

IMPROVING ACCESS TO JUSTICE AND BASIC SERVICES

Situation Analysis Report



**Land Tenure, Settlement Typologies, Livelihoods, Institutions
and Service Provision Nexus in Mukuru Kwa Njenga and Mukuru
Kwa Reuben Informal Settlements in Nairobi**

***PREPARED BY
Centre for Urban Research and Innovations (CURI)
University of Nairobi and
Muungano wa Wanavijiji***

TABLE OF CONTENTS

1.0 BACKGROUND TO THE STUDY.....	6
1.1 Context of the Study.....	6
1.2 Problem Context	6
1.3 Research Scope	7
1.4 Settlement Background	8
1.4.1 Services.....	8
1.4.2 Water.....	8
1.4.3 Sanitation.....	10
1.4.4 Solid Waste	10
1.4.5 Electricity	11
1.4.6 Community facilities.....	12
2.0 METHODOLOGY AND RESEARCH DESIGN	14
2.1 Methodological Approach	14
2.2 Research Design.....	14
2.2.1 Preparatory activities	14
2.2.2 Data Collection.....	15
2.2.3 Data Analysis.....	17
2.3 Ethical Considerations.....	18
2.4 Study Limitations	18
3.0 LITERATURE REVIEW.....	20
3.1 Informal Settlements Overview	20
3.2 Land Tenure, Settlement Typologies and Basic Service Provision Nexus	21
3.3 Governance in Land Tenure and Basic Service Provision in Informal Settlements.....	22
3.4 Conceptual Framework	24
4.0 LAND TENURE, SETTLEMENT TYPOLOGIES, AND SERVICE PROVISION NEXUS	26
4.1 Tenure	26
4.1.1 Formal Land Tenure	27
4.1.2 Informal Land Tenure	27
4.2 Housing Tenure.....	29
4.2.1 Preferred Tenure.....	30
4.3 Settlement Typology	31
4.4 Formation/ foundation.....	31
4.4.1 Spontaneous squatting.....	31
4.4.2 Appropriated.....	32
4.4.3 Speculative.....	32
4.5 Morphology	32
4.5.1 Grain analysis	32
4.5.2 Grain of Mukuru Kwa Njenga.....	35

4.5.3 Grain of Mukuru Kwa Reuben.....	36
4.6 Morphological Implications of Mukuru Informal Settlement	38
4.6.1 Organic	38
4.6.2 Moderately organic.....	41
4.6.3 Moderately refined	42
4.6.4 Refined.....	44
4.6.5 Highly refined.....	46
4.7 Open spaces.....	47
4.8 Physical Layouts and Housing Typologies	50
4.8.1 Physical Layouts	50
4.8.2 House/Building Typologies	51
Milimani Village	52
Feed the Children Village	53
Wape-Wape Village	54
Vietnam Village.....	55
Gateway Village	56
Kosovo Village.....	57
MCC Village.....	58
4.9 Synthesis: Land Tenure and Settlement Typologies Nexus in Mukuru	59
4.10 Does Tenure Situation Influence Service Provision?.....	61
4.11 Does Settlement Typology have any Implications on Level of Service Provision?.....	63
5.0 SERVICE PROVISION ENVIRONMENT: AN UNEVEN PLAYING GROUND:	67
5.1 Take it or leave it.....	67
5.2 Nowhere to run.....	67
5.3 Reflection.....	68
6.0 BEYOND SERVICE PROVISION – LIVELIHOODS, POWER DYNAMICS AND INSTITUTIONAL LINKAGES:	70
6.1 Women Groups as Sanitation Providers.....	70
6.2 Power Dynamics and Service Provision	72
6.2.1 Controlling their turf – Working with the Youth.....	73
6.2.2 The Youth and the Chief	74
6.3 Legal Connections and Illegal Extensions	75
6.3.1 The Power of Mukuru Power	75
6.4 Access to Services: Formal and Informal Institutional Linkages:	77
6.3.2 Cartels and Service Provision – A Gendered Perspective	77
6.4.1 Partnership between Njenga Power and Kenya Power Company	78
6.4.2 What does it take to get a water connection?	79
6.5 The Youth and Service Provision	81
6.6 Challenges in Service Provision:.....	82
7.0 IMPLICATIONS FOR PLANNING AND MODELLING	83

List of Figures

Figure 1 Water Reticulation in Mukuru Slums	9
Figure 2 Sanitary facilities in Mukuru Slums	10
Figure 3 Electricity Connection in Mukuru Slums	11
Figure 4 Community facilities in Mukuru Slums.....	12
Figure 5 Location of Mukuru in Nairobi County.....	13
Figure 6 Conceptual Framwork	24
Figure 7 Conceptual Framework	24
Figure 8 Grain Analysis Continuum	33
Figure 9 Grain analysis map for the Mukuru settlements	34
Figure 10 Grain of Mukuru Kwa Njenga	35
Figure 11 Grain of Mukuru Kwa Reuben	37
Figure 12 Sinking Nature of Structures.....	38
Figure 13 Organic Settlement of Mukuru kwa Njenga	40
Figure 14 Organic settlement of Mukuru Kwa Reuben	41
Figure 15 Moderately organic Area of Mukuru Kwa Njenga	42
Figure 16 Moderately Refined area of Mukuru Kwa Njenga	43
Figure 17 Moderately Refined area of Mukuru kwa Reuben	44
Figure 18 Refined areas of Mukuru kwa Njenga	45
Figure 19 Refined area of Mukuru kwa Reuben	46
Figure 20 Highly refined area.....	47
Figure 21 Large Open Spaces in Mukuru Slums	48
Figure 22 Open Spaces in Mukuru Slums	49
Figure 23 Illustration of Milimani Sample structure	52
Figure 24 Illustration of Zone 48 Sample structure	53
Figure 25 Perspective of Wape Wape structure sample 1	54
Figure 26 Plan Layout of Wape Wape Structure sample 2	54
Figure 27 Illustration of Vietnam Sample structure	55
Figure 28 Illustration of Gateway Sample structure 1.....	56
Figure 29 Illustration of Kosovo Sample structure 1	57
Figure 30 Perspective of MCC structure Sample 1.....	58

Figure 31 Plan Layout of MMC Structure Sample 1	58
Figure 32 Summary of Settlement Typology / Character	66
Figure 33 Power dynamics in Solid Waste Collection.....	73
Figure 34 Water connection Model	79
Figure 35 Power dynamics in water management.....	80
Figure 36 Service provision using PPP model	83

List of Tables

Table 1 Grain Category Table for Mukuru Kwa Njenga	35
Table 2 Grain Category Table for Mukuru Kwa Reuben	36
Table 3 Organic Settlements of Mukuru Slums.....	39
Table 4 Moderately refined Settlements of Mukuru	42
Table 5 Refined Settlements of Mukuru.....	45

1.0 BACKGROUND TO THE STUDY

1.1 Context of the Study

This report is for a research component conceived within a larger research project titled: “Improving Access to Justice and Basic Services in the Informal Settlements of Nairobi,” jointly undertaken by Akiba Mashinani Trust, Strathmore University, University of Nairobi and Katiba Institute whose purpose is to identify and understand the dynamics of service delivery, governance and land tenure in the informal settlements and to assess the application of the 2010 Constitutional provisions and innovative financial and planning models. The specific assignment for this research was to investigate the relationship between land tenure and settlement typologies; the nexus between settlement typologies and service provision; and to explore and document alternative models of basic service provision.

The specific research assignment was designed to feed into the larger goal, that is, to strengthen state and public partnerships and enhance their legitimacy and accountability in the allocation of land and provision of basic services in the process of slum upgrading. The knowledge and understanding developed through this research is intended to help add value to existing interventions but also identify new initiatives to achieve positive change for slum inhabitants. The research is expected to monitor and assess the implementation of new legislations and the institutions created under the Constitution (2010) through practical engagement with the participating institutions for the provision of secure tenure and basic services for the informal settlements.

We envision that lessons from this research will also form basis for influencing policy through possible amendments and development of innovative methodologies and tools by state and local communities. The whole process of carrying out the research in itself build awareness at the community level, foster greater citizen engagement and create a vital institution in defense of the rights of the vulnerable groups in society. This research seeks to inform and influence the laws and institutions created under new legislations to achieve equity, enhance state responsiveness and accountability, and protect the rights of the vulnerable. An in-depth study of the Mukuru slums in Nairobi provides insights and alternatives for understanding the dynamics and governance of land tenure, human settlement characteristics, and access to justice and basic services in informal settlements.

1.2 Problem Context

Access to land and shelter, physical ecology, and access to services are rated as the key variables that influence the overall form – physical and functional – of informal settlements.

Access to secure land and shelter is widely accepted as a precondition for access to other services and livelihood opportunities (Rakodi and Lloyd-Jones, 2002). Tenure in informal settlement emerges as a notion whereby *de facto*/pragmatic rights, security, and legitimacy situate people in certain ways in the development landscape that allow them access, or lack of it, to societal benefits/advantages.

Tenure systems can be viewed based on access and possession/ownership of land and/or buildings and the rights to use the same. The inhabitants and *de facto* landlords of informal settlements have structured and restructured the settlement form through acquisition of land vide largely informal land delivery mechanisms and a variety of unregulated building activities. These go further to control the activities of their plots and/or buildings thereon, including spatial compositions and access to both physical/technical and social infrastructure. It follows that the bulk of development in informal settlements is both unlicensed (not formally permitted) and unregulated, ranging from access and use of the land to building construction, and service provision.

Therefore, the possibility of a correlation between these (i.e. access to and ownership of land, the building typologies, and models of service provision) cannot be overlooked. Yet if such correlations were existent as between land tenure and settlement typology; or that of tenure and service delivery models, they cannot be taken for granted (thus seen under one rubric) because of internal typological variations of informal settlements. Seen from this perspective, the triad of tenure, settlement typology, and service delivery begins to point to a conceptual framework for understanding and improving informal settlements, including the dimension of governance. This study set out to explore such a framework using Mukuru kwa Njenga and Mukuru kwa Reuben informal settlements in Nairobi as case studies.

1.3 Research Scope

The spatial scope of this research covered two adjacent informal settlement clusters in southern Nairobi, namely, Mukuru kwa Njenga and Mukuru kwa Reuben. The two clusters together cover about 450 acres in size with Mukuru Kwa Njenga taking up 250 acres and Mukuru Kwa Reuben 200 acres. Mukuru Kwa Reuben and Mukuru Kwa Njenga fall within Imara Daima and Mukuru Kwa Njenga sub-locations in Mukuru Kwa Njenga location in Embakasi division. The settlement is divided into 21 villages, 10 being from Mukuru Kwa Njenga and 11 being from Mukuru Kwa Reuben. These villages include: Gatope, Mombasa, Feed the Children, Rurie, Simba cool, Bins, Falcon, Kosovo, Railway, Wesinya and Diamond (*see map 1*).

This study focused on the following; an analysis of the existing land tenure systems in the two informal settlements, analysis of the tenure administration mechanism, assessment of the

settlement structure within the two informal settlements, assessment of basic services delivery models and stakeholder analysis, power dynamics and management of basic services in Mukuru kwa Njenga and Mukuru kwa Reuben informal settlements. The specific tasks under this research were to build an empirical relationship between the variables; land tenure, settlement typologies, service provision; gender and youth; power dynamics, institutional linkages and livelihoods and to document alternative models of basic services provision in informal settlements.

1.4 Settlement Background

1.4.1 Services

Services provision in Mukuru informal settlement is done through a mixture of formal and informal interventions. This is reflected in both the physical networks and institutional agency regarding water, sanitation, solid waste management and electricity. The whole undertaking of service provision depicts overlaps between the formal and informal sector that sets the base for emergence of rich partnerships and complex power dynamics. This section will focus on the physical dimension of services provision thus will be discussed in the context of settlement structure and typology.

1.4.2 Water

The provision of water in Mukuru informal settlement is a result of combined intervention by various actors cutting across the public, non-governmental, and community sectors. The provision of water is the mandate of two main agencies that is Nairobi Water Company¹ and Athi water Services Board². The efforts of the two have been amplified through partnerships and collaborations with various other players in the non-governmental and community sectors. Initially water supplied to industries only and connections to the informal settlement were illegal. With time and through community-based partnership with service providers, minimum level of supply was provided – common water chambers as connection points from which lead pipes were connected by individual users. With time this was supplemented with water mains and system of water kiosks by Athi water Services Board following the main circulation spine, from which users will connect. This was amplified through collaborations and partnerships with Non-Governmental and Community-Based Organizations and development partners like the World Bank and European Union

¹ supply water

² provide the infrastructure

There exists a mixture of formal and informal networks of water provision. Formally, water users apply and get connected to water supplied by the Nairobi Water Company and they are billed for it based on defined tariffs. The formal water users comprise of individuals, institutions, and community-based organizations. The water is used either for private or commercial use. However, beyond this category lies another significant bracket of users who are not direct clients of Nairobi water Company but are informal (often illegal) connections, largely for commercial purposes.

The water supply landscape in Mukuru informal settlement does not reflect a uniform distribution. Water supply mains coincide with the road/circulation network; thus there exists a higher level of water supply in areas adjacent to these channels while the inner clusters portray low levels of supply. This can be used to explain the water supply variation as mapped, whereby villages such as Wape Wape depict higher supply levels, while those like Sisal portray water supply deficiencies. The organic areas of the settlements with a poor road network coincide with a lower level of water reticulation which can be attributed to the lack of adequate space and low physical accessibility.

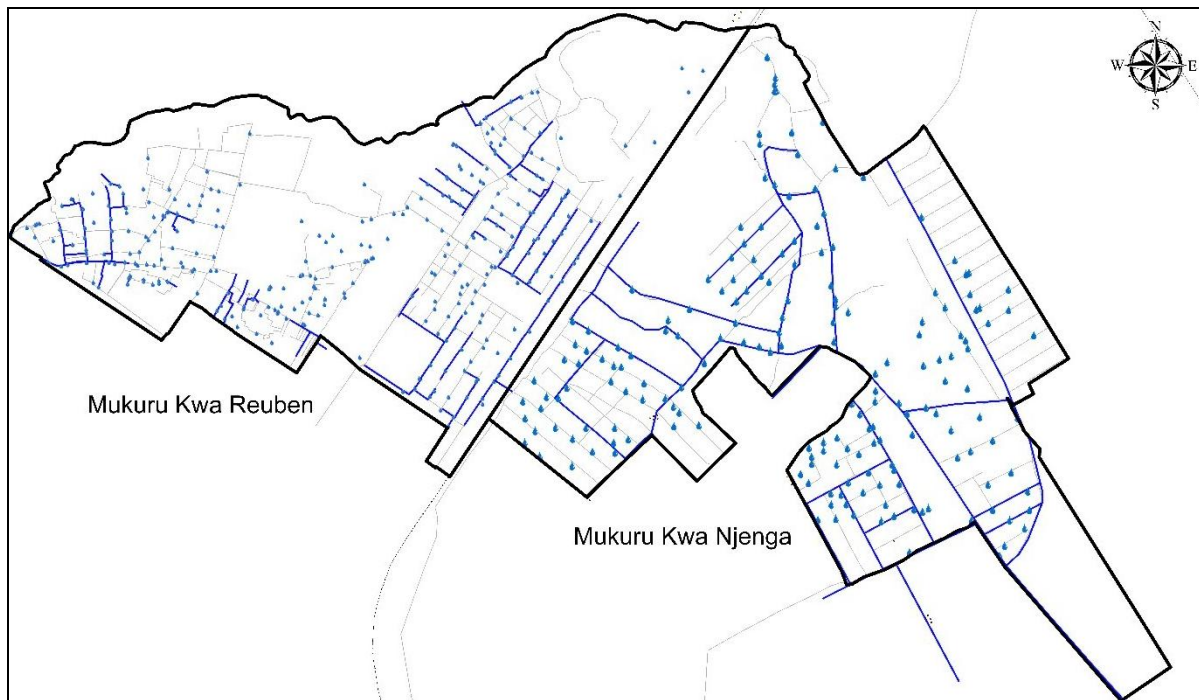


Figure 1 Water Reticulation in Mukuru Slums

1.4.3 Sanitation

The sanitation network in Mukuru is not as developed as that of water. There exists minimal coverage of sewer line, where it is mostly communal sanitation facilities and those of institutions connect. Like is the case of water, reticulation of sanitation in Mukuru Kwa Reuben and Mukuru Kwa Njenga corresponds with the character and grain of the settlement. Organic areas tend to exhibit low count of toilet blocks while the fairly refined areas have more toilets. Open drains however tend to dominate all areas of the settlement as illustrated in figure 2.

1.4.4 Solid Waste

There lacks an established network for solid waste management in Mukuru slums. There exists some recycling activities around abandoned/disused quarry sites that receive waste from wider catchment beyond Mukuru informal settlement. However, there lacks designated sites for waste collection within the settlement itself neither is there an established and structured network of collectors. In some villages, there exists inconsistent door-to-door collection by certain groups, specially the youth. The fact that there is a cost element to the services, structured waste collection does not qualify as a priority of many households.

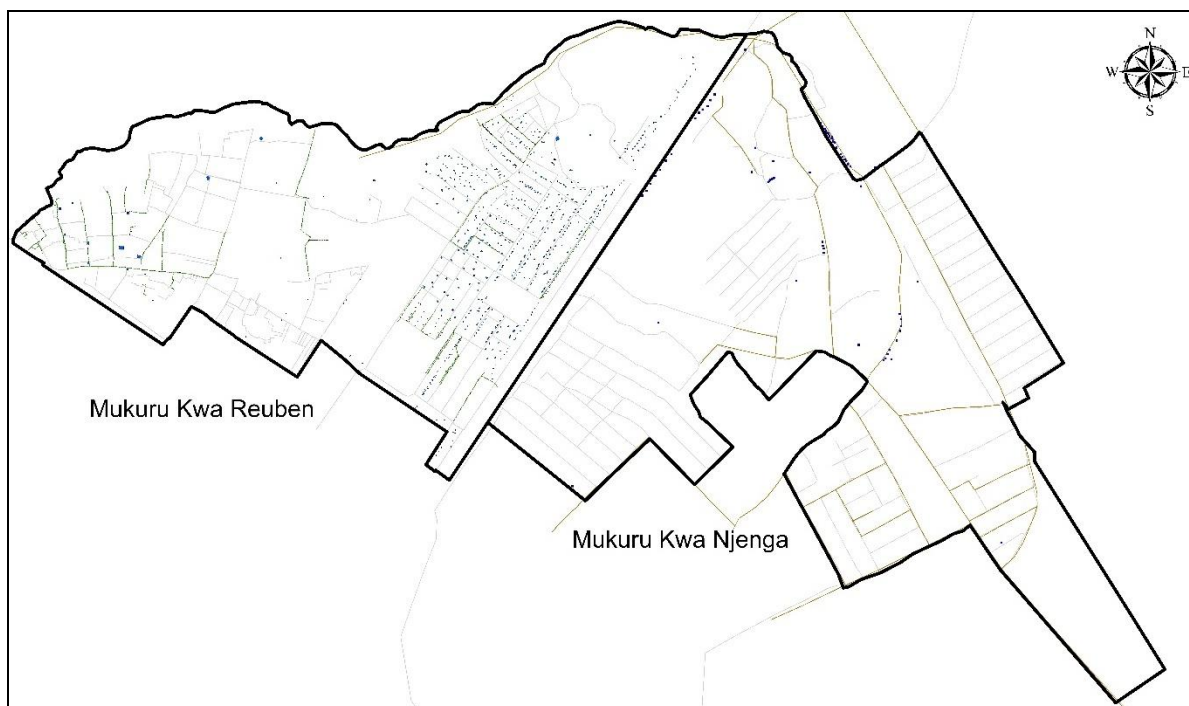


Figure 2 Sanitary facilities in Mukuru Slums

1.4.5 Electricity

Electricity supply in Mukuru, like that of water, has a formal and informal dimension. The formal supply covers those users who have applied directly to Kenya Power and have been connected to metred supply. Mostly these are private businesses and institutions like schools. The remaining category of users is supplied informally by unregistered power vendors³, who split and disseminate power from a single connection either legally or illegally connected. The power reticulation structure also corresponds to the settlement morphology, where the main power lines coincide with the main streets and the organic areas of the settlements exhibit a lower level of reticulation and an irregular network. Such a network exposes the users to electricity-related risks like surges and fire outbreaks. There are plans to improve power supply by upgrading the transformer units and regularization of power reticulation in the various clusters such as Gatope.

