NRW, %
AdeM	63	-	99	13	113	93	30	3	81	42
DAWASCO	55	7	100	17	190	55	36	5	98	53
LWSC	83	13	98	17	115	77	66	7	67	46
NCWSC	81	50	93	14	105	104	56	6	100	38
NWSC	78	8	98	18	135	97	41	6	100	28
WASAC	95	-	95	15	140	102	30	4	100	39
WASCO	62	6	95	18	103	81	39	6	100	47
ZAWA	78	10	58	20	60	35	33	8	7	53

<sup>25</sup> Global Environment Technology Foundation, The Nature Conservancy and WSUP (2018).

<sup>26</sup> AdeM - Águas da Região de Maputo; DAWASCO - Dar es Salaam Water and Sewerage Authority; LWSC - Lusaka Water & Sewerage Company; NWSC - National Water and Sewerage Corporation, Uganda; WASAC - Water & Sanitation Corporation, Rwanda; WASCO - Water & Sewerage Company, Lesotho; ZAWA - Zanzibar Water Authority.

<sup>27</sup> WASREB (2018).

### 5.1.3 Infrastructure development

Notwithstanding recent extensions to the water and sewer networks in informal settlements, water infrastructure remains inadequate across Nairobi: the utility is currently only able to meet 65% of the city's daily water demand.<sup>28</sup> Political interference can be a significant issue in approving required infrastructure works, worsened by the refusal of bilateral and multilateral partners to fund projects where land tenure is in question. Lack of technologies adapted to serving LIAs also contributes to the shortfall in meeting demand. A notable example offered by ISR respondents is the continued use of concrete as the standard material for sewer networks – this can be unworkable in LIAs, where lighter, more flexible materials are required to support network extension.

## 5.2 Opportunities

### 5.2.1 WASREB pro-poor KPI

NCWSC's trajectory towards citywide service provision is in step with wider institutional initiatives in Kenya. In a significant development, WASREB has introduced a new Key Performance Indicator (KPI) mandating utilities to report their efforts to serve low-income areas, with support from WSUP. KPI 10 requires utilities to demonstrate their pro-poor strategies, mapping and engagement, now essential to placing highly in WASREB's annual ranking. NCWSC participated in a successful pilot of the KPI from 2015-17; the remaining 40 urban WSPs will be brought into the KPI 10 reporting process over the next year, in time for the 2019 Impact Report.

KPI 10 requires utilities to institutionalise LIA service provision - from obtaining corporate commitment from the board of directors to designing subsidies and tariffs that will benefit poorer customers. Although NCWSC has already taken many of these steps, widespread adoption of the KPI will only make the utility's task easier as political momentum towards inclusive citywide service provision in Kenya continues to build.



Image: Resident using a pre-paid water dispenser in Korogocho. Credit: Eric Gitonga

### 5.2.2 Leveraging NCWSC corporate commitment

Table 7 presents NCWSC's scoring from the initial pro-poor assessment published by WASREB. The table is an accurate reflection of the utility's current positioning. Scoring for water coverage and levels of service demonstrate that notwithstanding the important steps outlined in this publication, there is a substantial progress still to be made; however, the higher score for "strategy and organisation" is significant. In creating and expanding the ISR and associated strategies, NCWSC has created an institutional structure conducive to at-scale, financially viable service provision in LIAs. This is coupled with senior management who understand the imperative for the utility to fulfil its mandate through citywide service provision; and who have demonstrated their willingness to invest finance and human resources to help bring this about. Although sustained corporate commitment cannot be taken for granted in any business, this more than any other metric provides a basis for optimism.

Table 7: WASREB pro-poor assessment: NCWSC scoring. Source: WASREB (2018).

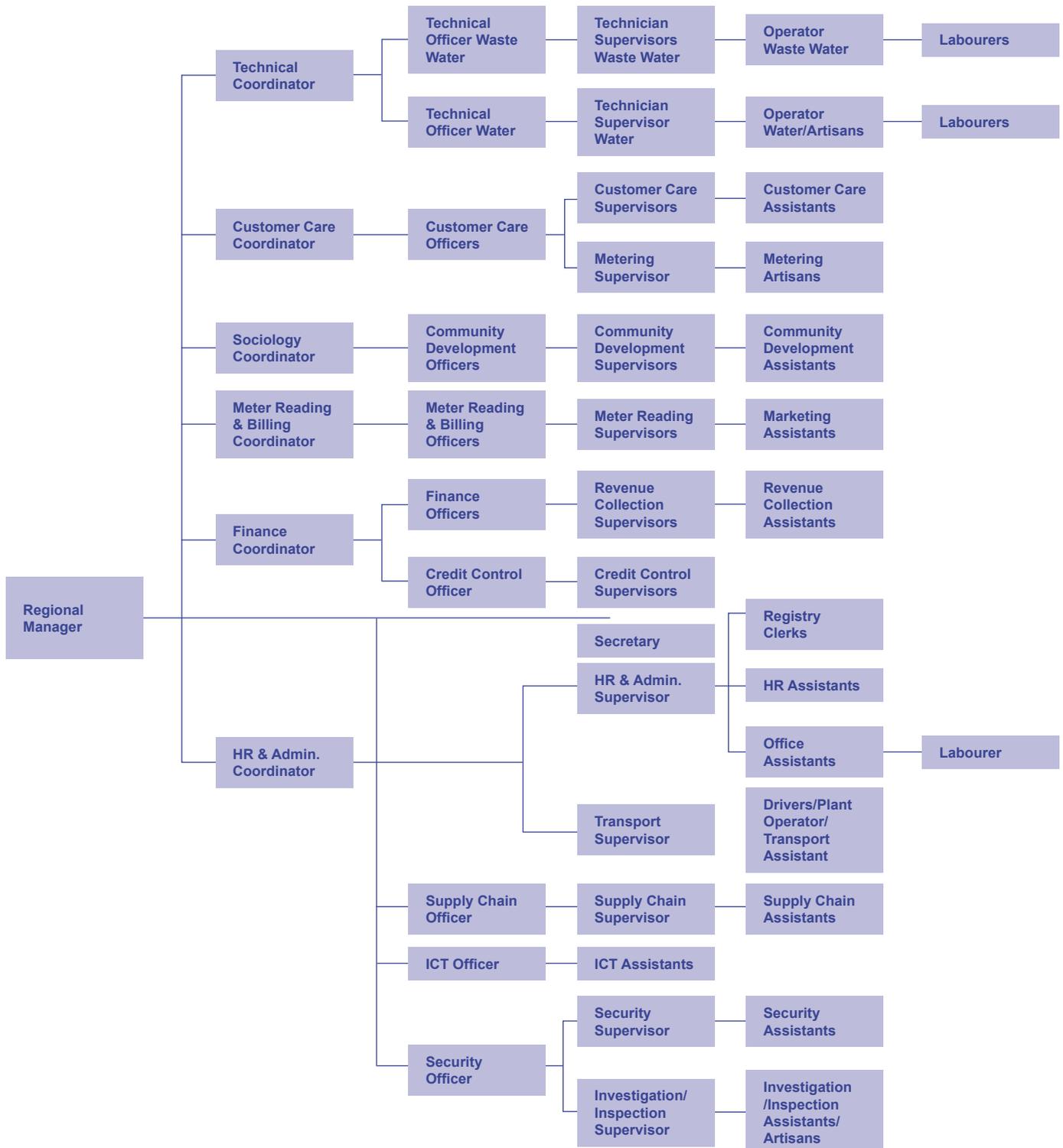
Water coverage in low-income areas	Levels of service in low-income areas	Strategy and organisation	Compliance to standards for water kiosks	% score	Weighted score
4/8	7/16	23/32	20/28	64%	840

<sup>28</sup> Global Environment Technology Foundation, The Nature Conservancy and WSUP (2018).

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# ANNEX 1: Informal Settlement Region (ISR) organogram