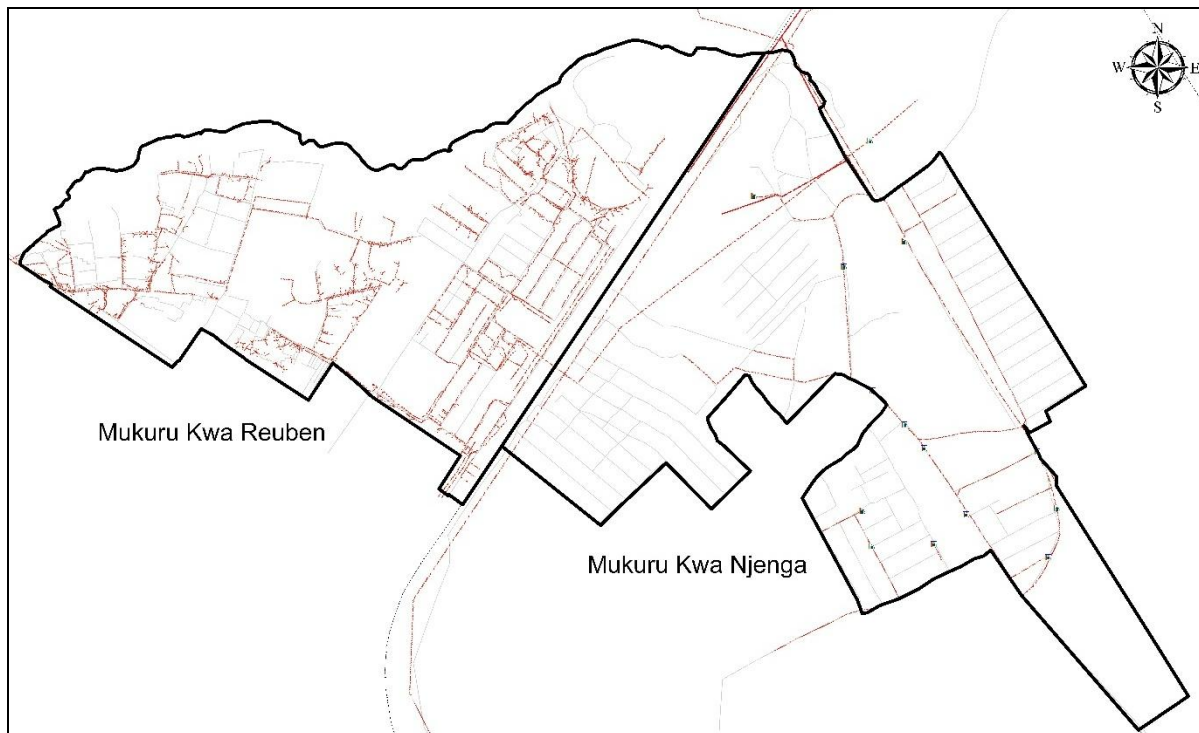


Figure 3 Electricity Connection in Mukuru Slums

³ Popularly known as Mukuru power

1.4.6 Community facilities

There are informal community facilities scattered all over Mukuru settlements. Many of these facilities serving communal functions are muddled with dwelling units and do not meet the minimum space standards for the intended functions, especially in terms of size, accessibility, ventilation, and safety. However, there are a few larger facilities that are mainly integrated with existing institutions such as the community halls in schools. Such larger facilities are also integrated with open spaces.

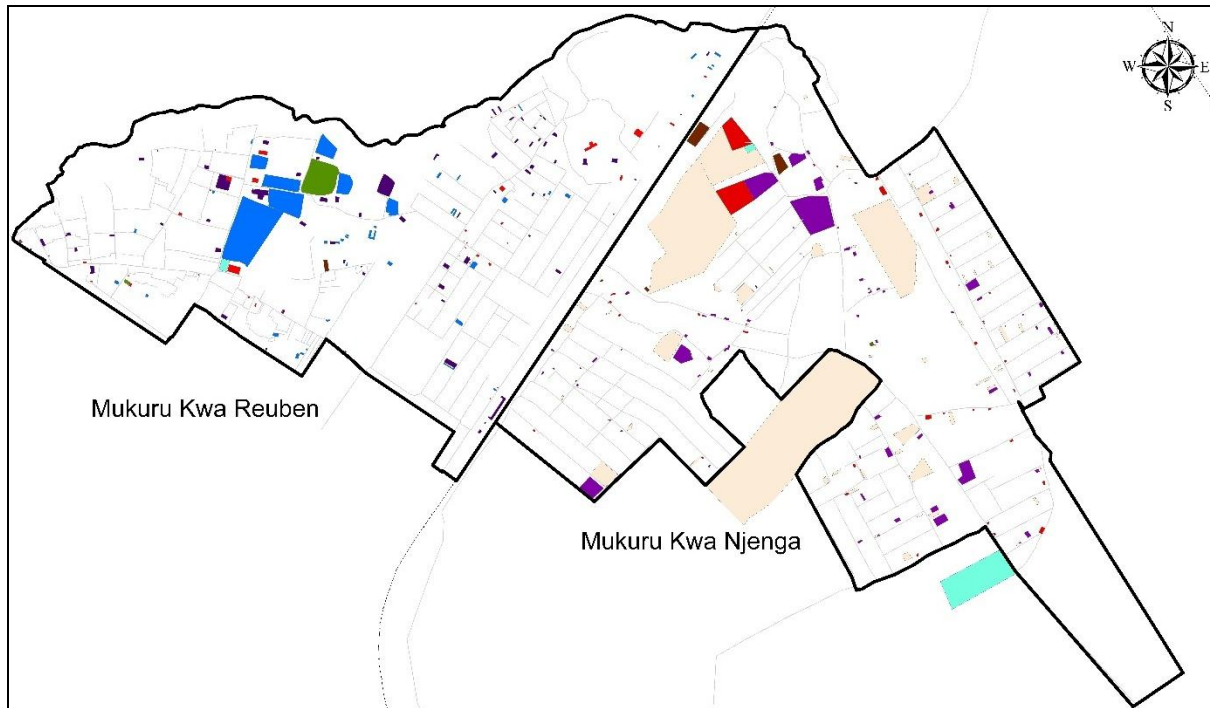


Figure 4 Community facilities in Mukuru Slums

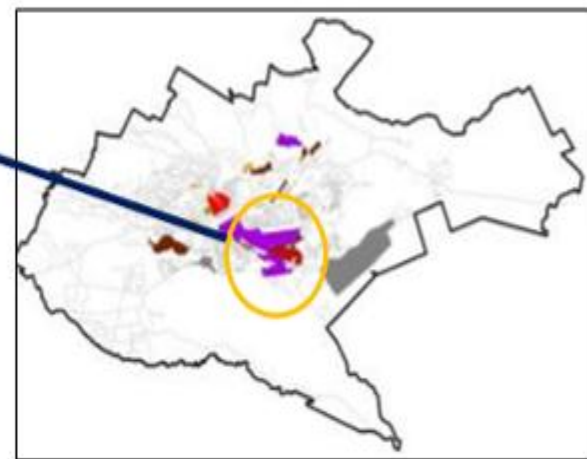
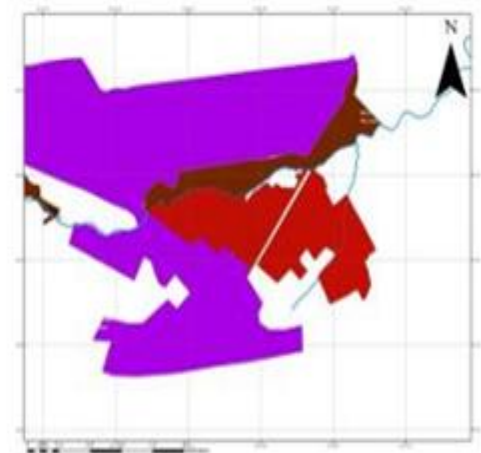


Figure 5 Location of Mukuru in Nairobi County

2.0 METHODOLOGY AND RESEARCH DESIGN

2.1 Methodological Approach

This study is a follow-up phase to the phase one profiling of Mukuru settlement conducted in the last quarter of 2013. The focus of this study goes beyond the descriptive data to seek explanations and relationships underlying the prevalent conditions in informal settlements, where matters related to tenure, settlement typologies, and service provision are concerned. In addition through this study, the researchers sought to assess the institutional set-up, partnerships and power dynamics on service delivery, operating policies, and implementing capacities of key urban institutions in basic urban services within informal settlements.

In order to ensure adequate coverage of the key components of this research, a participatory approach was preferred. Participatory research (PR) evolved as an alternative system of knowledge production by challenging the premise of conventional social science research methodology. The premise is that social science researchers can approach research sites in a neutral, objective, and value free manner. The study therefore benefited immensely from focus group discussions (FGDs) with selected residents, developers, and service providers in Mukuru Kwa Njenga and Mukuru Kwa Reuben. The study also identified key informants for detailed engagement on matters that were relevant to the study. The methodology involved the participation of Mukuru community members including community leaders, elders, women and youths in community mobilization, data collection and as key sources of information.

2.2 Research Design

In conducting this research, the research design used comprised four main stages: (a) preparatory activities; (b) data collection through questionnaire administration, focused group discussions (FGDs) and interviews; (c) data analysis; and finally (d) preparation of analytical report. These stages can be summarized into two key phases encompassing Data Collection phase and Situation Analysis phase.

2.2.1 Preparatory activities

During this stage the tasks of the research team included: review of relevant studies, project documents and preparation of research instruments; discussions with project partners; and preliminary visit to the settlement for orientation and consultations with contact persons.

After preparation of research instruments by the lead researchers, a team of six Research assistants was constituted to help in data collection. This team underwent thorough training on how to carry out data collection, data organization, analysis and presentation. During the

training the research assistants were taken through the household questionnaire, the key informant interviews, focus group discussion schedules and mapping instruments. The team of lead researchers based at the University of Nairobi and in charge of this research was multidisciplinary including Urban planning, Architecture and Sociology.

2.2.2 Data Collection

A mixed method approach was adopted to successfully collect both quantitative and qualitative data. The mixed method included both literature review and field work. Literature review involved reviewing of relevant documents, publication and websites as listed in the bibliography. Desktop research was focused on land tenure and administration in informal settlements, settlement morphology and housing in informal settlements and basic services provision and governance. On the other hand field work was designed to gather information that was not available from secondary data sources and also to confirm and compare the information gathered. Field work was done under four main methods of data collection i.e. questionnaire administration using a questionnaire with both closed and open-ended questions, key informants interviews using an interview schedule, focus group discussions based on a guide and direct observation and mapping. These helped in targeting different sources of information that would later be triangulated at the analysis phase in order to help answer the key research objectives.

Questionnaire administration

With the help of Akiba Mashinani Trust (the community mobiliser), the University of Nairobi research team managed to put together a team of community guides who helped in facilitating access to various persons within the informal settlement. The team also helped in making sure the planning team understood the village boundaries thus preventing overlap cases during data collection. The community guides were selected from their respective villages of residence within the informal settlement. This made it easier for the groups to access various households within a locale.

The fieldwork data collection was carried out by the research assistants under the guidance of the lead researchers. Two days were dedicated to piloting the house hold data collection questionnaire. This piloting was important in ensuring that the research assistants adequately understood the research instruments based on the training that they had been taken through and also in enabling review of the questionnaire for clarity. After editing and finalization of the household questionnaire, the team of research assistants went back to the field for the main data collection. An average of 16 household questionnaires was done per day, covering the various villages as per the sample frame prepared. An average of two weeks was used for household questionnaire administration. A total of 121 questionnaires were administered in

the entire study area. The distribution of the sample size was based on population size of clustered villages within the larger Mukuru. Clustering was based on proximity i.e. villages that are close together were put in one cluster. Mukuru Kwa Njenga had a total of 70 questionnaires administered while Mukuru kwa Reuben had 51 questionnaires administered. The questionnaires covered social, economic, physical and environmental aspects.

Key informant interviews

The other field work activity geared towards data collection involved key informant interviews covering both Mukuru kwa Njenga and Mukuru kwa Reuben. Various individuals regarded to have vital information about basic services provision, land tenure and housing typologies were consulted through the use of Key informant interview schedules. These included community leaders, structure owners and service providers (water, electricity, sanitation and solid waste collection).

Focus Group Discussions (FGDs)

In addition, Akiba Mashinani Trust and the Muungano wa Wanavijiji officials organized focus group discussions prior household questionnaire administration. The focus group discussions covered community leaders and service providers. This important approach enabled the generation of useful debate and deeper insights into the issues being discussed among a representation of men, women and the youth. A total of 7 focus group discussions were conducted. These were mainly based on thematic areas such as those in service provision and structure/land owners.

Mapping, Photography and Direct Observation

The other field data collection methods included mapping, photography and direct observation. Mapping work was done simultaneously with the household questionnaire administration. Aerial images of the study area were used to accurately identify the extent of the study area boundaries. The same was also used to define the spatial character of different sections within the study area. These aerial images were also vital in the preparation of Base maps which were used to map the distribution of services and infrastructure within the informal settlement and for further analysis of key aspects of this research with spatial dimension such as land tenure, settlement typologies etc. Observation sheets were combined with the mapping tools to collect corresponding a-spatial data e.g. the nature of households served, the physical state of a given service or infrastructure etc. Photography and sketches were done to record real-time events on the ground and give physical evidence of what was observed.



Using maps to identify and locate key issues in Mukuru. Maps provided a good basis for analyzing dynamics in Mukuru. Community members were able to relate well with the map models owing to their local knowledge and experience.

2.2.3 Data Analysis

Data analysis entails the use of appropriate methods to synthesize data to answer the research questions and therefore seeking to make meaning of the data collected. In this regard, data collected from the field was analyzed through various methods. Data from household questionnaires was analyzed using SPSS and presented using statistical methods such as charts, frequency distribution, and analytical tables. Before inputting the data into the SPSS software, the research assistants together with the lead researchers prepared a codebook to guide data entry. This was followed by validation of entries entered in the SPSS data frame. Once all entries had been validated, various frequency tables and cross tabulations were generated based on an analytical framework which had been prepared by the lead researchers.

Data from focus group discussions was transcribed and organized into research objective themes covering land tenure, settlement morphology and service provision. Similarly, data from key informant interviews was analyzed using content analysis and presentation of narratives and descriptive notes.

2.3 Ethical Considerations

Ethical considerations are a fundamental component for any research activity. For this research three key ethical issues were given utmost attention. These include prior information to participants to get their consent, voluntary participation and issues of anonymity and confidentiality.

Prior to data collection in the field, introductory meetings were conducted with village Chairmen/women through Akiba Mashinani Trust and Muungano wa Wanvijiji. The community leaders took an active role in relaying information to the village members about the pending surveys. In addition, they helped mobilise the community research guides (providing logistic guidance and data collection). The village chairpersons made sure that the appointed community members were respected within the villages. This was of great help in securing participation and warding off negative perceptions. This also provided assurance to the community's residents that the village chief had approved the study and that it was safe to participate. In addition, the research assistants and the key informant interviewers' comprehensively explained the aim and objective of the research and sought the respective respondent's concurrence to be involved before either the questionnaire administration or the interviews proceeded. Moreover, the research team endeavoured to answer all questions about the research from the participants.

Participation in this study was on a voluntary basis with no coercive approaches being employed. Even though this could have a negative implication on the response rate and possibly introduce biased feedback, the planning team observed the free will of the prospective respondents. To delimit this shortcoming, the planning team fully disclosed the purpose of this study and offered any assistance needed in giving feedback so as to encourage a higher rate of participation.

The respondents' identities were requested on a voluntary basis and those gotten were treated with utmost protection. No form of identity that could jeopardise the anonymity and confidentiality of the participants were shared to the public or unauthorised organisations. This was communicated to the participants. In fact, the report does not make particular reference to a respondent by their name. Photographs were taken with explicit permission from the subjects in instances where the subject was an individual's home, business, belongings or themselves.

2.4 Study Limitations

Research of any kind is more often than not faced by considerable limitations. This particular research was no exception with some of the limitations relating to issues such as security risks,

inaccessibility of respondents, and communication barriers. Firstly, the health and security risk of the research team was of major concern as the conditions on the ground were not friendly. The health hazards included the lack of clean water to drink, unhealthy eating places and canteens, congested paths that were also serving as open sewer drains within the informal settlement. Security was a major concern due to high crime propensity in informal settlements generally. To ameliorate these challenges, the research team was advised to carry their own clean drinking water, and to refrain from buying food which could be contaminated. Security was enhanced by partnering each research team member with a respected resident of the village being surveyed.

3.0 LITERATURE REVIEW

3.1 Informal Settlements Overview

The term *informal settlement* is often used in preference to that of *slum*. Since it first appeared in the 1820s, the word slum has been used to identify the poorest quality housing, and the most unsanitary conditions; a refuge for marginal activities including crime, 'vice' and drug abuse; a likely source for many epidemics that ravaged urban areas; a place apart from all that was decent and wholesome (UN-Habitat, 2007). However, overtime, the term "slum" has been considered loose and deprecatory and is seldom used by the more sensitive, politically correct, and academically rigorous (ibid). Proliferation of informal settlements is largely driven by a number of forces including rapid rural-to-urban migration, increasing urban poverty and inequality, insecure tenure, and globalization. Edésio (2011), while writing about Latin America's informal settlements, argues that they are caused by low income, unrealistic urban planning, lack of serviced land, lack of social housing, and a dysfunctional legal system. This argument is corroborated by Cities Alliance (a multi-donor alliance of cities and their development partners) who points out that slums/informal settlements are the products of failed policies, bad governance, corruption, inappropriate regulation, dysfunctional land markets, unresponsive financial systems, and a fundamental lack of political will.

Informal settlements are not a finite static object, but rather the result of a long process of socio-economic exchange and physical improvement with the formal means of production in the city at large (Samper, 2012). Whether they are established on public or private land, they develop irregularly and often do not have critical public services such as sanitation, resulting in health and environmental hazards. In Kenya, slums/informal settlements owe their origins to six factors: migration during the struggle for independence, rural-urban migration and urban population growth without corresponding housing provision, resettlement due to new developments, upgrading or relocation in suitable sites, and extension of city boundaries. Olima (2001) asserts that the inadequate provision of land, a disposition towards over-regulation, and an institutional framework that is, at best, indifferent to the needs of the urban poor are additional reasons for the continued existence and expansion of informal settlements in Kenya.

A generally accepted interpretation of the genesis of informal activities including informal settlements is rooted in their operating beyond the prevailing regulatory systems. In other words, these activities do not comply with legal or administrative requirements. A more positive view suggests that exclusion has to do with the lack of access to development policies (Tokman, 2007). The nature of these settlements and activities existing outside the prevailing regulatory system often results in low to non-provision of services resulting in (if not controlled) an ever declining settlement character. This is more evident with sanitation, water, housing and circulation channels.

According to UN-Habitat (2010), national and local governments in Eastern Africa influence land markets and access to land in urban areas through allocation of publicly owned parcels, provision of

infrastructure and services, and through enforcement (planning controls, power of eminent domain and taxation). UN-Habitat (2010) further suggests that these policy instruments are often viewed as inequitably curtailing access to land by low-income urban groups. Moreover, whereas Eastern African constitutions and statutes often refer to social justice and the social aspects of property rights, formal urban land market operations have not been to the advantage of the urban poor who constitute the overwhelming majority of demand (UN-Habitat, 2010).

As such the tenureship challenge for the urban poor has been seen to be in an ever declining state where the urban poor consider the public authorities as a threat to tenure security and as such treated with apprehension. This results in an even more reliance in the informal land delivery system which more often than not is characterised by lack of technical guidance in informal land administrative systems such as planning in subdivision of plots. The result of these is often a chaotic plot allocation and ordering structure which once developed result in highly disorganized settlement structure.

3.2 Land Tenure, Settlement Typologies and Basic Service Provision Nexus

There are about six broad categories of tenure including freehold, leasehold, conditional freehold, rent, collective forms of tenure and communal tenure (UN-Habitat, 2008). Of fundamental importance to informal settlements is usually not much the type of tenure adopted but the security associated with that particular tenure system. Each type of tenure provides varying degrees of security. The spectrum ranges from one extreme of no *de facto* or *de jure* security, to the other end of the continuum, where those with legal and actual secure tenure can live happily without any real threat of eviction, particularly if they are wealthy or politically well connected (ibid). Security of tenure which is a basic attribute of human security has continued to remain extremely fragile for hundreds of millions of the urban poor and has continued to deteriorate as land values within cities continue to rise, as affordable land becomes increasingly scarce, and as housing solutions are increasingly left to market forces (ibid).

Sims (2002) has argued that adequate security of tenure is measured by a five point criteria in which one looks at the extent to which such tenure; protects against arbitrary eviction/demolition; encourages investment and house improvements; allows for the provision of infrastructure and public services; permits market values to apply to property; and allows owners to leverage equity for credit. Land tenure security has a number of advantages; it is essential in stimulating the development of land since many local and foreign investors are hesitant to invest in land when tenure is insecure, it has the potential of increasing credit use through greater incentives for investment, enhancing the collateral value of land, facilitating land transfer from less efficient to more efficient users, reducing the incidence of land disputes and raising productivity through increased agricultural investment (Twerefou et al, 2011).

Within informal settlements land tenure is delivered mainly through informal subdivisions which often fall short of planning requirements set by the approving authorities hence cannot be registered. In some cases land is availed through illegal occupation and informal settlement by squatters. Land provided through informal subdivisions is often short of essential services and social amenities (GoK, 2004). As such informal tenure gives rise to settlement characterized by low if any provision of services.

Consequently, informal settlements are seen to be a result of the informal tenure process that tends to relieve off the public authorities of their responsibility of service provision, even in light of contrary government policy. This low service provision including infrastructure such as roads often results in a settlement chocking on itself where the nature of structures is not only substandard but also highly organically organized. This is because infrastructure which is an urban organizing element is missing and supplied on demand.

This is seen for instance in Vision 2030 goal for equity and poverty elimination in Kenya which aims to reduce the number of people living in absolute poverty to the tiniest proportion of the total population by guaranteeing equality of opportunity in accessing public services and providing income-generating activities as widely as possible (GoK, 2007). However there is very minimal direct intervention by the governing authorities to actualize this. This is more due to the fact that with the tenure not well established, the authorities feel that before resolution of tenure then the settlements remain illegal. This curtails any hope in positive development of the settlements.

3.3 Governance in Land Tenure and Basic Service Provision in Informal Settlements

Discourses on governance framework for land tenure and basic service provision in informal settlements largely relate to the way informal settlements have been hitherto conceived and more essentially how this has changed overtime. UN-Habitat (2003) reports that over the years, approaches to slums, and to informal settlements in particular, have generally shifted from negative policies such as forced eviction, benign neglect and involuntary resettlement, to more positive policies such as self-help and *in situ* upgrading, enabling and rights-based policies. Nevertheless, some of the new approaches to tackling the challenge of informal settlements have had mixed results. For example, according to Durand-Lasserve (2006), structural adjustment policies in addition to deregulation measures; massive government disengagement from the urban and housing sector; attempts to integrate informal markets within the sphere of the formal market economy, along with the lack of, or inefficiency of, safety net programs and poverty alleviation policies have resulted in increased inequalities in the distribution of wealth and resources at all levels within the urban setting. The issue therefore of good governance mechanism in relation to policies and strategies adopted for tackling the challenge of informal settlements still continue to be put under intense scrutiny.

Amnesty International (2009) has noted that Nairobi's slums are the consequence of both explicit government policy and decades of official indifference. They further argue that informal settlements were excluded from city authority planning and budgeting processes, which meant in effect that public policy often, treated these areas as if they did not exist. As early as the 1970s, a study by University of Nairobi Housing Research Unit (1971) advised on the need to recognize informal settlements by facilitating a two-way communication to enable the authorities to respond to the needs of low-income families living in urban areas and move away from the 'national pride' syndrome which rejected modest housing solutions, yet no alternatives were being proposed. Today, various interventions continue to be undertaken by the post-colonial government of Kenya and city authorities with the support of donors,

civil society organizations, including Community Based Organizations (CBOs) in ameliorating the conditions in informal settlements.

Some of these new initiatives touch on land tenure delivery and basic service provision in informal settlements. These have however been faced by governance challenges especially those relating to land tenure administration. The National Land Policy (GoK, 2009), while underscoring that the essence of 'informal' or 'spontaneous' or 'squatter' settlements is the absence of security of tenure and planning, notes that the hitherto rather complex land management and administration system in Kenya has resulted in environmental, social, economic and political problems including deterioration in land quality, squatting and landlessness, disinheritance of some groups and individuals, urban squalor, under-utilization and abandonment of agricultural land, tenure insecurity and conflict. Indeed, Olima (2001) asserts that the inadequate provision of land, a disposition towards over-regulation, and an institutional framework that is, at best, indifferent to the needs of the urban poor are additional reasons for the continued existence and expansion of informal settlements.

Within the current policy and legal disposition, land administration and management is within the purview of the National Land Commission and the Office of the Land Registrar under the Ministry of Land, Housing and Urban Development. For example, the National Land Commission is mandated with the allocation and management of public land including land adjudication while maintenance of land registries continues to be under the Office of the Land Registrar under the Ministry of Land, Housing and Urban Development. Based on this mechanism, application for land allocation and/or development will be through the County Land Commissions, County Land Control Boards amongst other agencies. Commentators have argued that such a 'mongrel' land administration system is a recipe for chaos, corruption and bureaucracy thus further alienating the urban poor.

Many times such conventional land tenure administration systems are not sustainable nor are they effective in addressing the issue of informal settlements. Despite the envisioned changes under the Constitution (2010) which seeks under Article 60 (1) that land in Kenya shall be held, used and managed in a manner that is equitable, efficient, productive and sustainable, and in accordance with a number of principles including equitable access to land; security of land rights; and transparent and cost effective administration of land; the current system does not seem to be complying. Therefore such a rigorous land administration system will continue to disadvantage the poor who are unable to afford the payments of stamp duty, rates, ground rents and other such payments before title is granted (Government of Kenya and UNCHS, 2001). Zevenbergen *et al* (2012) argue that pro-poor land administration system should bring tenure security to the poor at faster rates and lower costs, and should enable a foothold on the lower rungs of the property ladder.

Within informal settlements in Nairobi, there exists mainly an informal land and basic service governance system. A report by World Bank (2006), notes that within the over 180 different informal settlements in Nairobi, 92 percent of the households are rent-paying tenants; while of the remaining eight percent, six percent claim they own both their house and the land, while two percent say they own the structure but not the land. Within the small group of resident home owners (8 percent of total), 60

percent rent out at least one room that is, 4.8 percent of slum households are “resident landlords” hence the vast majority of structure owners are “absentee landlords” (World Bank, 2006). Syagga et al (2001) reports that tenure for many who live and work in the settlements is insecure with 1.5 million people confined to less than 5 per cent of the total municipal residential area; the population is subject to uncertainty associated with ambiguous and irregular land allocation, commonly referred to as "land grabbing"..

According to UN-Habitat (2006) land records and land management in both formal and informal settlements are not computerized and are subject to corruption. This, the report adds, leads to poor and inequitable land management, resulting in lack of access to land for the poor and more generally to slum expansion. This report further supposes that securing formal rights to land is subject to complex procedures which at times lack transparency. Syagga et al (2001) argue that out of the 50 per cent informal settlement land that the state owns officially, individuals have over time negotiated informal arrangements with the authorities to erect structures and collect rents hence the tenancy phenomenon. Under such an arrangement, structure owners are under no obligation to maintain premises or provide basic services moreover, the ambiguous tenure status of those living and working in informal settlements - structure owners and tenants alike - prohibits them from enjoying their rights as urban citizens (Syagga et al, 2001). Therefore, basic service provision has hitherto been a preserve of cartels. However, overtime local community based organizations, NGOs and lately the government has joined through programs such as KENSUP and KISIP.

3.4 Conceptual Framework

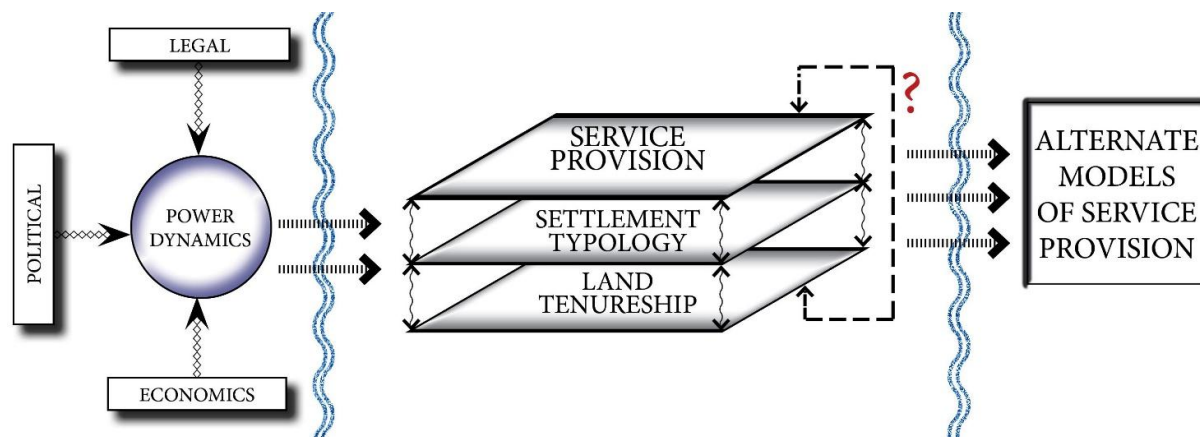


Figure 7 Conceptual Framework

The conceptual dimension of this research attempts to frame the interaction between tenure, settlement typology, and service provision. This is with the appreciation that these three do

not exist in a vacuum but instead are influenced by contextual dynamics in the socio-political, legal, and economic nature. Seen from this perspective, the triad of tenure, settlement typology, and service delivery begins to point to a conceptual framework for understanding and improving informal settlements, especially in the pursuit of alternative models of service provision (Figure 3.1).

4.0 LAND TENURE, SETTLEMENT TYPOLOGIES, AND SERVICE PROVISION NEXUS

4.1 Tenure

The dynamics of ownership and rights of use of land and buildings in Mukuru Kwa Njenga and Mukuru kwa Reuben are complex. Land transactions in Mukuru informal settlement are done in a haphazard manner by various actors ranging from local administration, to landowners – both legal and perceived, structure owners, and politicians with no regard to existing laws. In the prevalent practical sense, the ownership of land in Mukuru is not legal but perceived in that the legal owners of the land do not have access to it due to irregular occupation of the land. The problem is complicated further by the fact that the perceived owners of the land are not necessarily the developers of the same; even where they are the developers in many cases they are not the occupants. It is thus possible to find that the occupant, the structure owner, and the perceived land owner are totally different entities. Adding the legal land owner to this equation, the result is a multi-layered structure of rights, at times in contestation, which makes tenure a complex phenomenon in Mukuru as is the case in many other informal settlements. Majority of the slum dwellers are tenants who neither own the structures nor the land. Majority of the respondents do not consider the tenure in Mukuru as secure as affirmed by 97% of residents in Mukuru Kwa Njenga and 92% in Mukuru Kwa Reuben. Approximately 89% of the residents of Mukuru do not have any tenureship documents which aggravates the state of tenure insecurity. The insecurity of tenure has led to several problems such as eviction (39%), fear of eviction (17%), insecurity (normal/inter-ethnic/political) (27%), demolition (4%), lack of basic services (6%), and inability to develop (3%). Insecurity of tenure is considered the main reason as to why the structures are constructed with temporary materials against high deficiency in basic services.

Land Tenure

Land tenureship in Mukuru Kwa Njenga and Mukuru Kwa Reuben is seen to be divided into two main categories. These are formal and informal land tenure-ship.

4.1.1 Formal Land Tenure

This refers to tenure administered and protected by statutory law. If viewed from this perspective, land in Mukuru falls under 2 main categories, namely public land⁴ and private land⁵ largely under leasehold. Public land covers interest in land by the government for public purposes. The latter category represents an interest in land for a definite period in time⁶ and subject to the continued fulfilment of specified conditions such as payment of rates and rent. In the case of Mukuru, the leases were granted by the government. Formally, the land occupied by Mukuru informal settlement is divided into 7 *parcels*. The formal land tenure and land delivery mechanism seems not to be highly regarded at the grassroots level, whereby the legitimacy of title deeds held by the bona fide land owners is reduced to mere paper such that a popular adage on the ground goes like... "*karatasi ni yao, ardhi ni yetu*" (the papers/documents belong to them, but the land belong to us). Despite that fact that majority of the residents here are aware of the original title holders of the land, still about 6% of those interviewed reported that they own land in the settlement. Disregard of legitimate ownership may be as such because majority of the land is formally owned by a few individuals who are largely absentee landlords. These land owners, or their agents, are rarely the occupiers of the land.

4.1.2 Informal Land Tenure

The inhabitants and *de facto* landlords of informal settlements have structured and restructured the settlement form through acquisition of land vide largely informal land delivery mechanisms and a variety of unregulated building activities. Informal tenure has evolved over time; the initial phases of the settlement saw aspects of adverse possession and appropriation of vacant land by influential people (including initial African settlers like the old man Njenga) for spontaneous but incremental settlement and with time laying claim.

"Sisal was the first village and it started in the 1980's and people lived there until 1993. Sisal was built without any planning compared to Wape Wape as people were being given land to build on by the local elders such as Njenga, and Karanja Muiruri."

FGD Participant, Mukuru Kwa Njenga, 2014

With increased population, there developed a socio-political power structure that engaged in land transaction based on grounded rules. The key players in this are the perceived land owners

⁴ Reserved for public purposes such as community and infrastructural facilities like roads

⁵ Largely earmarked for industrial development

⁶ Maximum 99 years under the new Constitution of Kenya, 2010???

(sellers or lessors)⁷, the local administrators (the Chief), the Village Elders, Village Chairmen, and the consumers (buyers or lessees). There are no formal documents for purchase or lease of land and building properties. Only written agreements⁸ between the seller/lessor and the buyer/lease exist, witnessed by village elders, chairmen, or Chiefs⁹. Through this method, land could also be acquired in bulk by organized groups then it is later subdivided with the help of a surveyor to individual plots.

....the Land where the settlement lies was initially unoccupied until the Provincial Administration subdivided the land into plots and sold to individuals. This process, though illegal, was orchestrated by the Village Chairmen on the behest of the Chiefs and District Officers albeit without the knowledge of the original title holders.

FGD Participant, Mukuru Kwa Njenga, 2014

The subdivided land was organized into zones. Buyers of such land were usually issued with a certificate which were not official government documents and only had a Chairman's stamp from the respective zone. These certificates were printed locally and had the name of the buyer, their identification number, and plot number. The names of the buyers were then recorded in a register under the custody of the Chairmen. In case one wished to transfer 'ownership' or sell the land to another person, the initial certificate holder had to surrender the certificate to the Chairman who would then issue the new buyer with another certificate. Similar changes were also done in the register to reflect the new status of the said plot. All these processes were done in the office of the Chairmen, who served both as the agent of transactions and as a witness to the process. It was noted by another Chairman interviewed that overtime, subsequent buyers are usually not issued with any document of ownership but enter into signed sale agreements with previous owners, witnessed by trusted parties such as the village elders.

For those who indicated they owned land in mukuru, the identified mode of land acquisition included allocation by Chief, Village Elder, or early squatters (38%); purchase from land owners (37%); squatting (13%); and adverse possession (12%). The irregular land buyers have some form of ownership documents; these could be in form of written agreement from village administration, allotment letters/ownership certificates, and temporary occupation licence.

⁷ These normally are invaders of vacant land, a process locally known as "kukamata" (Swahili word for "to seize/grab")

⁸ Could we get samples of these??

⁹ Seen as the last resort

The informal tenure process seems to stop at this stage with such owners consolidating development of those lots, with the hope and intention of leveraging the government to formally transfer the land to them and subsequently regularization of ownership and tenure of such land. The consolidation goes further to control the activities of the plots and/or buildings thereon, including spatial compositions and access to both physical/technical and social infrastructure and basic services.

Currently, the more or less the same process of land administration continues with the Chairmen still playing the role of witness and facilitators during any land transaction exercise. He/she is paid a fee ("transfer fee") which is not fixed and is based on the financial capability of those transacting. The money is then shared among the village elders. Nevertheless, there are those who currently engage in land transactions without the knowledge or involvement of the Chairmen. Such an arrangement is usually risky and prone to conflicts while other people end up losing their money to conmen. One of the Chairmen interviewed gave an example of a situation where the head of the household sells land to another person then after some time the spouse claims she was not consulted and hence the transaction was invalid.

With the new devolved system, the political angle of County Member of Assembly (formerly Councillors) seems to have been rejuvenated and provided an alternative pathway in land transaction, co-opting some of the village leaders into it. It is emerging that the roles of the Chief are likely to significantly diminish as there are now County representatives, ward managers, and County planners from the Nairobi City County whose presence is increasing on the ground. There seems to be a power struggle between this channel and the age-old one centred on local administration. Notwithstanding the channel of engagement, it all leads to insecure tenure.

Based on this informal (insecure) tenure, it follows that the bulk of development in informal settlements is both unlicensed (not formally permitted) and unregulated, ranging from access and use of the land to building construction, and service provision. The insecure tenure was cited by majority (----%) of respondents as a hindrance to substantive investment, either to lack of courage to invest or inability to use the land as collateral in seeking finances to invest on the land. However, for those who were interested in acquiring and investing in land cited the following uses for it: majority are for building of rental houses (65%); others are for building own houses (21%); provision of services such as water (3%); provision of community facilities such as schools (3%); and urban agriculture (8%).

4.2 Housing Tenure

In the context of this study, this term covers the ownership, access, and right of use of buildings. Majority (94%) of residents in Mukuru settlement are on rental housing with the rest

6% of the respondents indicating that they own the houses which they were occupying. Out of all the respondents sampled (tenants and structure owners alike), about 47% of them had some form of tenureship document, while the rest (53%) of the respondents did not affirm. Further analysis showed that in every two owner-occupied housing units, one did not have any proof of ownership. On the other hand, about 45% of the respondents who had rented houses affirmed that they had tenureship arrangements, while the majority 52% did not have anything to refer to. Of the 45% who claimed to have tenureship arrangements, about 63% of them said that they received receipts after payment of rent, while 7% of the respondents had written tenancy agreements, and 29% of them said that tenureship arrangements were in form of verbal agreements.

The respondents were also asked to identify problems that they faced out of their housing tenure status. The major problems identified include fear of eviction as noted by 43% of the respondents; risk of demolition (21%) , and risk of demolition (22%), while 10% identified insecurity as the main threat. The remaining 4% identified the inability to develop since they did not have proper tenureship documents, but also due to stigmatization and lack of basic services.

When asked to give suggestions on solutions to problems faced due to housing tenure status, 41% of the respondents said that they wanted proper maintenance of their housing units, while 27% called for government intervention. About 9% said that the standardisation of rent would resolve their problem, another 6% indicating that their problems would be resolved through proper planning of the settlement. In addition, 9% of the respondents said that the major problem can be addressed through regularization of the land tenure for the settlement while 5% of the respondents called for community unity and working together to bring change.

4.2.1 Preferred Tenure

The most preferred type of tenure in Mukuru is private on freehold at 82% of respondents. This is because the residents perceive that it will enable more freedom of use than any other tenure system. Further, individuals can be more responsible and also avoid conflicts over land. Communal tenure is the second preferred tenure at 11%. The residents think that communal tenure will bring the benefits of working together as a community, which will enhance unity and cooperation among the members. Cooperative tenure was preferred by some people mainly because they believe that cooperatives have better management techniques. According to the residents of Mukuru any tenure improvement initiative should be all inclusive and based on a planned and structured system. It was noted from the FGD that an enumeration to know how many people are residents and how many are structure owners should be contacted to know how to do subdivision, so that in case of upgrading they know how many people will

benefit from the project to guard against infiltration by land speculators as it has been witnessed in previous similar projects like relocation of those who were living within the railway reserve.

4.3 Settlement Typology

This examines settlement form and structure and their defining context at different spatial scales. Thus it will look into the deriving factors and meanings attached to form and structure, their relation to use, and the underlying transformation processes. In the context of Mukuru informal settlement, the typological examination looked at two broad categories with internal divisions; it classified settlement morphology by formation/foundation¹⁰ and by morphology¹¹. The latter was based on four scales of analysis, namely neighbourhood, block, cluster, and lot level.

4.4 Formation/ foundation

This dimension classifies settlement typology based on how they were created or realized. It categorizes the settlement types according to their pathways for materialization. This translates to the method of establishment, construction, and development. It categorizes the settlement types according to their pathways for materialization. Mukuru slums have manifested different pockets of formation models depending on the periods of development/formation. These are spontaneous squatting, appropriated, and speculative.

4.4.1 Spontaneous squatting

This is the oldest form of formation whereby individuals in an uncontrolled/unstructured manner take over land slowly and develop it for their own purposes. This is what is seen as the initial formation of Mukuru settlements. This is from the point where Mukuru set up the market shed. The appropriation was to the level of allocating stores for people selling their wares. However driven by necessity and lack, the individuals set up residence there by adding an extra room at the back of the stores. Eventually more traders turned the shops into structures for residence abandoning the businesses altogether. Spontaneous squatting is however seen to have inherent transformative processes whereby initial construction in the area was in temporary basic building materials which were mostly cartons, then proceeded to roofing with

¹⁰ Classifies settlement typology based on how they were created or realized. It categorizes the settlement types according to their pathways for materialization. This translates to the method of establishment, construction, and development. It categorizes the settlement types according to their pathways for materialization

¹¹entails accessibility, grain, unit density, land use, street network, block sizes, lot layout, massing, building typology, and construction material.

iron sheets, eventually the walls were also constructed using iron sheets. Spontaneously established clusters of Mukuru are mainly the old and organic ones.

4.4.2 Appropriated

Land appropriation is mostly done by power brokers who earmark vacant sites and declare them available for settlement. Such settlement then happens rapidly and as a one-off process. The land is appropriated and allocated by individuals who are considered to have power vested on them either by law or de facto mechanisms to control and manage the access and use of land. These are however not the owners of the land but are authority figures such as the chiefs, Councillors (now called County Member of Assembly –CMAs), and Village Elders and Chair persons. Land would be appropriated for patronage¹² or during crisis such as need for resettlement of people after hazards related to fire or flooding. The land appropriators have always played a major role in the development growth of the settlements. This is from way back when the settlement from the market where the settlement started from the allocation of spaces to sell their wares. This allocation set the stage for the next formation model to set in, the model of spontaneous squatting. Settlement clusters established using this pathway also tend to be fairly organic.

4.4.3 Speculative

This is a market driven model of development perpetuated by slum Landlords where a few individuals or organized groups irregularly gain access to land and vest upon themselves the authority to dispose or develop the land for economic gain. They therefore hoard, develop or lease the land with the aim of making a profit from the entire process. This is seen to be the most recent model in place and working in tandem with the appropriation model. Settlement forms derived from this model tend to be morphologically more refined due to the need to maximize on land and for more pleasant layouts that will readily attract users.

4.5 Morphology

4.5.1 Grain analysis

This refers to the patterns and arrangements depicted by the settlement based on the extent to which typical elements and qualities are differentiated and separated in space. Grain can be defined as “course” or “fine” in terms of the quantity of a given type that is separated out in one cluster; it can be described as “sharp” or “blurred” in terms of the manner of separation at the (typical or qualitative) boundary. The elements in question might be similar or dissimilar.