## ANNEX 2: NCWSC partnership with WSUP

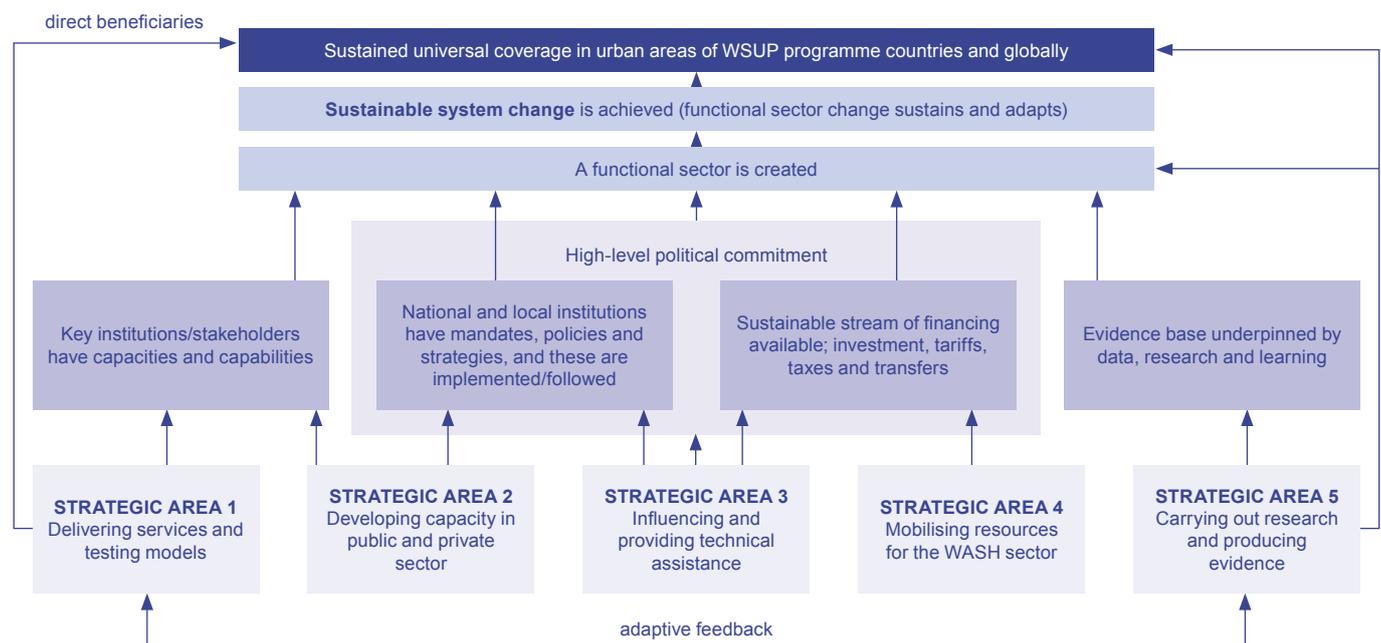
WSUP began working in Kenya in 2006, shortly after the organisation was created. From the outset, WSUP's activity in Nairobi reflected the conviction that citywide sanitation service provision must be driven by local providers with the mandate to serve an entire city.

### 2.1 WSUP's theory of change

In the context of water services provision, WSUP aims to build long-term, trusted partnerships with mandated utilities, and to equip them with the necessary capacity to respond to the challenges inherent to their particular context: this is achieved by implementing a "demonstration" phase to understand what is possible, before working side-by-side with utilities over time to initiate institutional reforms, enhance financial flows, develop services and build infrastructure that will help them reach low-income customers (Figure 16).

Over time, the partnership with NCWSC came to provide a test case of WSUP's Theory of Change in practice. At the point of WSUP's inception there were few successful models for pro-poor WASH capacity development; the business of institutional-based pro-poor service delivery was weakly understood, and practical knowledge had to be developed. The starting point in Nairobi and elsewhere was to carry out basic service and institutional capacity assessments, leading to the identification of 1) service delivery models for testing and 2) capacity development interventions to position the utility to serve low-income customers better. Assessment findings led to a project development and piloting phase, generating practical knowledge on the feasibility of pro-poor service delivery models and institutional bottlenecks to implementation. The piloting and demonstration phase provided the foundation for WSUP and institutional partners to develop partnership agreements and jointly raise resources to implement service delivery and institutional strengthening projects.

Figure 16: WSUP theory of change



WSUP's engagement with NCWSC began in 2008 with a project development phase in Kibera - the largest informal settlement in Nairobi, with a population in excess of 300,000 people. Funded by Bill & Melinda Gates Foundation (BMGF), the project aimed to provide sustainable and affordable water and sanitation to the residents of Gatwekera in Kibera through the construction of secondary and tertiary water networks and kiosks managed by local vendors.

The next phase of WSUP's partnership with NCWSC began with the scaling-up of the pilot project with support from USAID and AusAID, leading to the construction and installation of sewer connections, water storage tanks, ablution blocks, shared toilets, sludge holding chambers and bulk meters for water supply improvement in Kibera. This was accompanied by a set of activities to improve water efficiency, reduce NRW and to enhance water services, including the provision of data loggers, electronic microphones, electronic listening sticks and other equipment to assist NCWSC in monitoring flow and pressure and to improve detection of leaks.

NCWSC staff were trained in the use of the water data loggers, associated software and other related equipment. Additional expert support on field tests and pressure monitoring was provided during a six month-long NRW reduction demonstration in Kibera.

In the years to follow, WSUP's partnership with NCWSC expanded to include the development of strategy and policy documents, notably the ISD departmental strategy detailed in Section 3; however, the capacity development activities implemented under this first phase have remained a feature of the partnership throughout.

Table 8: Total beneficiaries of WSUP activity in Nairobi, 2007 – 2018.

	Direct beneficiaries	Indirect beneficiaries
<b>Water</b>	224,859	306,242
<b>Sanitation</b>	71,418	0
<b>Environmental Sanitation</b>	15,762	0
<b>Hygiene</b>	264,063	0
<b>TOTAL</b>	576,102	306,242

Image: Resident on her way to collect water. Credit: Brian Otieno

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