¹² Mostly political

A scaled continuum was established where highly differentiated settlement arrangement (course) lies on one extreme and highly refined structure (Fine) lies on the other. As such grain analysis seeks to establish the character of a settlement based on these variations. From grain analysis Mukuru Kwa Njenga and Mukuru Kwa Reuben exhibits a grain spectrum that evolved over time; older areas tend to have a rougher grain that is highly organic compared to the relatively new areas with fine grain. This is due to the mostly haphazard manner in which older villages of the settlements often developed. This was later followed by areas where the grain gets finer as development took in a more organised layout in response to challenges brought about by the organic character.

Based on grain, Mukuru informal settlement was classified into five categories. These are organic, which indicates highly differentiated character corresponding to the oldest of the settlement where the most haphazard form of structure orientation and placement is noticed. This is followed by the moderately organic where the organic character is noted to reduce with less dendritic pattern of streets. Next is the moderately refined where the level of order is seen to increase and the dendritic character of streets starts to be replaced by an unrefined grid form of streets. The refined category follows which now has a more concrete form of street grid. The highly refined is the highest in this morphological hierarchy whereby not only is the structure of streets seen to depict regularity but also the structures are noted to be larger by unit size and more permanent in the use of materials. This is as indicated in the grain analysis continuum figure 8 and 9.

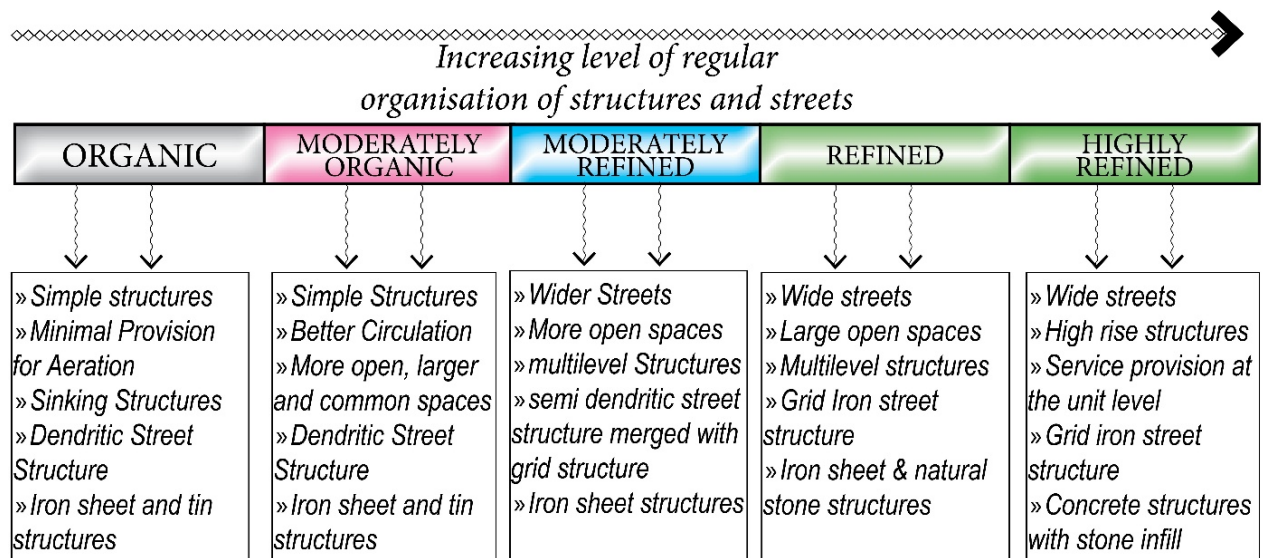


Figure 8 Grain Analysis Continuum

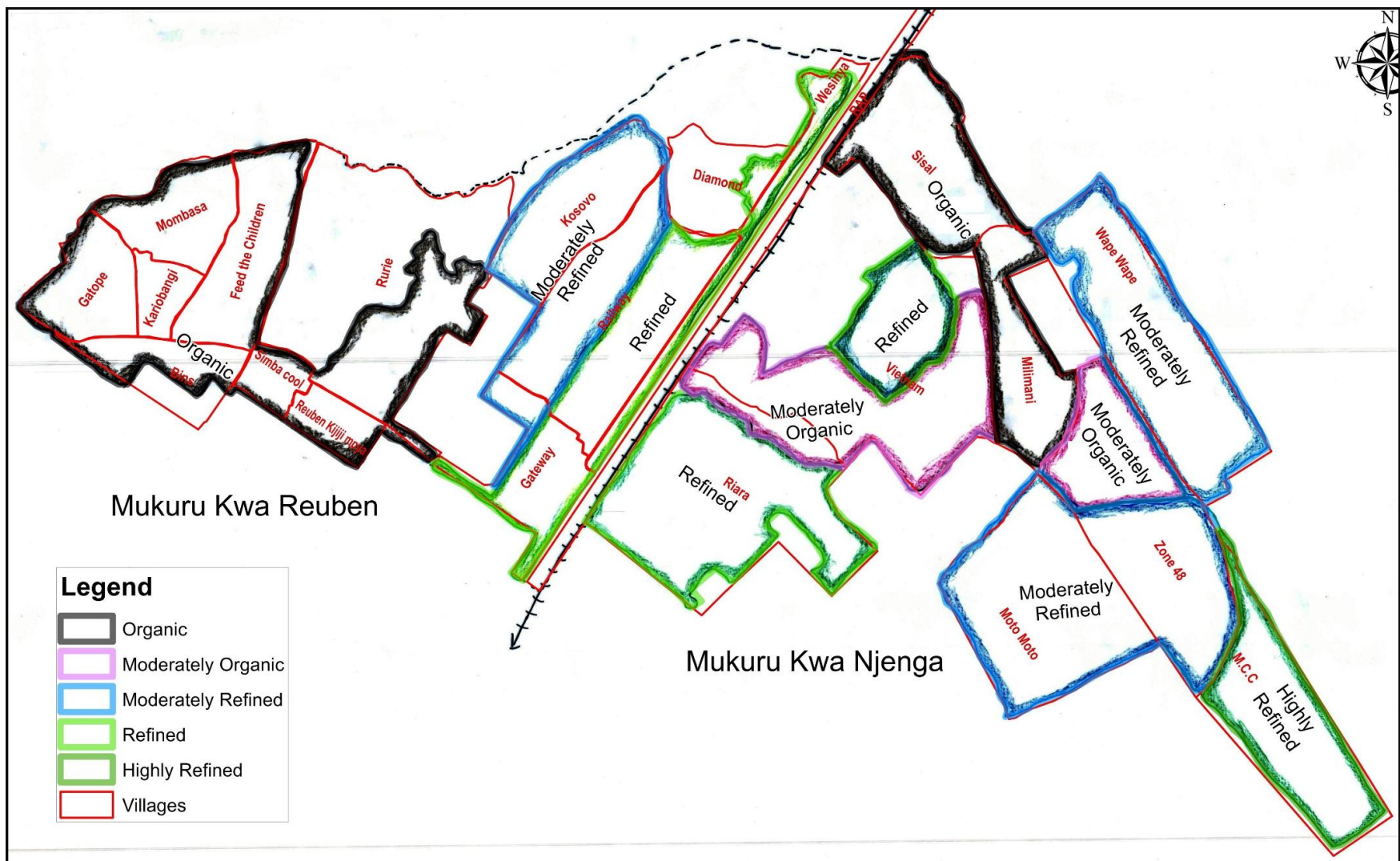


Figure 9 Grain analysis map for the Mukuru settlements

4.5.2 Grain of Mukuru Kwa Njenga

Mukuru Kwa Njenga is noted to have the highest level of variety as far as grain is concerned where all the five level of grain feature. As indicated in table 1 and figure 10, the grain character is manifested in pockets where one character can exist in two different locations.

Table 1 Grain Category Table for Mukuru Kwa Njenga

Grain Category	Villages Featured
Organic	<ul style="list-style-type: none"> Sisal Milimani
Moderately Organic	<ul style="list-style-type: none"> Northern Zone 48 East and South East Vietnam
Moderately refined	<ul style="list-style-type: none"> Wape Wape Moto Moto South and Southeast of zone 48
Refined	<ul style="list-style-type: none"> Riara Northern Vietnam
Highly refined	<ul style="list-style-type: none"> M.C.C.

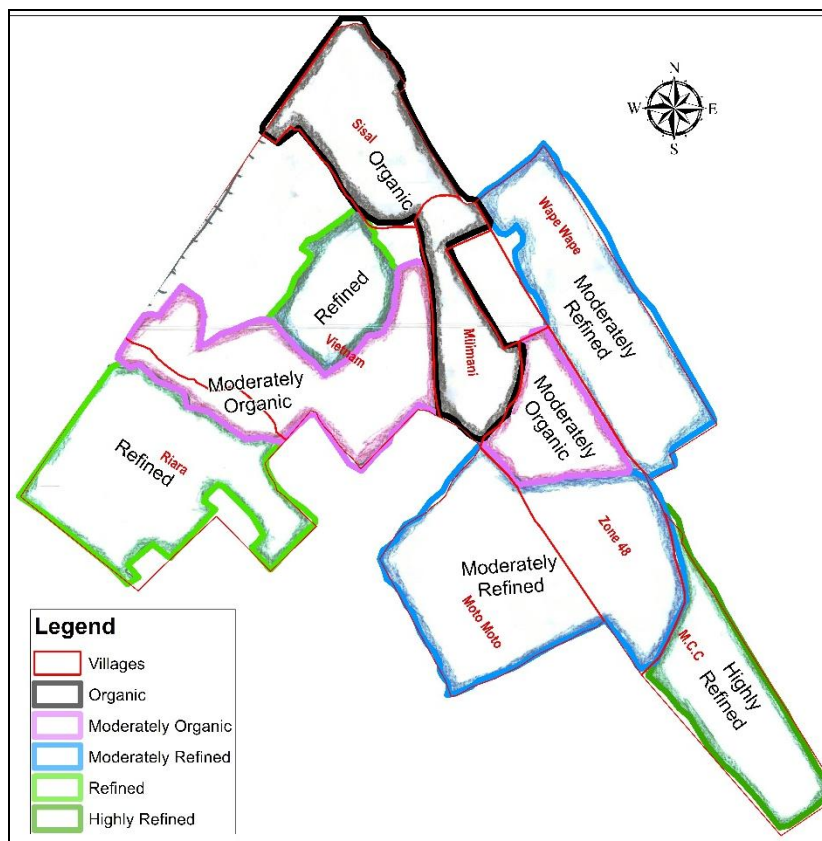


Figure 10 Grain of Mukuru Kwa Njenga

4.5.3 Grain of Mukuru Kwa Reuben

Mukuru Kwa Reuben contrary to what is seen in Mukuru Kwa Njenga is seen to have the least amount of variation with only three grain characters. It also exhibits a skip in the grain continuum where from organic it skips to the moderately refined character without going through the moderately organic character. This coupled with major manufacturing companies at its heart indicates the possibility of a leap frog development history. The grain categorisation of the settlement is as indicated in table 2 and figure 11 below.

Table 2 Grain Category Table for Mukuru Kwa Reuben

Grain	Villages in Grain
Organic	<ul style="list-style-type: none">• Gatope• Mombasa• Kariobangi• Feed the children• Bins• Samba cool• Rurie• Reuben Kijiji mpya
Moderately refined	<ul style="list-style-type: none">• Kosovo• West railway
Refined	<ul style="list-style-type: none">• East railway• Wesinya• Gateway• RAP

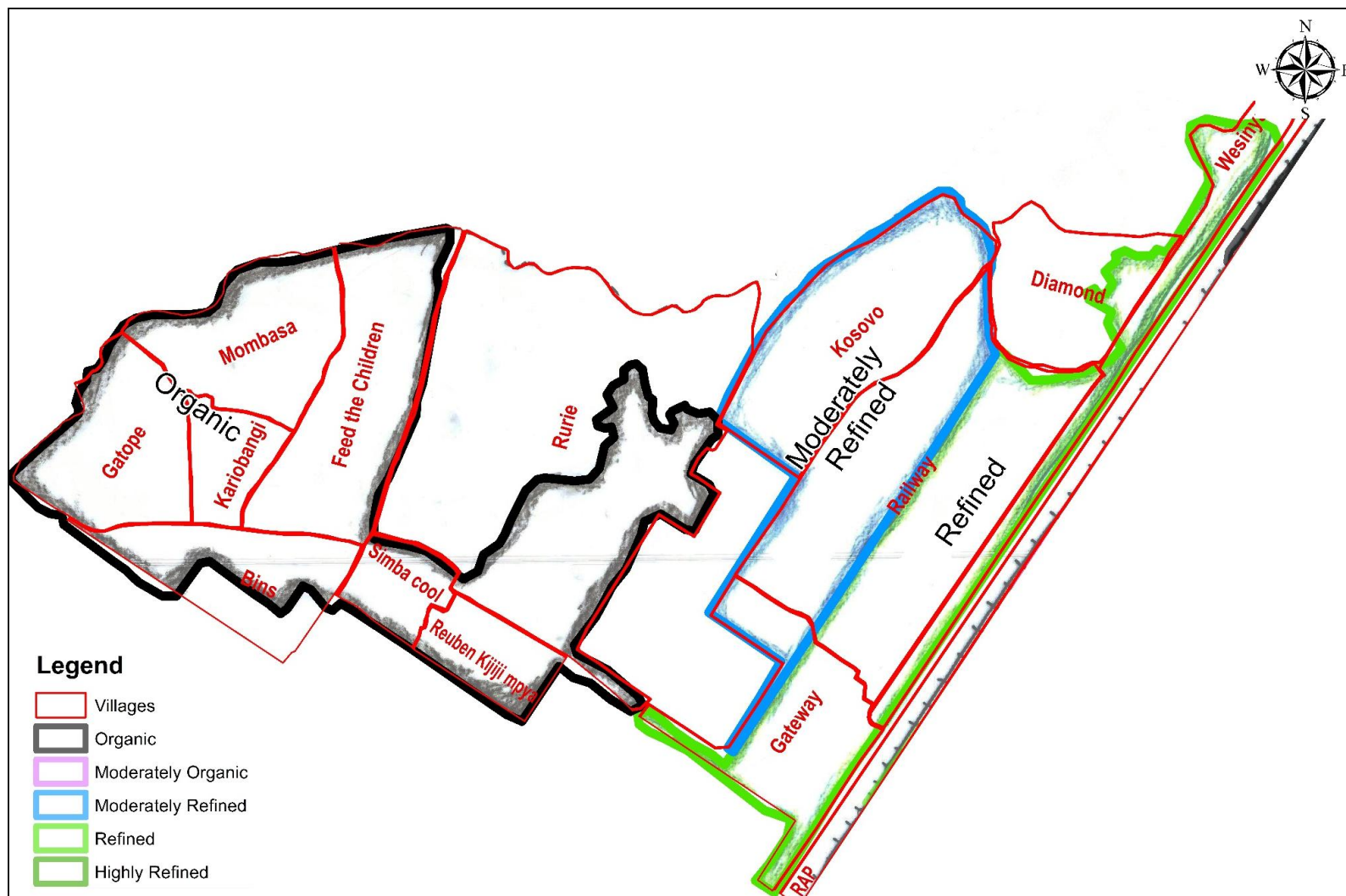


Figure 11 Grain of Mukuru Kwa Reuben

4.6 Morphological Implications of Mukuru Informal Settlement

4.6.1 Organic

The organic component of the settlement is the oldest of the morphological continuum. This is the most haphazard and randomized of all the settlement characters. This is with areas such as Gatope, Mombasa and feed the children in Mukuru Kwa Reuben that existed as early as 1980 and Sisal and Milimani in Mukuru Kwa Njenga. The organic clusters are most of the time in the most problematic areas of the settlements. For instance there has been a flooding problem in Mukuru Kwa Reuben since 1989, in Gatope, Mombasa, and Feed the Children clusters; the reason behind this is largely because the land in question was largely reclaimed from the flood plain hence the seasonal challenges of flooding. The structures are often affected by dampness due to the wet character of soil on which they are located, but also face sinking due to the unstable soil base.

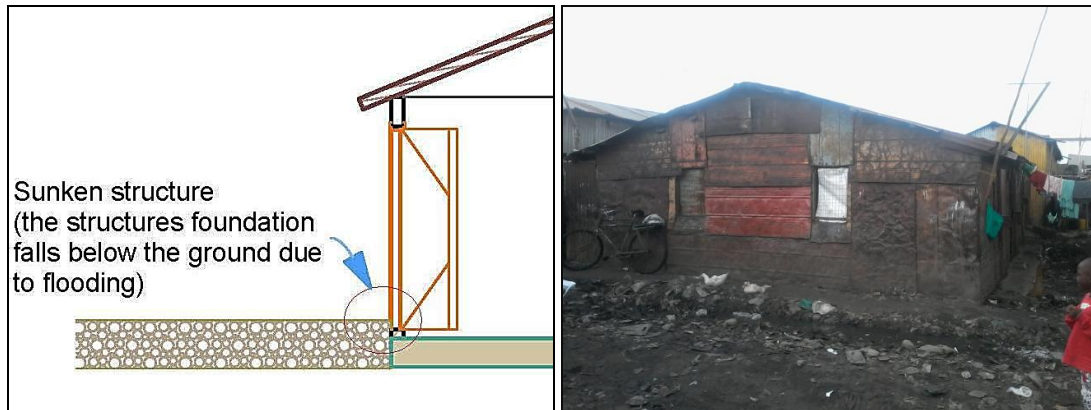


Figure 12 Sinking Nature of Structures

The street grid of these settlements is often dendritic in character. This is often coupled with non-hierarchic character of roads. Off the main circulation spine, the inner roads quickly degrade into often very narrow paths, of irregular width, and twisted following left-over space between irregularly positioned building structures. As such there are very low activity levels on the inner roads, which happen to be deficient in terms of aeration and light penetration.

Service provision also faces a similar difficulty as that in circulation and accessibility. This is because most of the time the only available space for service provision and reticulation is the road network. As such services such as water, electricity and drainage (open drains) are noted to be highly aligned to the roads. The organic nature of this category of clusters makes service reticulation a complex problem. Service utility lines have to be aligned to the twisted and irregular street grid, or be laid below building structures to achieve straight networks. Such

approaches to laying out of services become complex negotiated processes. Community functions are often crammed in structures that formerly served as residential units that were acquired and modified to serve the functions. Common spaces are often than not lacking where all spaces have been taken up by development. Day-to-day interaction is reduced to the streets which are often congested, while structured community engagements take place in informal social halls, which fall way below the recommended space standards.

Sanitation is often a major problem in organic settlements as there lacks space for toilets, sewerage and solid waste disposal. As such a few dilapidated, often full, latrines are used by a very large number of individuals. There have however been approaches by NGOs and CBOs to develop toilets to minimise the rate of pollution from open defecation and ‘flying’ toilets. Solid waste and waste water open drains are let to run adjacent to structures. The settlements of organic character in Mukuru slums are as indicated in Table 3.

Table 3 Organic Settlements of Mukuru Slums

Mukuru kwa Njenga	<ul style="list-style-type: none"> • Sisal • Milimani
Mukuru Kwa Reuben (Mukuru Kwa Reuben has more areas in organic character than Mukuru Kwa Njenga cluster. This is mostly attributed to a longer history and age of the former)	<ul style="list-style-type: none"> • Gatope • Mombasa • Kariobangi • Feed the children • Bins • Samba cool • Rurie • Reuben Kijiji mpya

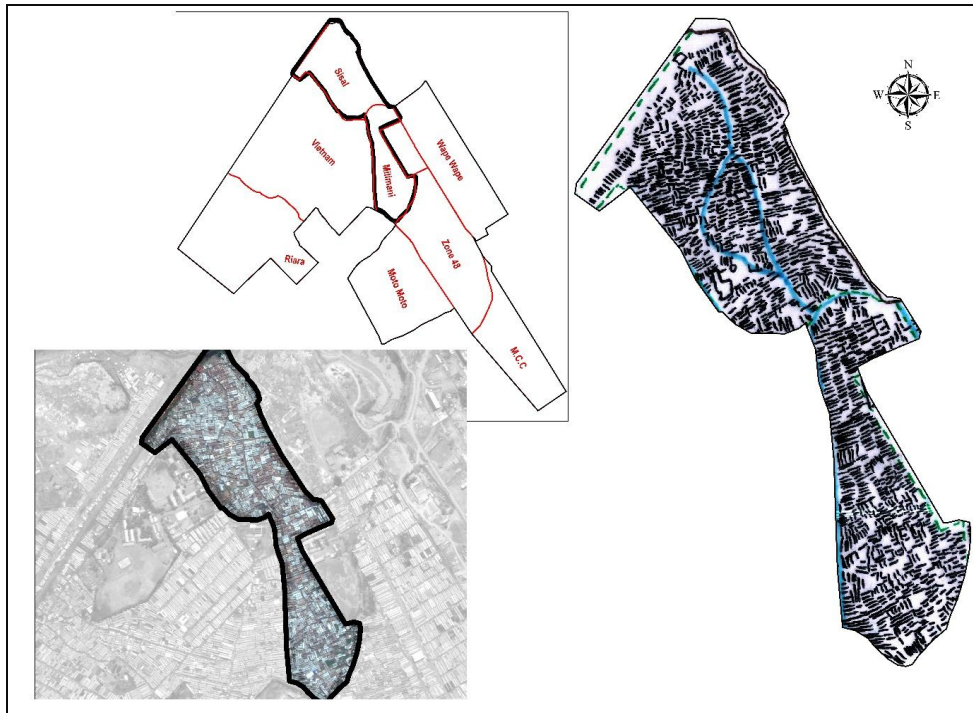


Figure 13 Organic Settlement of Mukuru kwa Njenga



Figure 14 Organic settlement of Mukuru Kwa Reuben

4.6.2 Moderately organic

The moderately organic areas are the first step transitional areas towards refinement where the quality of structures is improving and more space is realized for aeration and circulation. The street hierarchy also improves as more streets become more accessible for use. As such movement and accessibility is enhanced.

The street grid is however still dendritic being a partly organic settlement. This has allowed for better provision of services such as water and electricity since they align to the roads. Sanitation is still a problem here, although there are isolated cases where one can find structures with their own sanitary block. This typology is only manifest in Mukuru Kwa Njenga – part of Zone 48 and parts of Vietnam villages, without any traces in Mukuru Kwa Reuben.

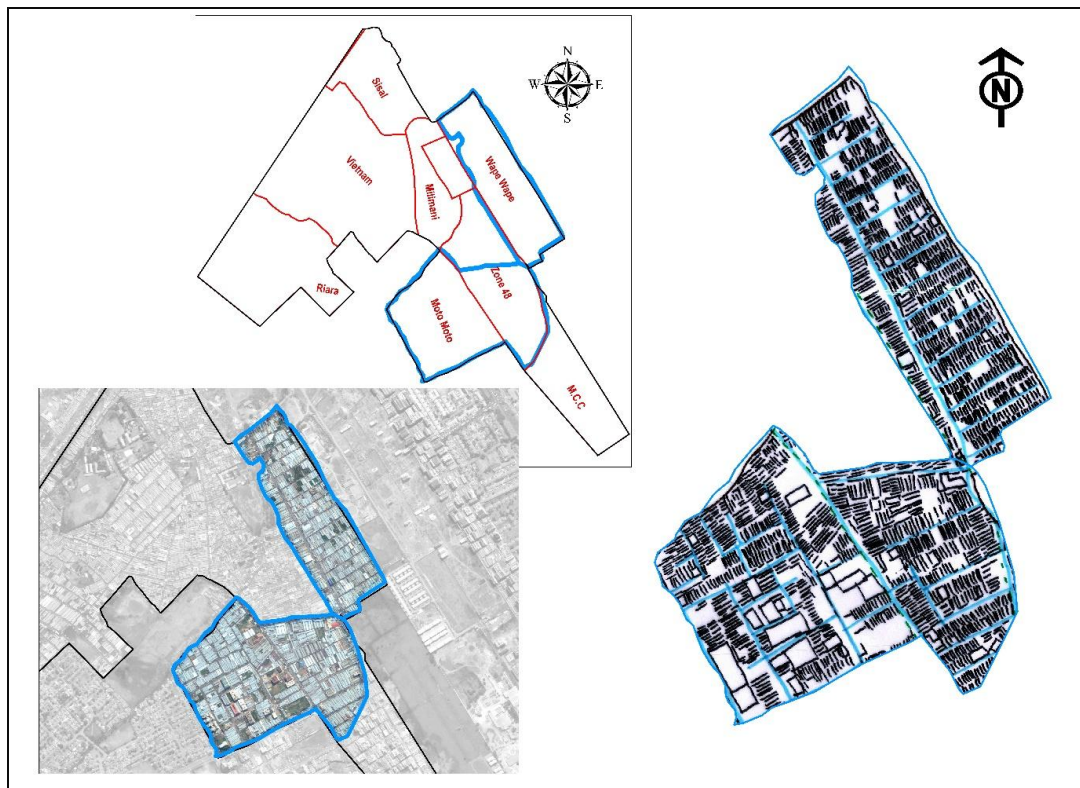


Figure 16 Moderately Refined area of Mukuru Kwa Njenga

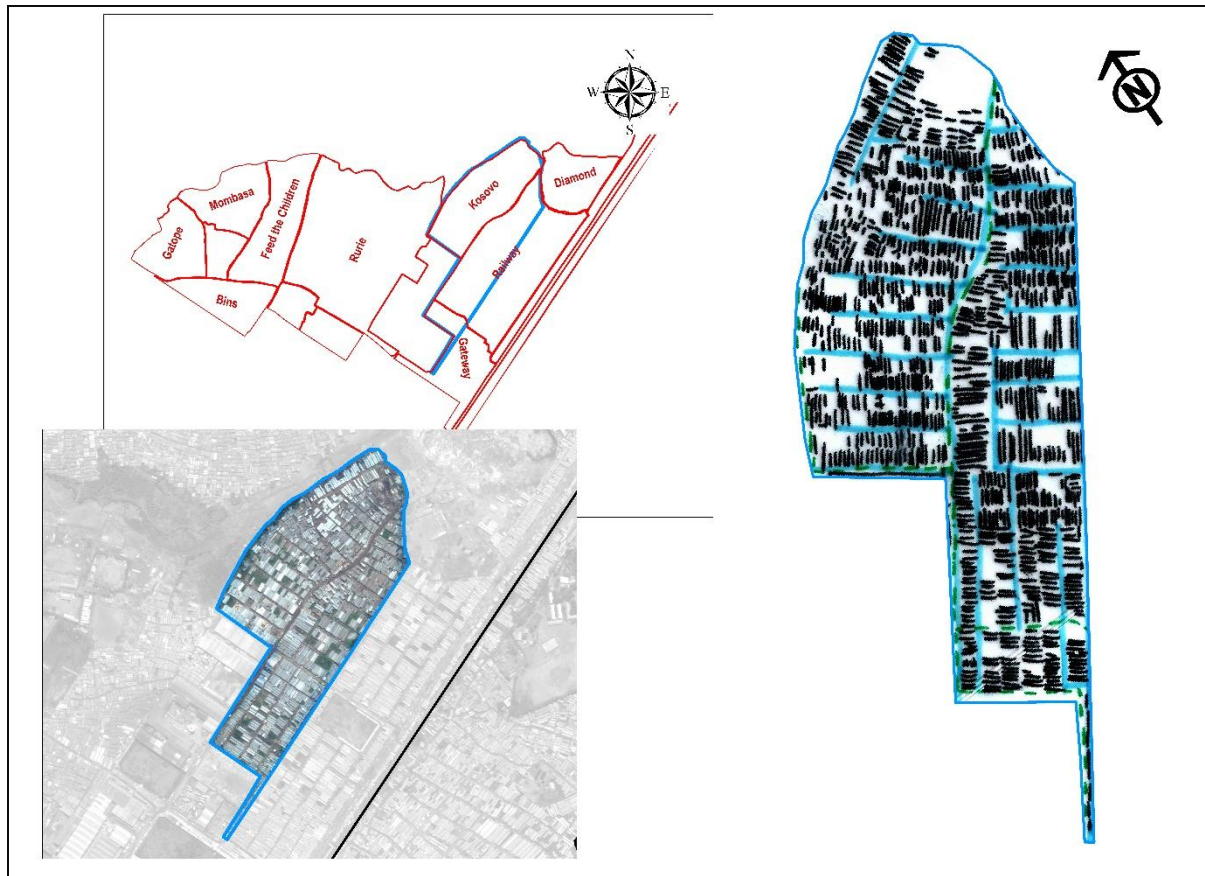


Figure 17 Moderately Refined area of Mukuru kwa Reuben

4.6.4 Refined

The refined areas exhibit an almost perfect grid of street layout. This increases the efficiency and access to water and electricity. Similarly movement and accessibility is enhanced due to increased connectivity as there are various access streets leading to a given destination. The densities here are lower compared to the organic character and sanitation relatively much better where all structures have a sanitary block which includes at least a bathroom and toilet. Open drains are however still a problem even at this level. The magnitude of foul water in the drains is however minimal hence less hazardous conditions. The building typology is mostly residential units with commercial units fronting the roads. There are also permanent structures emerging in this category where some structures are done of stone with some being storey buildings. Settlements in this category are as outlined in table 5.

Table 5 Refined Settlements of Mukuru

Mukuru Kwa Njenga	<ul style="list-style-type: none"> • Riara • Northern Vietnam
Mukuru Kwa Reuben	<ul style="list-style-type: none"> • East railway • Wesinya • Gateway • RAP



Figure 18 Refined areas of Mukuru kwa Njenga



Figure 19 Refined area of Mukuru kwa Reuben

4.6.5 Highly refined

The highly refined character is an extreme departure from the other slum characters where apart from better street organisation and service provision this category exhibits more permanence of structures and higher street profiles due to the high rise stone developments. This is however seen to be interrupted by pockets of low rise iron sheet structures. Most of the high rise developments are formally serviced and in many cases service provision is at the household level with some units being self-contained. This character only exhibits itself in MCC village of Mukuru Kwa Njenga.



Figure 20 Highly refined area

4.7 Open spaces

Open spaces are unevenly distributed in the two settlements, with most featuring on the northern part, which is lower in altitude, gently sloping towards the Ngong river. The larger of these spaces are associated with institutions, mostly schools. These spaces are most of the time shared with the community. There are also some open spaces that are fenced off; these tend to be vacant private property awaiting development and cannot be considered to be functional open spaces in the long run (figure 21).

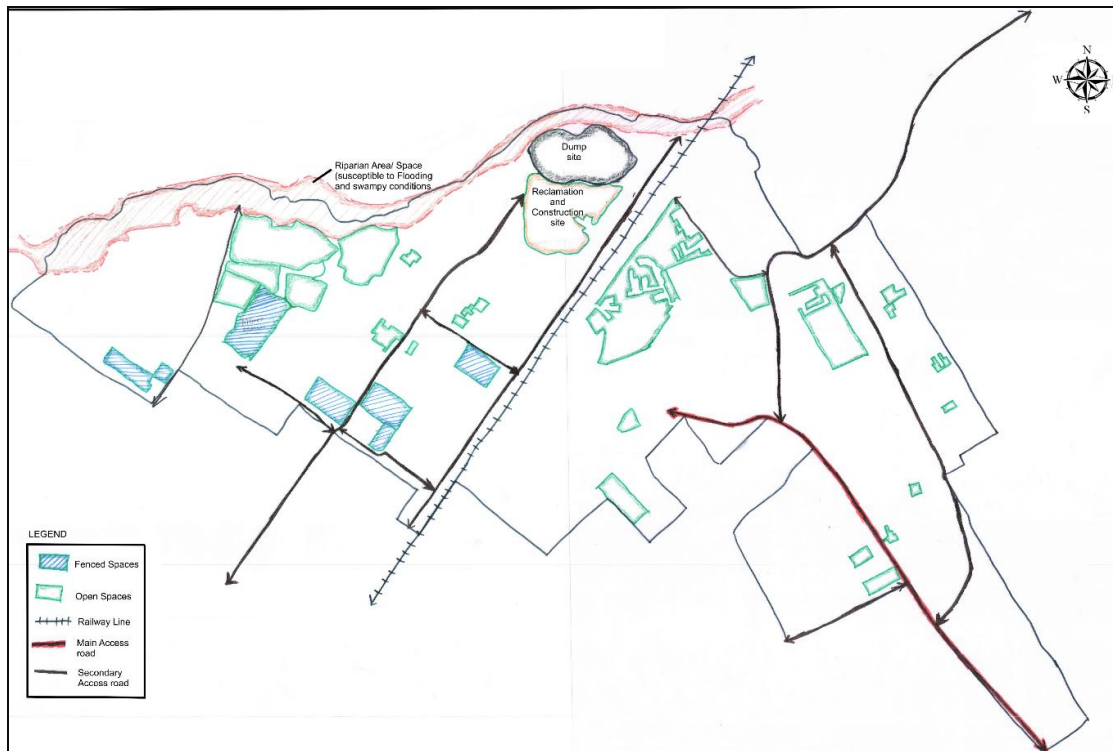


Figure 21 Large Open Spaces in Mukuru Slums

The smaller open spaces which are numerous in number are highly fluid open lots which from time to time get built up through infill development. The other open spaces are used as dumping grounds or are derelict landscapes, especially adjacent to the riparian zone on the north.

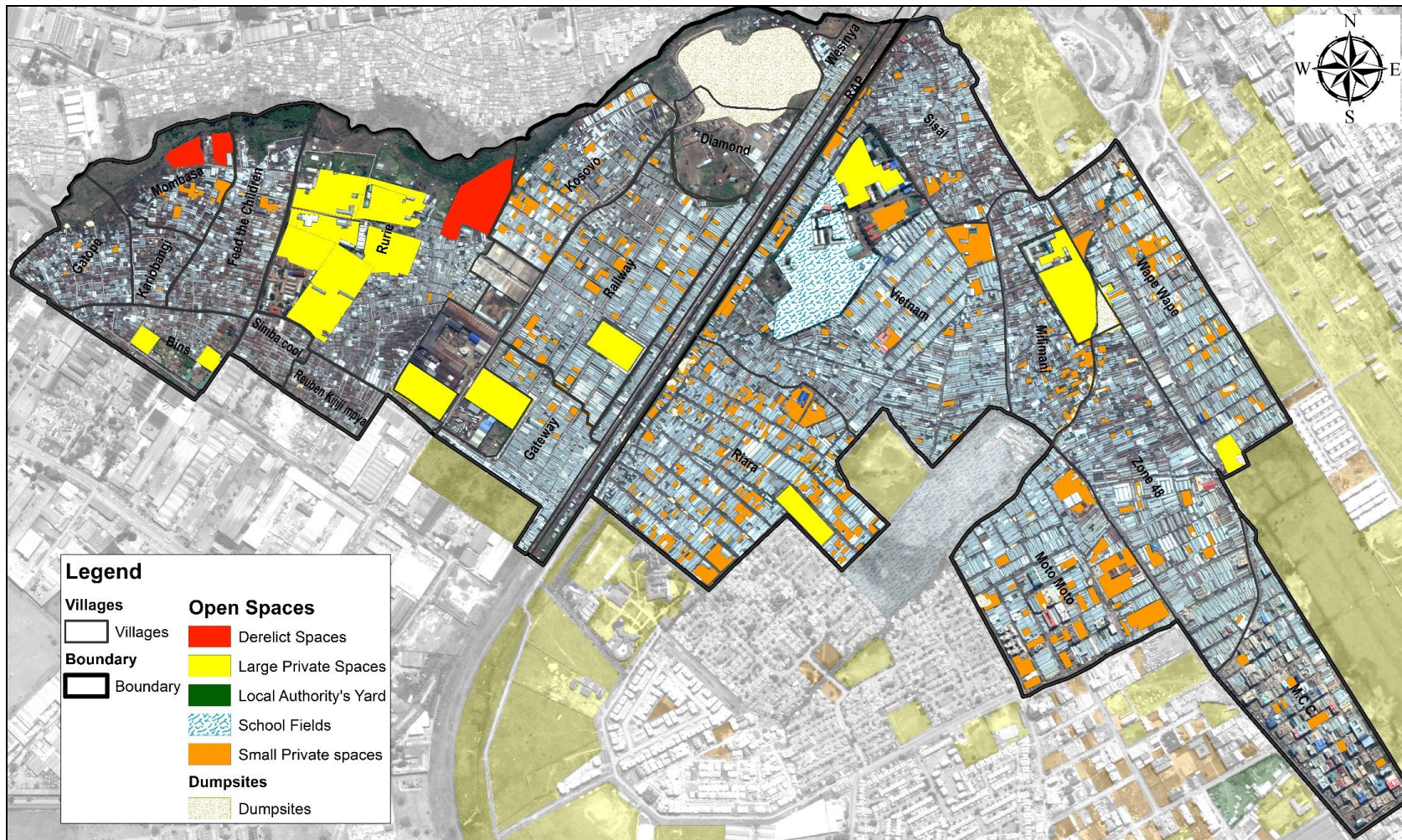


Figure 22 Open Spaces in Mukuru Slums

4.8 Physical Layouts and Housing Typologies

4.8.1 Physical Layouts

The physical layout of buildings in Mukuru is influenced by a combination of factors ranging from physical ecology, space economy, construction systems, to socio-political variables. Above the physical parameters, decision on physical layout is a power dynamic. Overall, village elders are the entities seen to have the greatest influence on decisions to do with physical layout and construction of the settlements, a phenomenon affirmed by 50% of the respondents. Below this, however, the chain of command varies from one part of the settlement to the other; for instance, in Mukuru Kwa Reuben the Chief and plot owners are second to the village elders in their influence; this is in contrast to Mukuru Kwa Njenga where plot owners are seen to be more influential than chiefs in influencing settlement layout and construction. Youth groups are seen to exert the least amount of influence in such matters.

The basic dwelling unit in Mukuru is a single room measuring 10ft by 10ft (100 square feet) as shown in figure 4 and 5. Building structures consist of a collection of such rooms joined end-to-end to form terrace (row) layout of regular or irregular disposition. In the regular layout, there is about 2ft separation between the linear units. Building layout could also take a clustered form (condominium) where terraced blocks are arranged around a common space, which is used for functions like child play, outdoor cooking, and airing of clothes. Such structures are not necessarily owned by the same person; they are of multifamily occupancy and in some situations will go several floors above the ground. Clustered settlements will often have on-plot services – especially toilets and electricity as evidenced in Gateway and MCC villages (check with correlation) Irregular layouts are mainly prevalent in the older clusters, where buildings are laid out without due consideration for circulation, building orientation (common fronts and backs), lighting, ventilation, or fire safety.

The main challenges identified in the determination of physical layout of Mukuru settlement are lack of spaces, lack of cooperation by the public, negative influence from rich individuals, poor management and pre-existence of an inflexible layout by previous settlers. These challenges make it overwhelmingly difficult to prepare an improved layout of the settlement. On the other hand, the current physical layout of the settlement poses a lot of problems to individuals residing in Mukuru. The main problems manifested are inaccessibility of roads, insecurity and spreading of fires. For example, Inaccessibility of roads is seen to be the top leading problem caused by the current physical layout of the settlement by 47% of the respondents in Mukuru Kwa Reuben with 38% of the respondents in Mukuru Kwa Njenga noting the same.

- **Best Physical Layout:** Reuben Kijiji mpya in Mukuru Kwa Reuben and AA in Mukuru Kwa Njenga are considered to be the villages with the best physical layout as noted by 35% and 27% of the respondents respectively. This is followed by Railways in Mukuru Kwa Reuben and wape wape in Kwa Njenga.
- **Worst Physical layout:** Villages with the worst physical layout are Gatope in Mukuru kwa Reuben, and Sisal and Matopeni in Mukuru kwa Njenga.

The main reasons for the differences in the physical layout of villages are time differences in the establishment of the settlements, layouts being established by different individuals, and the topographical characteristics/physical variations of the various areas.

Planning is seen to be the most important way of improving the physical layout of the two settlements as noted by 35% of respondents in Mukuru Kwa Reuben and 47% of respondents in Mukuru Kwa Njenga. Other ways suggested that can improve the physical layout is by upgrading and improving of the road networks.

4.8.2 House/Building Typologies

Housing typology generally describes the nature of the housing configuration and design. Mukuru informal settlement consists of a limited range of house types that have evolved over time. The bulk of these are temporary in nature and are slight variations of one another. The distinction of house typologies can be based on various parameters including age, use, building technology and materials, height in term of number of floors, type of developer/development, and building layout. There are three main typologies characterizing the settlement; these include flats (high rise) housing, terrace/row housing and bungalow type of housing. According to the survey conducted 93% of the respondents have settled in row houses, 6% live in flats while only 1% said that they live in bungalows.

The models preferred for housing in Mukuru are anchored on three main criteria. The first one is housing as a product where some individual prefer specific typologies of housing; the second one is of individuals who would prefer basic services to be improved; and the third is those who are interested in housing that is sensitive to their economic status. Permanent stone housing is the most preferred housing typology according to 46% of the respondents in Mukuru Kwa Njenga and 52% in Mukuru Kwa Reuben. Second to this is a self-contained flat identified by 33% of the respondents in Mukuru Kwa Njenga and 25% in Mukuru Kwa Reuben.

In terms of building materials, a majority 91% of respondents lived in houses made of iron sheets for walls against 8% living in stone-walled buildings. About 99% of the buildings had

their roofs built iron sheets 99% of the respondents indicated that their roofing material was iron sheets. Given the fact that the various villages in Mukuru settlement were constructed at different times and under different development circumstances, there is some correlation of typological differentiation and the village clusters. This section has attempted to review house typologies based on selected representative village clusters.

Milimani Village

Milimani sample structure 1 being in an organic area in Mukuru Kwa Njenga manifests structures that are simpler in form. However this area is challenged by the presence of foul water management where most structures have foul water passing just next to them. Access to water at the unit level is limited to water vendors. Most electricity connections are informal **(figures 3.4-2).**

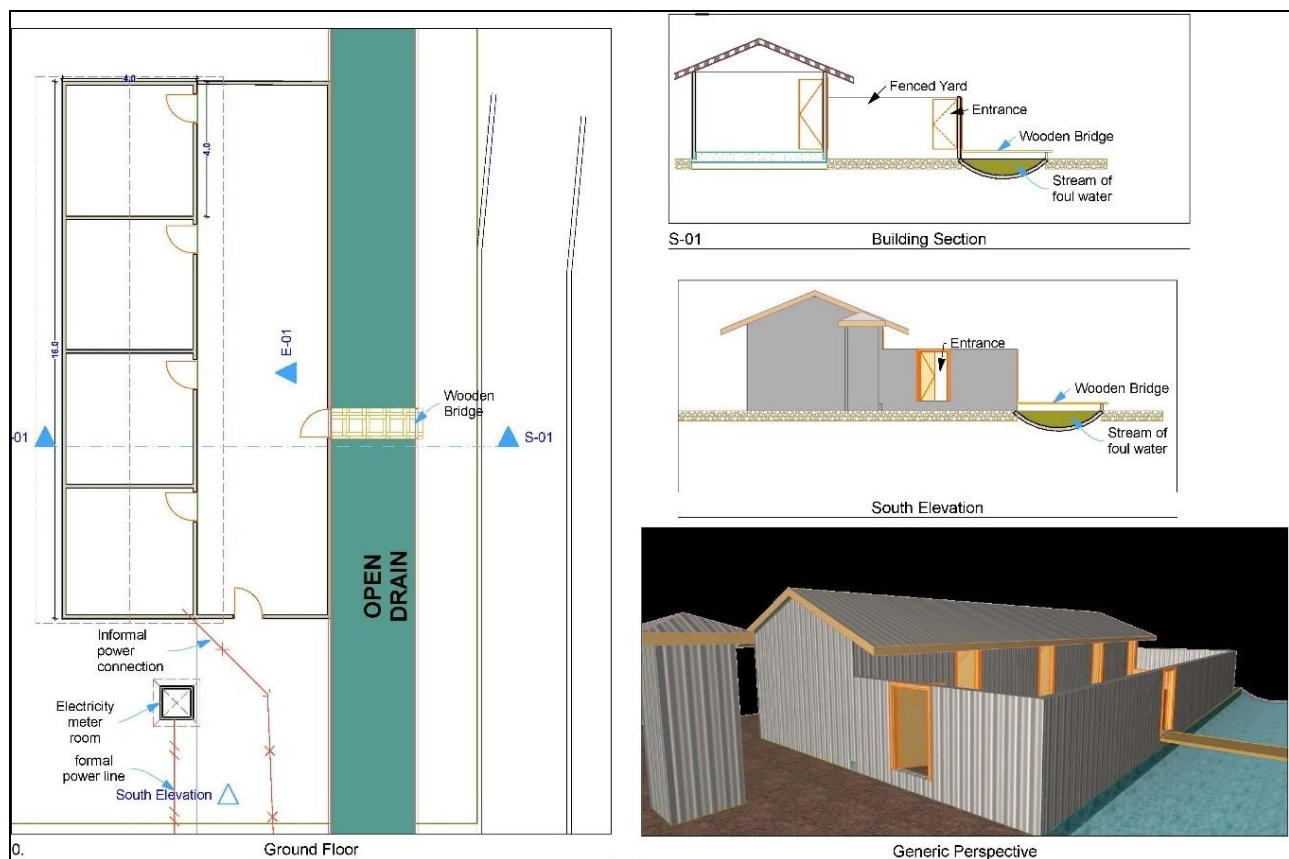


Figure 23 Illustration of Milimani Sample structure

Feed the Children Village

Feed the children structure sample 1 being in an organic settlement in Mukuru Kwa Reuben is a settlement located in the middle of swampy grounds. As such access is a problem. It lacks basic services such as water. There is no power connection and the swamp is full of foul water. The area is however still under densification as new structures are coming up evidenced by one coming up next to the swamp. This is as indicated in **figure 3.4-3**.

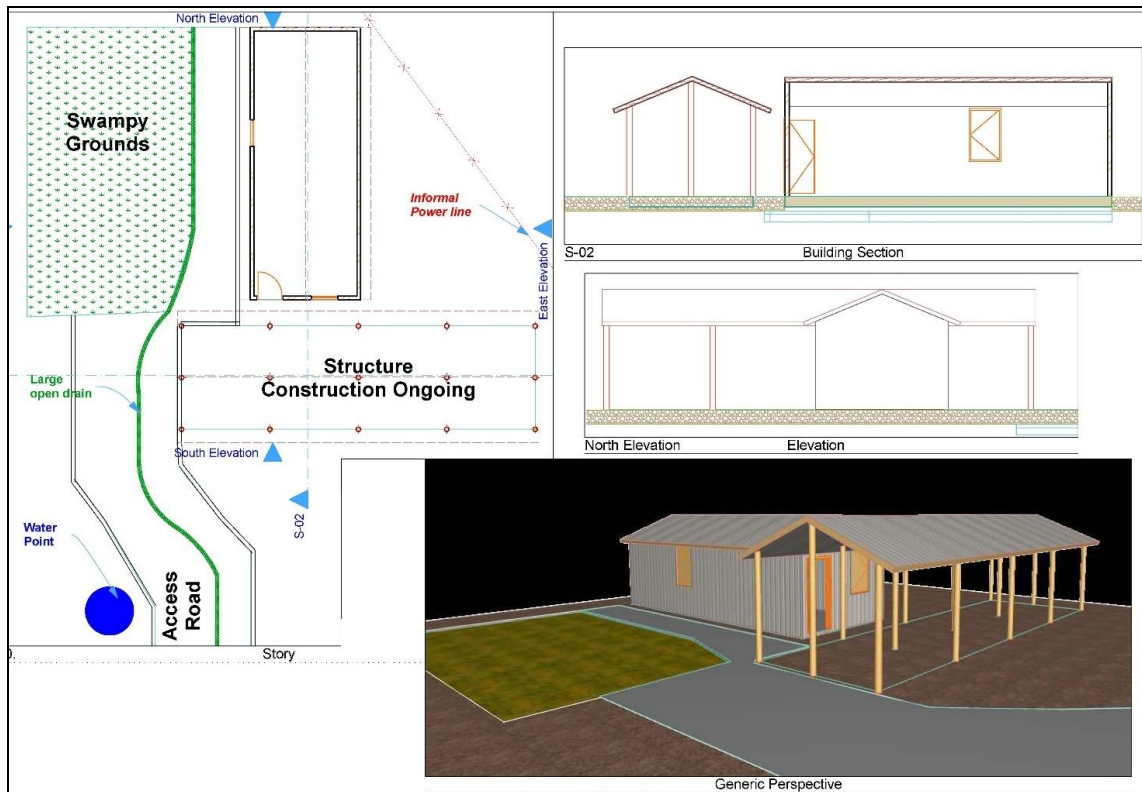


Figure 24 Illustration of Zone 48 Sample structure

Wape-Wape Village

Wape-wape being a moderately refined area exhibits uniformity of typology in structure where the modal structures are low to medium rise structure made of corrugated iron sheets. This is as illustrated in figures below.



Figure 25 Perspective of Wape Wape structure sample 1

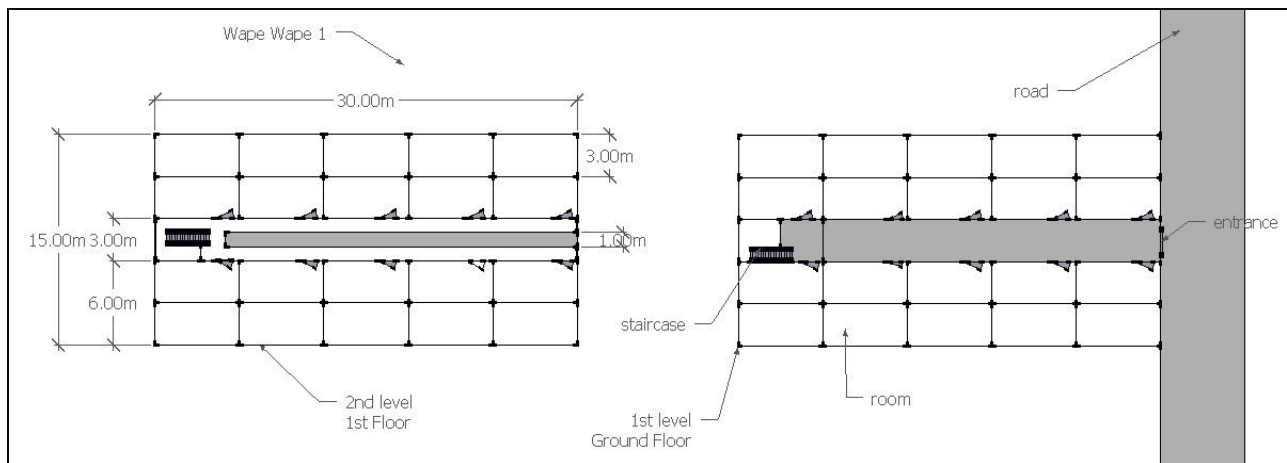


Figure 26 Plan Layout of Wape Wape Structure sample 2

Vietnam Village

Vietnam sample 1 being part of the refined settlements in Mukuru Kwa Njenga is a two level building made of iron sheets. It opens to a 4 metre street, with two open drains running along it. The electricity connection is informal. The units fronting the road are used for commercial activities. The toilets and bathrooms are within the structure as indicated in the illustration below.

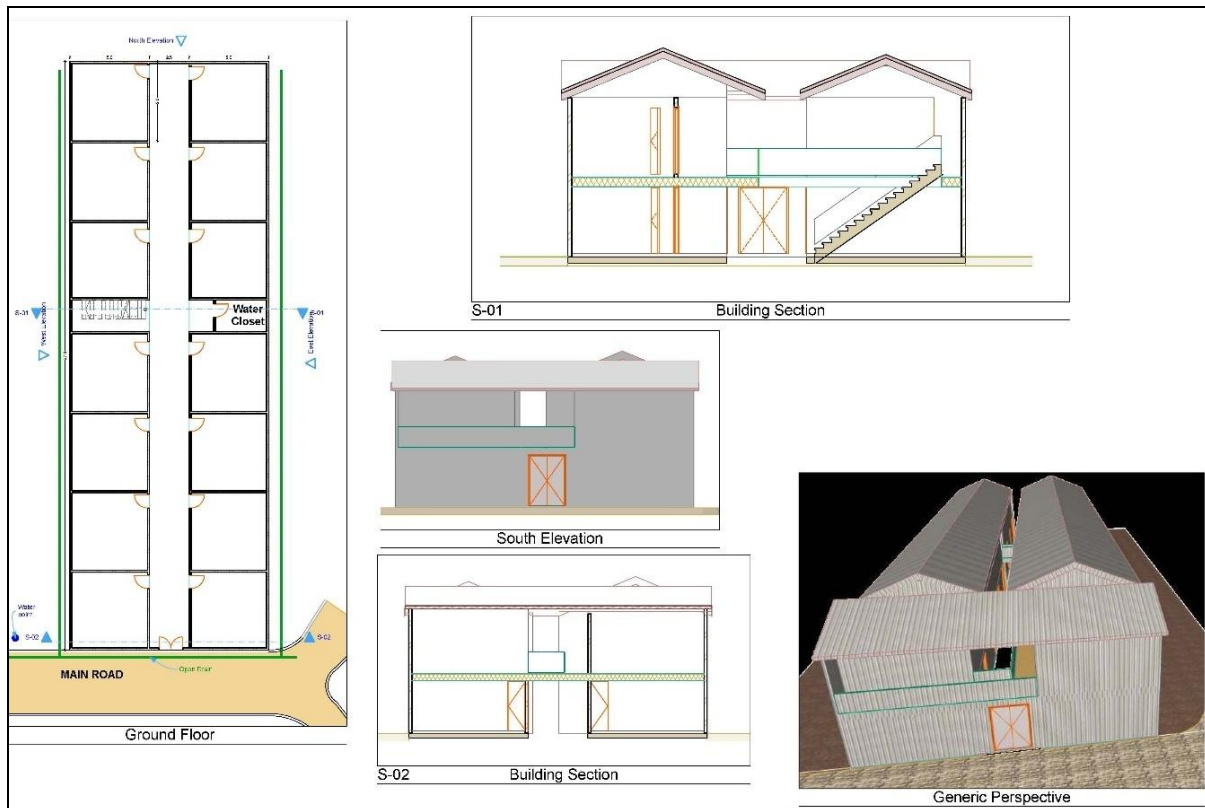


Figure 27 Illustration of Vietnam Sample structure

Gateway Village

Gateway sample structure 1 is a three level structure made of natural stone and iron sheets. The two lower levels are made of natural stone and the third is an extension made of iron sheets. There is an open drain running along the structure to the main road. Electricity connection is informal. The structure however lacks a sanitary block. This is as illustrated.

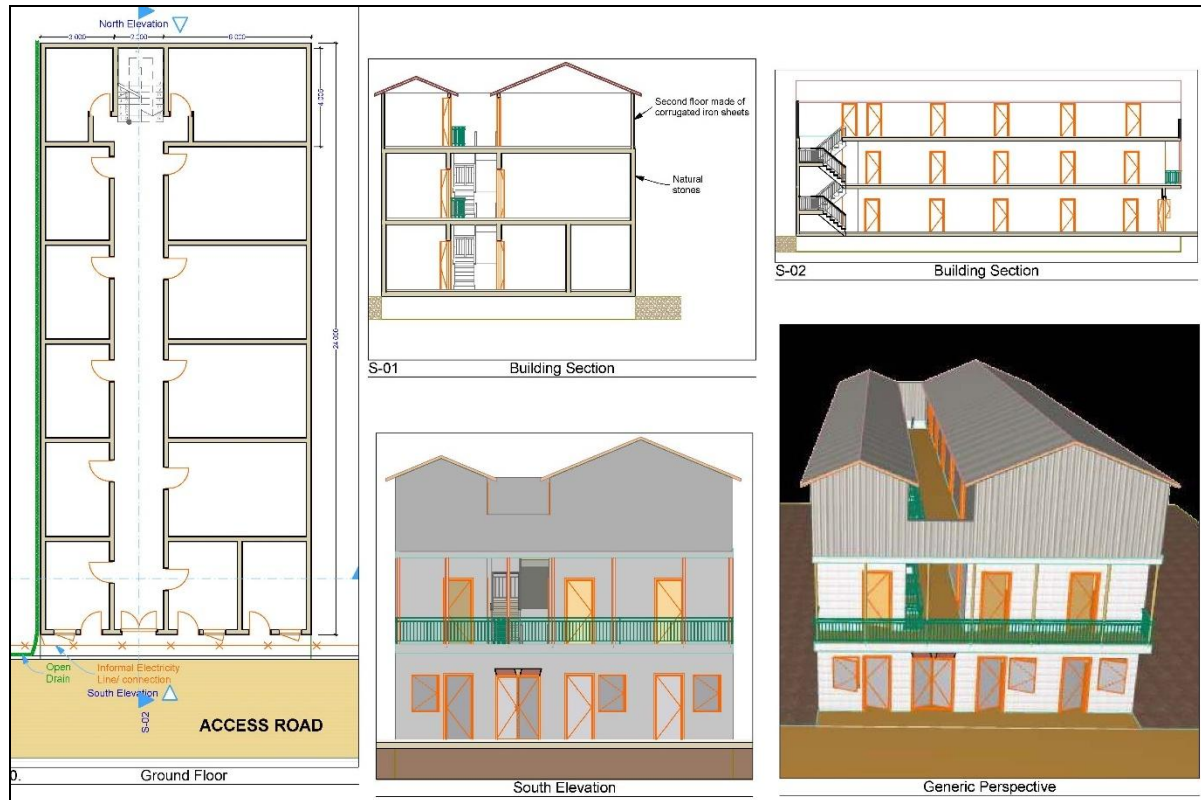


Figure 28 Illustration of Gateway Sample structure 1

Kosovo Village

Kosovo sample structure 1 is a one level permanent structure made of stone. The sanitary block is within the structure. An open drain runs along the road that the structure opens to and the electricity connection to the structure is informal. This is as illustrated

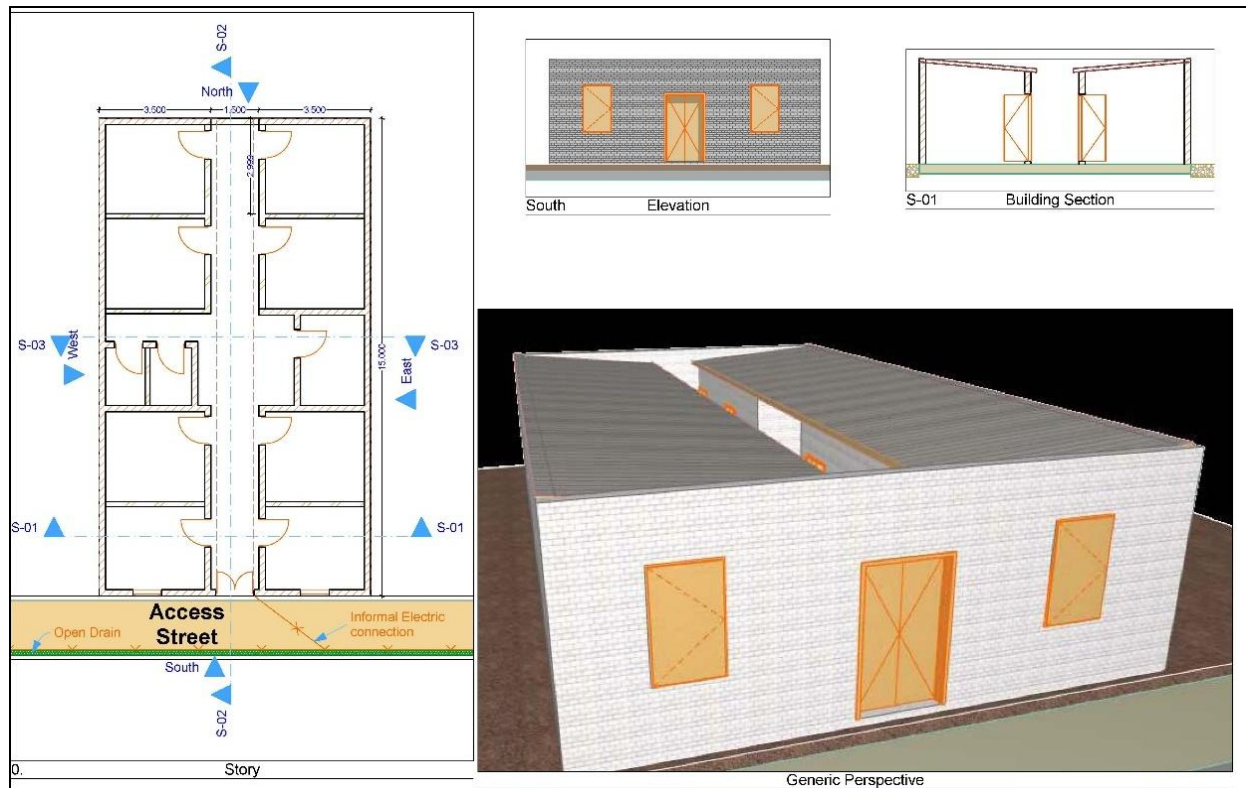


Figure 29 Illustration of Kosovo Sample structure 1

MCC Village

Structures in MCC being classified as a highly refined area in the grain analysis is seen to exhibit a character of better organised permanent structures comprising of high rise development which are mostly mixed use apartments using the lower levels for commercial activity. This is mostly due to the influence of the adjacent road. The developments are as the one illustrated in figure 30.



Figure 30 Perspective of MCC structure Sample 1

Units in these developments are mostly single rooms measuring 3.3 by 3.5 metres (12 square metres) as shown in figure 31.

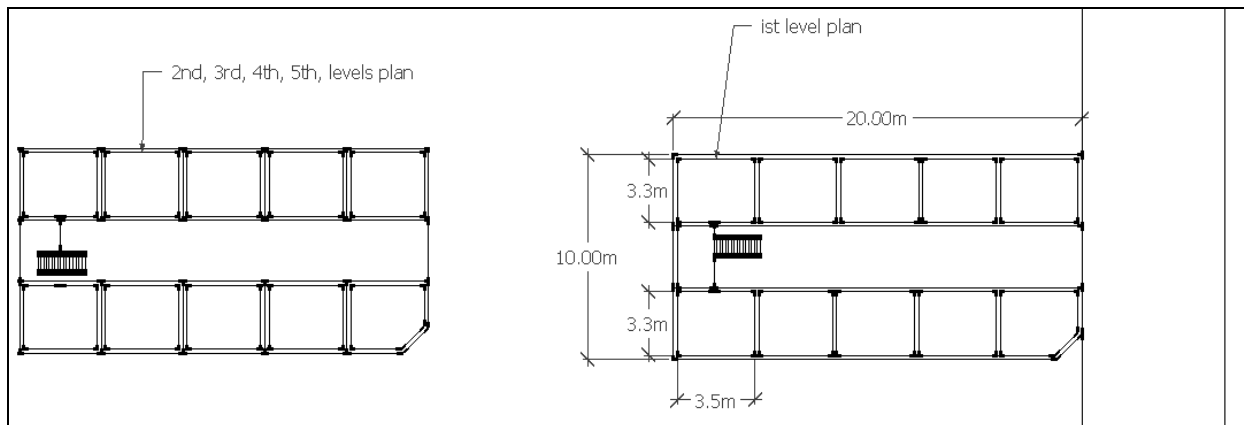


Figure 31 Plan Layout of MMC Structure Sample 1

4.9 Synthesis: Land Tenure and Settlement Typologies Nexus in Mukuru

One of the key objectives of this research was to investigate existence of any causal relationship between land tenure and settlement typologies within Mukuru Informal settlement. Land tenure basically refers to the terms and conditions, under which rights to land and land-based resources are acquired, retained, used, disposed of, or transmitted. Land tenure problem is a pertinent feature in informal settlements due to unclear tenure arrangements and documentation. In Kenya, the complexity of land tenure in informal settlements is worsened by factors such as absentee land owners, structure owners, compensation demands and sometimes limitations in the legal framework and wanton corruption.¹³ Nevertheless, of much importance to the urban poor residing in informal settlements, is not much the type of tenure adopted but the security associated with that particular tenure system. Currently, about 60 percent of Kenya's urban population lives in informal settlements that are characterized by among others insecure land tenure (UN Habitat and KENSUP, 2007). This insecure tenure condition in informal settlements is exemplified in Mukuru where 95% of the respondents under this study perceived their tenure situation to be insecure mainly because of lack of title deeds or any form of legitimate ownership documents for the land which they currently occupy.

Within informal settlements land tenure is delivered mainly through informal subdivisions, illegal occupation and squatting which often fall short of planning requirements set by the approving authorities hence cannot be formally registered. This illegal occupation of land out of the formal regulations, more often than not limits the involvement of planning authorities in intervening so as to guide settlement layout and typological disposition. Moreover, the insecure tenure discourages government, private investors and even the informal settlement dwellers themselves from fundamentally investing in the land. Various commentators on this subject share similar sentiments for example, Nyametso (2010) has argued that uncertainty or insecurity of land tenure is a major source of disincentive for people to invest in the land. In addition, Gelder (2010) presupposes that once an owner is convinced that his/her property claims can be enforced and the fruits of an investment safe, he/she also has an incentive to invest in land or housing improvement. Conversely, to the urban poor, access to land and security of tenure has been reported to have potential of increasing individual, household and community savings and expenditure towards improvement and development of homes thereby helping improve standards of living and the achievement of housing rights (UN-Habitat, 2008).

¹³See Paul M. Syagga, 'Land Tenure in Slum Upgrading Projects', < http://halshs.archives-ouvertes.fr/docs/00/75/18/66/PDF/Paul_Syagga_-_LAND_TENURE_IN_SLUM_UPGRADING.pdf > accessed on 18th December 2013

As noted in the previous paragraph, majority of the residents in Mukuru do not have title deeds to the land they occupy or any other tenureship documents which aggravates the state of tenure insecurity. There are no other formal documents for purchase or lease of land and building properties. Only written agreements between the seller/lessor and the buyer/leasee exist, witnessed by village elders, chairmen, or Chiefs. Within the Kenyan land law system, title deeds are the most legally recognised land ownership documents. On the other hand, out of all the respondents sampled, about 47% of them had one form of house tenureship document or the other, while 53% of the respondents did not have any housing tenureship documents. Tenureship documents on housing occupied are important in demonstrating and protecting rights of an occupant as being legally housed in a unit or have the rights to develop. It also helps in providing a tenant or occupant of a housing unit with security of residence thus reducing fear of being dispossessed, evicted or against the arbitrary demolition of one's housing unit. Overall, arising from this informal (insecure) tenure, it follows that the bulk of development in informal settlements is both unlicensed (not formally permitted) and unregulated, ranging from access and use of the land to building construction, and service provision. The insecure tenure was cited by respondents as a hindrance to substantive investment, either due to lack of courage to invest or inability to use the land as collateral in seeking finances to invest on the land. Moreover, due to this tenure insecurity the slum residents live under constant fear of evictions and demolitions which in turn makes development difficult. To illustrate the gravity of this situation, a participant in one of the FGD conducted summarised their tenure situation by noting that; "the land belongs to the owners and at times they threaten us and that's why we have not built properly since we are not assured of the land." This implies that tenure insecurity jeopardises residents' ability to carry out any meaningful improvements on land or housing.

Based on the findings of this study, tenureship was found to be closely related to the grain of settlements in Mukuru kwa Njenga and Mukuru kwa Reuben. As such the level of tenureship security is seen to have a direct correlation to the size, type, configuration, and character that structures take in the form of durability and also the organisation that these structures take in space which then in turn affects the degree to which service can be reticulated. A good indicator of these is Milimani area in Mukuru kwa Njenga. Milimani area is one of the organic areas of Mukuru kwa Njenga, tenure security is very low with 100% of the respondents indicating that there is no security in tenure. This then affects the settlement morphology where due to lack of tenure security individuals opt to develop structure with an aim of minimising losses should they be evicted. These structures are mostly small, inadequately aerated and lit structures that are placed in an ad hoc manner in space. This is further exacerbated by the fact that since tenureship is a major challenge in this area, most individuals build their structures in the little space that they can find including constructing just next to the open sewer.

A contrast to this would be the Falcon/ Gateway area of the Mukuru kwa Reuben settlement, where a refined character is manifested. This is seen to be a derivative of a higher sense of tenure security where 20% of the respondents indicated that there is a sense of security of tenureship.¹⁴ As such it is noted that individuals due to better security of tenure feel a higher level of entitlement. The development scenario then takes a different tangent from the organic character in that here developers are able to introduce better structures which are more spacious some of them being permanent. They consider circulation, water reticulation and even aeration where windows are seen to be more common than in the organic areas. Hierarchy of streets start to emerge and a better organized grid iron structure is seen.

It is therefore evident that land tenure and especially the resultant security of tenure has implications on the development decisions that informal settlement dwellers and other agencies make on land use. The fear of making any substantial investment on improving the overall environment and settlement typology is largely hitched on lack of security of tenure. In this manner, the resultant housing and morphological typologies that characterize Mukuru informal settlement have more to do with the prevailing tenure conditions there. For example, this study has ascertained that the main building materials for houses in Mukuru settlement are temporary and easily available such as iron sheets. This is to ensure that the structure owners realize minimal loses in case of eviction and demolition. Moreover, due to unclear or even nonexistent land rights, the developers as well as the alleged plot owners rarely build permanent houses preferring instead to build temporary houses.

4.10 Does Tenure Situation Influence Service Provision?

Establishing whether the prevailing tenure situation has any influence on service provision within informal settlements generally and in Mukuru specifically was another fundamental area of concern for this study. Literature has already established a strong link between tenure security and the propensity of people to invest on land. For example, Sims (2002) has argued that adequate security of tenure is measured by a five point criteria in which one looks at the extent to which tenure allows for the provision of infrastructure and public services.

¹⁴ This phenomenon underlines the finding that even within the informal tenure there exist internal variations that result in different settlement typological dispositions.....the relatively more structured tenure system such as that attached to informal subdivision of land are perceived to be more legitimate and result in more refined and better serviced settlement typologies

This study has established that the dynamics of ownership and rights of use of land and buildings in Mukuru Kwa Njenga and Mukuru kwa Reuben are complex. Land transactions in Mukuru informal settlement are done in a haphazard manner by various actors ranging from local administration, to landowners – both legal and perceived, structure owners, and politicians with no regard to existing laws. In the prevalent practical sense, the ownership of land in Mukuru is not legal but perceived in that the legal owners of the land do not have access to it due to irregular occupation of the land combined with a delicate¹⁵ and sometimes hostile¹⁶ local environment. The problem is complicated further by the fact that the perceived owners of the land are not necessarily the developers of the same; even where they are the developers in many cases they are not the occupants. It is thus possible to find that the occupant, the structure owner, and the perceived land owner are totally different entities. Adding the legal land owner to this equation, the result is a multi-layered structure of rights, at times in contestation, which makes tenure a complex phenomenon in Mukuru as is the case in many other informal settlements.

According to Syagga et al (2001), the ambiguous tenure status of those living and working in informal settlements - structure owners and tenants alike - prohibits them from enjoying their rights as urban citizens. For example, such tenure phenomenon does not make it easy for the government through its line agencies to provide basic services within the informal settlements. In fact, the prevailing informal tenure arrangements in informal settlements more often than not is used to relieve off public authorities of their responsibility of service provision, despite numerous government policy that otherwise seeks to ensure that all persons have access to adequate basic services such as water and sanitation. Moreover, under such tenure arrangements, structure owners are under no obligation to maintain premises or provide basic services as their main objective is to reap maximum benefit from investment which they consider insecure due to their lack of tenure security. Thus, it is common to encounter many dysfunctional service facilities or those in gross state of disrepair where both situations drastically reduce the utility levels of such facilities, making the physical existence of facilities non-correspondent with the prevailing quality of services and the general environmental conditions

The tenure-services link can be direct or indirect. A direct relationship holds where the perceived level of security of tenure generates confidence to improve the land one occupies by, among others, investing in basic services while perceived insecurity will discourage the

¹⁵ The stakes sometimes involve the powerful elite represented by their proxies

¹⁶ The illegal occupants of the land use hostility as a defense mechanism to keep the bona fide owners at bay

improvement of the land occupied and investment in basic services. This implies that informal tenure can lead to suboptimal provisions and lost opportunities in provision of basic services and settlement improvement. An indirect relationship prevails where tenure affects state of service provision by influencing other associated variables such as settlement typology. This was echoed by service vendors who indicated in the interviews that improvement of tenure will lead to improved settlement conditions that will attract more people hence good catchment for business in service provision.

Basic service provision has hitherto been a preserve of cartels. However, overtime local community based organizations, NGOs and lately the government has joined through programs such as KENSUP¹⁷ and KISIP¹⁸ even though cartels still play a major role. Over the years, several policy-sensitive initiatives have been undertaken and institutions and facilities have been established to address the issue of informal settlements especially those within the city of Nairobi through joint efforts of the government, donors and civil society organizations. This new paradigm shift could be attributed to many factors, but key amongst them is the human rights/basic needs approach mainly championed by NGOs who have played a key role in lobbying both government and international partners to support basic service provision in informal settlements despite the prevailing tenure situation.

4.11 Does Settlement Typology have any Implications on Level of Service Provision?

Informal Settlement typology is easily identifiable by analysing the spatial manifestation of both form and character (such as land use disposition) of a given settlement. In the context of Mukuru informal settlement, the typological examination looked at two broad categories with internal divisions; it classified settlement typology by formation/foundation and by

¹⁷ KENSUP's objective is to improve the overall livelihoods of people living and working in slums through targeted interventions to address shelter, infrastructure services, land tenure and employment issues, as well as the impact of HIV/AIDS in slum settlements.

¹⁸ Its objective is to improve living conditions in informal settlements in selected municipalities in Kenya by enhancing security of tenure and improving infrastructure based on plans developed in consultation with the community. This project has 4 components. Component 1 focuses on strengthening institutions and program management by supporting institutional strengthening and capacity building of the Ministry of Housing, the Ministry of Lands, and the selected municipalities. Component 2 enhances tenure security by supporting systematization and scale-up of ongoing efforts to strengthen settlement planning and tenure security in urban informal settlements. Component 3 will invest in infrastructure and service delivery. Component 4, planning for urban growth, will support planning and development of options that facilitate the delivery of infrastructure services, land, and housing for future population growth.

morphology. Based on the formation/foundation classification, this study categorized the settlement types according to their pathways for materialization encompassing the method of establishment, construction, and development whereby three main typologies were identified, namely spontaneous squatting, appropriated, and speculative. On the other hand, classification by morphology was based on an array of analytical components entailing accessibility, grain, unit density, land use, street network; block sizes, lot layout, massing, building typology, and construction material. Arising from the morphology analysis based on settlement grain, a continuum of five typologies was identified. This continuum categorization exhibits settlement typologies that range from those that are organic to those that exhibit varying degrees of refinement.

The analysis of Mukuru settlement typologies enabled visualization of the resultant basic services in terms of reticulation, accessibility, and coverage based on the different typologies. This study found out that the prevailing settlement typology has fundamental implications on basic service delivery within informal settlements in general and Mukuru in particular. For example, critical analysis of areas within Mukuru that were categorised as organic demonstrated that reticulation of basic service infrastructure is a rather complex phenomenon. This was largely attributed to the dendritic character of available access paths where off the main circulation spine, the inner roads quickly degrade into often very narrow paths, of irregular width, and twisted following left-over space between irregularly positioned building structures. Under such manifestation of haphazard spatial layout, reticulation of basic service infrastructure which normally follows the orientation of roads becomes difficult. This is because service utility lines have to be aligned to the twisted and irregular street grid, or be laid below building structures to achieve straight and more efficient networks. Such approaches to laying out of services infrastructure becomes a complex negotiated processes. This is especially due to the unconventional tenure system that renders most of the land in such organic settlements unavailable for public utility use and the general lack of prior land use planning which would have otherwise reserved land for such public utility services. The organic clusters of the settlement also depict low permeability that constrains the physical access of service facilities but also makes such facilities vulnerable to crime, especially at night, for lack of natural surveillance.

In an interview conducted in Mukuru Kwa Reuben, Rurie Village, one of the key water providers noted that the dense, congested, and organic nature of the settlement hampers service reticulation. The water vendor further observed that the distribution of services by Nairobi Water and Sewerage Company hardly goes beyond the first row properties along the main circulation spines leaving the inner clusters underserved. The implication of this is that the organic settlement typology affects reticulation of water services hampering levels of supply,

quality of water supplied and making reticulation an expensive affair in addition to making households walk far distances to access water points. In addition, one of the youth groups engaged in solid waste collection noted that due to the physical layout of the settlement, they have difficulties in transporting waste collection buckets as the paths are too narrow and crooked to allow easy passage of the hand drawn carts which are their main mode of transport. They therefore sometimes have to carry the otherwise heavy buckets on their backs.

Considering the highly refined typology, an extreme departure from the organic typology was noted. In such areas, apart from better street organisation, more permanence of structures and higher street profiles due to the high rise stone developments, basic service provision can be considered adequate and improved. For example, in MCC village of Mukuru Kwa Njenga, majority of the high rise developments there are formally serviced and in many cases service provision is at the unit/ household level with some units being self-contained.

In summary, this study found out that basic service provision is highly dependent on the prevailing settlement typology. Water supply infrastructure in Mukuru informal settlement coincide with the road/circulation network; thus there exists a higher level of water supply in areas adjacent to these access roads while the inner clusters portray low levels of supply. Similarly, reticulation of sanitation in Mukuru Kwa Reuben and Mukuru Kwa Njenga corresponds with the character and grain of the settlement. Organic areas tend to exhibit low count of toilet blocks while the fairly refined areas have more toilets. The power reticulation structure also corresponds to the settlement morphology, where the main power lines coincide with the main streets and the organic areas of the settlements exhibit a lower level of reticulation and an irregular network. Such a network exposes the users to electricity-related risks like surges and fire outbreaks which result into higher casualties during such disasters as rescue missions are hampered by the narrow and intermittent street network.



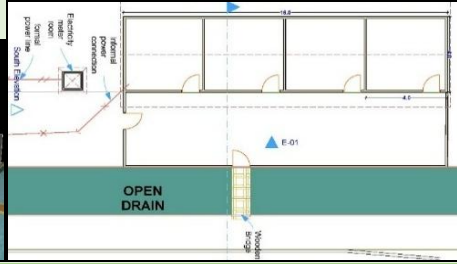


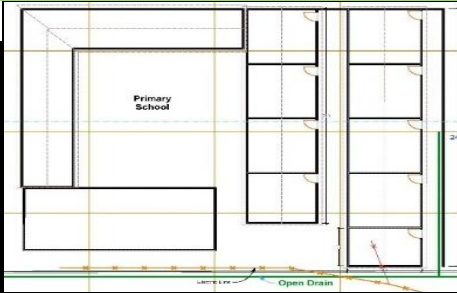


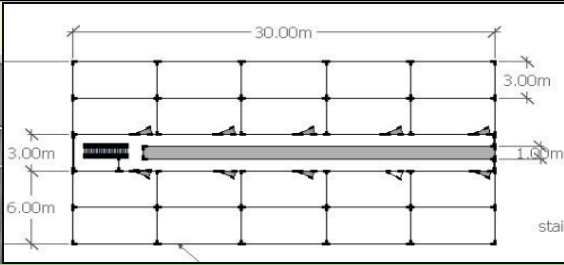


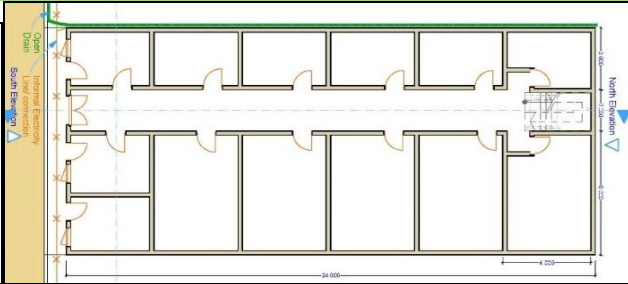
Grain	Illustrations	Character
Organic (Milimani)	  	<ul style="list-style-type: none"> • Simple structures • Minimal Provision for Aeration • Sinking Structures • Dendritic Street Structure • Iron sheet and tin structures
Moderately Organic (Zone 48)	  	<ul style="list-style-type: none"> • Simple Structures • Better Circulation • More open common spaces • Dendritic Street Structure • Iron sheet and tin structures
Moderately refined (Wape wape)	  	<ul style="list-style-type: none"> • Wider Streets & open spaces • New multilevel Structures • New semi dendritic street structure merged with grid structure • Iron sheet structures
Refined (Gateway)	  	<ul style="list-style-type: none"> • Wide streets • Larger open spaces • Multilevel structures • Grid Iron street structures • Iron sheet and natural stone structures

Figure 32 Summary of Settlement Typology / Character

5.0 Service Provision Environment: An Uneven Playing Ground:

Service provision in the informal settlements is a function of existing community and power brokers relationships, gender dynamics, access and control of resources especially land including power.

Groups of young men and women who were engaged in solid waste collection for example, found themselves in the wrong side of the “law” when the area Chief in charge of Bins village banned their garbage collection activities citing that they were not licensed by the City authorities to offer the service. In a focus group discussion, some of the youth observed that there had been a cold war between the area Chief and the waste collectors since the later had sort permission from the Chief to operate in the village. Saul observed that

“the chief is powerful in the settlement because she receives bribes from all kinds of people seeking favors”.

5.1 Take it or leave it

The environment in which the residents live and experience daily is not conducive to say the least. Interaction with some of the community members revealed a dissatisfied and largely deprived community Maina Waruinge from Bins was quoted saying that nothing was positive except that his landlord is always patient with him whenever he is delayed in paying rent. He said:

“...Kusema ukweli hakuna kitu yoyote nzuri...”

“Honestly, there is nothing positive about this place / village.”

He then added:

“Mahali ninaishi sijawahi ona choo na maji tunayoletewa ni chafu mpaka ni green. Tunasurvive tu kimungumungu”.

I have never seen latrines/toilets where I live. The water that is brought to us is so dirty that it is green in colour. We just survive by the grace of God.

5.2 Nowhere to run

Under the circumstances, the residents had little or no choice to seek audience or redress for the challenges and injustices they experienced by living in Mukuru. Discussions with communities regarding options the community had for seeking redress revealed different

reasons for the predicament. Probing further why the community did not have a formal channel to address their situation the following responses were recorded.

Evans Omondi a resident of Mukuru kwa Reuben responded by saying that it was tricky to do so for various reasons.

First, people worked in different shifts and so they hardly met.

Secondly, owing to forced evictions, associations and grouping were difficult to manage and hold together.

Thirdly, landlords discriminated against anyone who was seen to be an activist of the tenants' rights.

Lastly, there were tenants who betrayed their colleagues by leaking information to the landlords and agents about their plans to fight for the rights of the tenants.

Regarding community relations with the police and law keepers, the residents indicated that the police and administration tended to side with the landlords whenever the tenants registered any complaints.

Mary Wanjiku from Kosovo village observed that the house agent representing the landlord had refused to bring the landlord on board to discuss rent hikes and poor services. Their conclusion was that the agent took advantage of them and pocketed the extra rent amount.

"...wakati tunaongea na mwenye nyumba kwanini ameongezea nyumba na hakuna ata kitu amefanya, tunamwambia atuitie mwenye nyumba; hataki. Anawambia kama ni hiyo kuhama mtahama..."

...when we talk to the agent and ask why they increase the rent and they have not done any renovations, they refuse to bring in the structure owner and they insist that if they were not able to pay, they were left with no choice other than vacate the house...

As observed by Grace Wanyua from Bins village, landlords were not willing to reduce rents despite the poor or total lack of adequate services such as on-site water and sanitation. She quipped;

"...nyumba imepanda...landlord anasema...mwenye ataki kuongezea atoke..."

...rent has gone up and the landlord says that anybody who does not want to pay should move...

5.3 Reflection

Communities in informal settlements have little or no options when it comes to choice of services on offer by landlords or other service providers. Service providers have taken advantage of the situation to overprice the access to basic services. How did this situation

arise? And who are the drivers of this phenomena?. The following sections of the report will provide an analysis of the power dynamics, actors and linkage with livelihoods dimensions in addition to providing a gendered perspective.



Water chamber in Mukuru kwa Reuben.

The Nairobi water and sewerage company provides bulk water supplies up to the chamber. The residents in turn connect from the chamber and distribute to various points across the settlement. The limited number of connections leads to power brokerage and cartel formation to control access and connection.

6.0 Beyond Service Provision – Livelihoods, Power Dynamics and Institutional Linkages:

“...the group calls itself Cactus...it is made up of the youth who were initially idle...we sat down one day in the village and talked...we could create our own jobs...by that time we were not registered...we started making meetings...on Sunday we collect a lot of solid waste...we don't get any money...we are supposed to accept...we pooled resources...we got registered...we visit all plots and inform them on the importance of collecting solid waste...we take them for sorting...in 2010 we got registered at the District Officer's office in Kayole and that cost us Kshs 2000..”

6.1 Women Groups as Sanitation Providers

Phyllis a community health worker and women leader from Mukuru kwa Reuben recounted that;

‘...niko kwa kikundi iko na choo...niko na vikundi viwili, moja inaitwa Reuben Afya, tuko na mradi wa choo...sisi ni CTWs, (Community Health Workers)...choo tuko na moja, na iko na bathrooms ndani na iko na maji... niko na ingine pia, inaitwa Mukuru Saving Network, hapa iko na choo mbili...bio centres na Njenga mbili...Moja iko hapa Rorie Zone pale chini ukienda lunga Lunga, ingine iko pale juu Simba pool...’

‘...I am in a group that has a toilet...I have two groups, one is Reuben Afya, we have a sanitation project...we are CTWs (Community Health Workers)...we have one toilet with bathrooms and water...I also have another one called Mukuru Savings Network. It has two toilets around here...bio-centres...two are in Njenga...one is at Rorie Zone as you approach Lunga Lunga, the other one is up there at Simba Pool...’

The pooling of resources and experiences has enabled women to form groups which attract donor and local funding towards the construction of facilities to offer services related to water and sanitation. The supply gap within Mukuru enables organized groups to establish facilities using commercial models which in turn impacts on their livelihoods as well as improving access to basic services by the wider community.

The Service Provision and Livelihoods; Story lines

Three years ago **Paul Irungu** a water vendor in Feed the Children in Mukuru kwa Reuben zone ventured into the business where he sold vegetables. He later started a water selling outfit alongside his earlier business to supplement his household income.

He was also motivated by the fact that within the settlement the population is high and there were no water distribution pipes to individual homes so the residents depended on water sold through outlets like his. There was an opportunity and he went for it.

“... Ile ingine kwa kijiji kuna watu wengi na wote hakuna hizi lines imekuja inaingiza maji huku kwa boma kwa hivyo maji mingi inatumika ni hii ya nje ...” In the village there are many people residing here...few households have individual connections...there are few water points.. and people rely on water sold from the selling points / taps...this he did despite being a tenant....he had to seek the authority of the structure owner in order to start the water selling business

Peter Muthuri also had a business, he owned a kiosk and from the proceeds he got from his business he decided to venture into water provision.

“... Mimi niliingilia biashara ya maji nilikuwa na kazi kidogo.nilikuwa na kama kiosk namna hii. Sikuwa na uwezo, nikaanza sasa kutengeneza biashara nikasema nitaweka maji....” “ Plot ninayo kaa ni yangu...”

In Muthuri’s case, he owned the structure where he was operating from. This made the start-up an easy process. His motivation was the good returns from the water selling venture.

6.2 Power Dynamics and Service Provision

Based on their influence and close relationship with other important actors such as the area Chief and Police, village leaders were highly regarded by the youth who provided services such as waste collection in the settlement. The youth groups for example perceived the village elders as very active and respond to them quickly in times of need.

Villages Chiefs play a significant role in the provision and access to basic services within the settlements. Before a toilet or water facility is constructed, the Chief will be consulted without which the structure / works will be stopped or demolished all together.

“... Wakati unajenga hio choo tuseme kama hio ya bio toilet lazima upitie hata kwa chief. Sababu hata wale majirani wako kwa area hio hawataki choo pale katikati yao... tuseme for example ukikataa kupitia through the chief, Wakati ile itafungana na uende kwa chief naumweanmbie iko namna hii ama ushtakiwe pale itakuwa kazi ngumu sana kwa sababu atakwambia enda bomoa sababu hukupitia kwa ofisi...” FGD Participant, 2014

“...when you start building that toilet/sanitation block it is a must you pass through the Chief... because even those neighbours in the area do not want toilet between their buildings...failure to consult the Chief, in the event a problem such as blockage occurs, you will need to inform the chief but it will be difficult because the chief will tell you to demolish because you did not pass through his office...” FGD Participant, 2014

The chief has the power to commission and decommission any water or sanitation facility if he is not involved in its implementation or if it is a threat to the residents. Additionally, all developers have to seek the consent of neighbours where the facility is intended to be constructed.

“... unaanza na ule mzee wa kijiji mahali unaishi. Usipomuambia kwa na uende kwa chief atakufuata kule na akungonga.... Ukienda pale kwa chief si ati unanda pale bure...”

“... it is the Chief, elders and neighbours you will have to consult before constructing a facility...If you proceed without their knowledge, the leaders will follow you up and stop the project...” FGD Participant, 2014

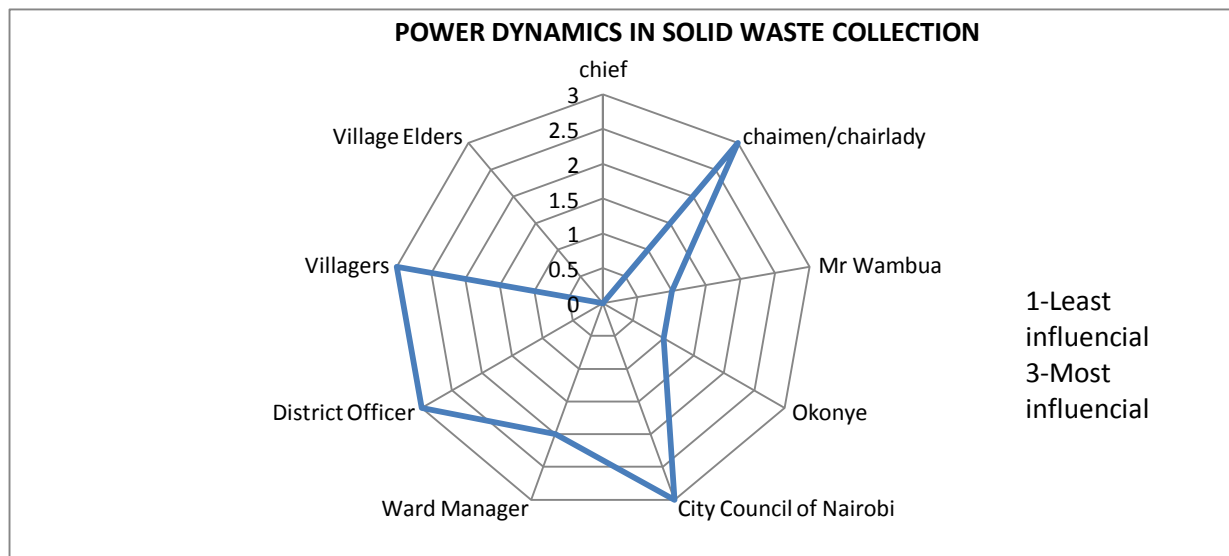


Figure 33 Power dynamics in Solid Waste Collection

6.2.1 Controlling their turf – Working with the Youth

The youth may shun jobs which according to them are a disgrace and likely to lower their esteem such as collecting and disposal of human waste. A new sanitation venture that has been introduced by Sanergy¹⁹ has not managed to attract many youths from the settlement. This may explain why the **Fresh-life** toilets are being broken into. According to one resident, “...that’s why you see **Fresh-life** being broken into because there are no youths involved...”

The City Government of Nairobi has introduced a new system aimed at regulating the solid waste management industry. The registered solid waste collection groups within the slum collect solid waste and will get paid for their services by the City Government.

Despite previous poor relationship between the City Government and slum groups / residents where the former did not recognize them, the new direction by the City Government is perceived to offer a solution to that will solve some of the challenges they face like payment

¹⁹ <http://saner.gy/>

Sanergy supports a network of residents - Fresh Life Operators –who have been able to purchase and operate hygienic sanitation facilities. The resident operators become franchise partners and are provided with training and access to financing. Sanergy collects the waste on a daily basis and further processes it into organic fertilizer.

after offering services and logistical services to ferry the waste collected from the settlement. The youth driven solid waste collection initiative was supported by the Mukuru ward representative who encouraged all registered youth groups to enlist and reap the benefits accruing from the new arrangement involving the City Government.

6.2.2 The Youth and the Chief

A tainted past has led to a poor relationship between the Chief and the youth who provide solid collection within the settlement. The chief regards the youth as crime perpetrators using the cloak of waste collection to carry out their activities. The youth on the other hand view the Chief as a major stumbling block in the enhancement of their work of solid waste collection. The relationship between the chief and the youth is best expressed in the words of Robert Maina from Mukuru kwa Reuben;

“ ...Sisi na chief ni kama maji na stima...Chief alisema hataki kusikia maneno ya takataka...Niko sure group zimeformiwa huku hawajapitia kwa chief”

“...we and the chief are like water and electricity...the chief is not intested in anything to do with the youth solid waste collection venture... I am sure the groups that have been formed in this settlement do not pass through the chief ...”

6.3 Legal Connections and Illegal Extensions

6.3.1 The Power of Mukuru Power

“...stima haina meter...ni hizi za sambaza...”

“...the electricity supply we get is not metered...we get it from the ‘sambaza’ system...”

Residents in Mukuru settlement access electricity mainly through the “sambaza” system. The system involves electricity distribution by middle men or groups of persons who have legal and illegal power connection from the main distributor lines. All tenants / users have to access through this system of supply. A monthly charge of between Kshs 300 and 500 is charged for use. These connections are not approved by the Kenya Power and Lighting Company (the official power distributors), which makes it unsafe and dangerous to human life if not connected well.

Maina Waruinge a resident of Bins Villages, regarding the Mukuru power system observed that;

“...stima unapata yakwamba unalipishwa na mtu tofauti, stima ni mtu mwingine tofauti...mi nalipa 500 of which unapata hizo stima ni very risky. Juu ni vitu tu zinapita kwa hewa, mara imeguza mabati...by the way ata ile chanzo cha moto mingi huku inatokanga kwa stima...”

“...the person who charges you for electricity connection and the owner of the distribution power lines are different persons...the connections in this place are risky...hey hang loosely and very close to the structures (many of which are constructed using iron sheets)...by the way, many of the fires in the settlements are caused by electric faults....”

Mukuru Power – “The better option??”

Accessing electricity supply through formal means is a tall order for most residents. The associated charges and other requirements such as the ownership of a permanent structure are way out of reach of the residents.

In a focus group discussion, Mary from Bin village mentioned that;

“Watu wa Kenya Power niwaexpensive ukienda huko wanakuhesabia mpaka transport watatumia wakikuja kukuwekea stima, transformer na wires lakini hizi za sambaza unanunua wire unsambaziwa na unalipa mia tano pekee.”

“The Kenya Power company connection is expensive. Upon application the charges will include transport, transformer fee and cables etc. For Mukuru power all you need is to buy a connection cable and pay a fee of Kshs 500 and you are connected instantly”.



Electricity connections in Mukuru:

Notice the numerous connections from the main power lines. These have been connected despite the illegality and danger they pose to nearby structures and subsequent users.

6.3.2 Cartels and Service Provision – A Gendered Perspective

Are there women involved in the water and electricity supply cartels?

“...wako kama mama Akinyi; ukienda kwake ako na maji na stima yeye ana pump maji.”

“...there are some women brokers such as Mama Akinyi. She deals in water and electricity supply and also has a water pump for her business”.

Why were there fewer women brokers than men in this business?

“...Ukitaka kuwa broker wa maji au stima lazima uwe tayari shingo iende ama uwe haramu juu ni vita tupu, ukiwa na watoto hutataka kujiingisha kwa shida kama hiyo. Lakini wako wengi kwa maji hao ni wazee wao wamewaingiza kwa hii maji. Lakini mama Akinyi huenda Sinai asubuhi saa kumi kupump maji pekee yake. Lakini huyo mama ni gaidi anapigana mpaka na wanaume...” FGD Participant, 2014

“...if you want to be a water or electricity broker, you have to be prepared because there are risks involved, you could get murdered because the business is dangerous...as a parent you don’t want to put yourself into such risks...there are many women who are in brokerage but these businesses were started up for them by their husbands...for mama Akinyi, she is a hard nut and is ready even to fight with the men...”.

6.4 Access to Services: Formal and Informal Institutional Linkages:

What does it take and how much does it take to get electricity connection?

“...hiyo nikuelewana mimi kama yangu nililipa Kshs 20,000 kutobolewa lakini official ni five thousand kutoka Kenya Power...kuna wenye waliapply meter lakini sasa wanaitumia na njia ingine kusambaza...kwa process ya Kenya power utapata after 3 months ama hata 5 months lakini sambaza ata after 20 minutes utapata stima lakini ni kawaida ya parastatal kutengenezea watu wa kijiji huenda slow sana....”

“...it will vary from individual to individual...I paid Ksh 20,000 but the official connection is Ksh 5000 from Kenya Power..” there are people who applied for meter and now they

are using it to offer illegal connection to others...applying through the Kenya Power, it will take 3 to 5 months, but through illegal connections, you get connected in less than 20 minutes...we are not surprised that a government managed company will be slow in service provision..." FGD Participant, 2014

6.4.1 Partnership between Njenga Power and Kenya Power Company

What if the Kenya Power and Lighting Company proposed to supply electricity in partnership with Njenga power so as to upgrade electricity services, can it work?

"Hawa watu wanaitwa Njenga Power walikua kazi Kenya Power wakafutua so sioni vile watapartner na Kenya Power. Hawafanyi hivyo juu ya kpenda ni ukosefu wa kazi. Hiyo partnership inawezakua source of employment lakini kwa wale wako na goodwill waone hii connection wanafanya ni hatari. wale wako na tama ndo wanaeza kata juu wamezoea kupata kama 30,000 umwambie atakua anapata allowance ya 5,000 au 10,000 kutoka Kenya Power ataona kwake ni hasara." FGD Participant, 2014

"...these people called Njenga Power are former employees of Kenya Power but they were fired so I don't think a partnership can work. they do it due to lack of employment, the partnership can be a source of employment but only for those people have goodwill of the community as they will see the illegal connection is dangerous for the community but the self-centered people will not be for it since they are used to getting Ksh 30,000 then you tell them they will be earning Ksh 5,000 to Ksh 10,000 from the partnership hence they won't be for the idea.

6.4.2 What does it take to get a water connection?

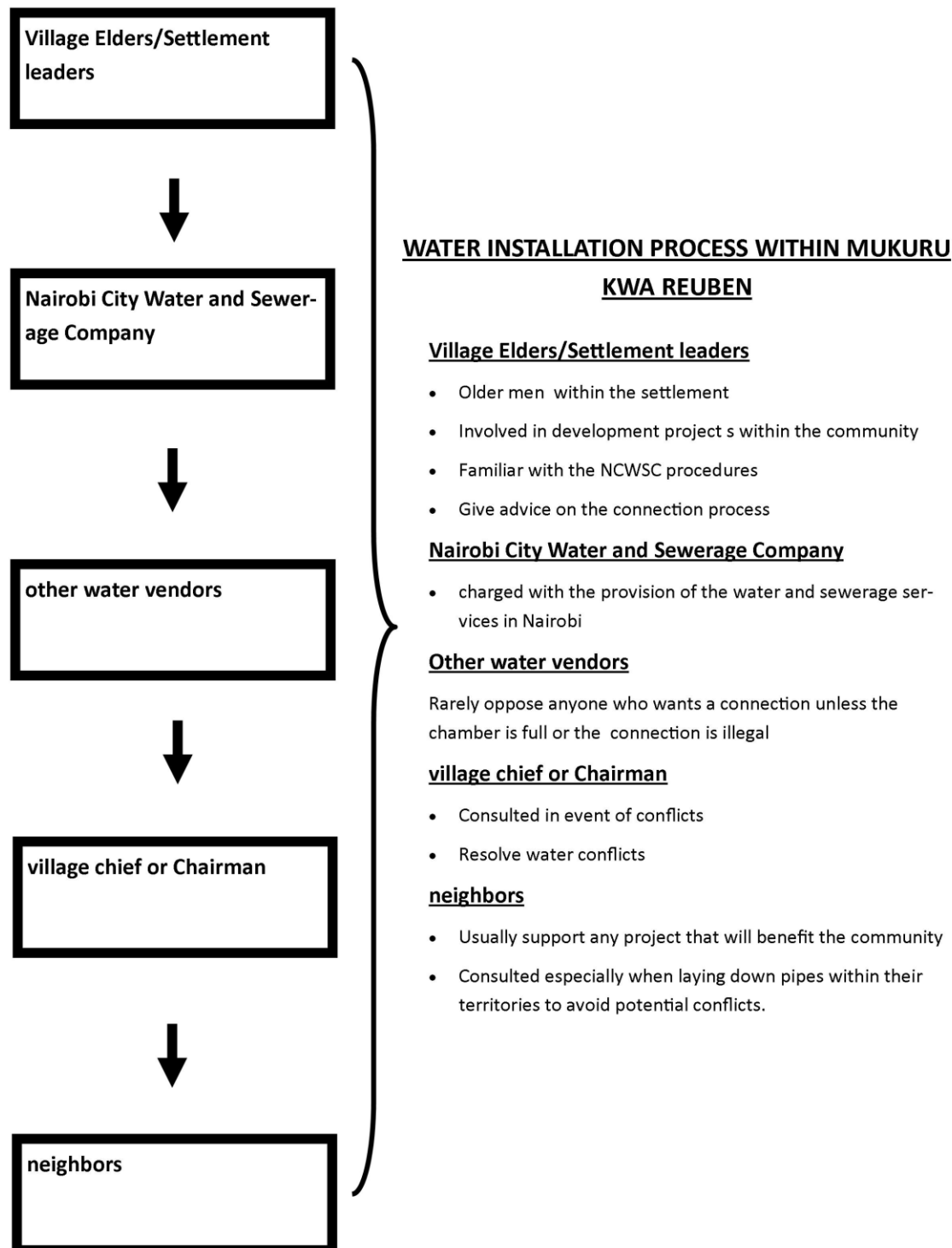


Figure 34 Water connection Model

Despite formal acquisition of a water meter from the Water providers (Nairobi City Water and Sewerage Company) any new entrant into the water business must meet with the local community members who have connections from a particular chamber. They help guide the location of new piping system so that it does not interfere with the already existing pipes causing bursting. They also get to discuss on how they can continue managing the chamber as provided by the Nairobi City Water and Sewerage Company. This is important as the people who draw water from a particular chamber have been managing the chamber and therefore, it is instrumental that he/she gets oriented.

The installing of a new meter depends on the availability of space within the chamber where the new meters are installed. Some area for example Gatope and Mombasa zones still have spaces so there are not restrictions, in-case anyone wanted to install a new meter they can do so. The areas where there are restrictions are those that the chambers are already full. In most instances there are no impediments so longer as one has an understanding with the owner of the area in which that person intends to put a water kiosk or water point. Any particular person laying down water pipes can only be stopped when that person vandalizes other people's water pipes.

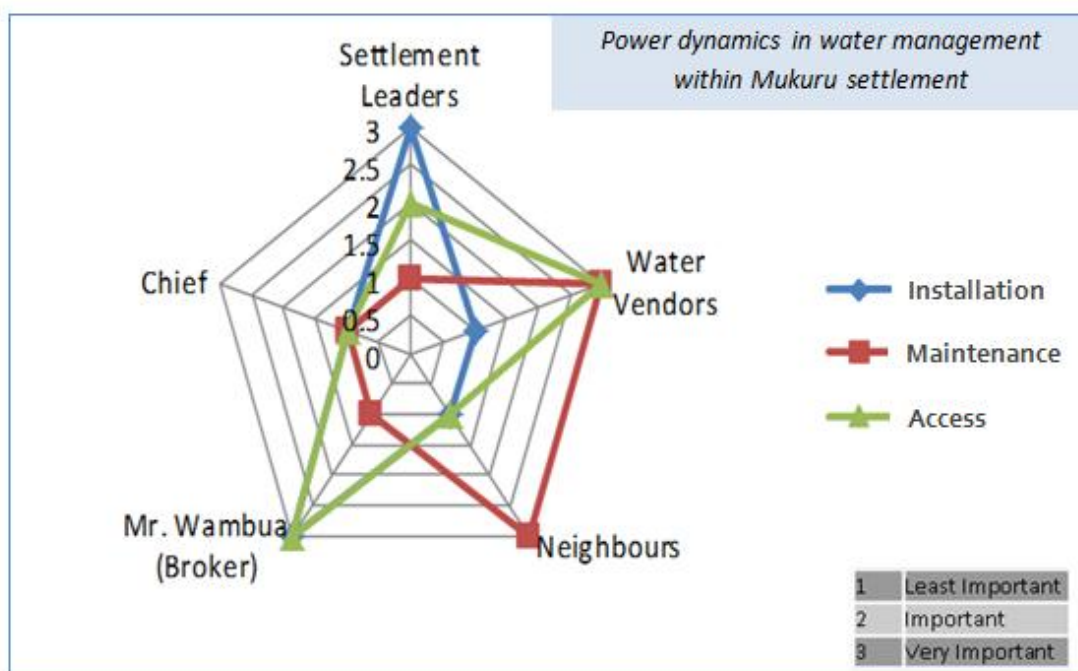


Figure 35 Power dynamics in water management

6.5 The Youth and Service Provision

“...Mostly ukipata kijana anahusika na maji unapatanga ni ya kuachiwa si yake....ni ya mzee wake ama uncle yake ndio amekua na hiyo story ya maji...so wazee sanasana ndio wako juu juu hao walitucratia mapema wakitutafutia hizo kazi ndio atleast nikigrow ananionyesha hiyo njia.....tuna challenge sana saa hii tuseme vile mzee amesema hiyo....chamber yao kuna vile wao pia ujuana si mtu yeyote tu anaweza kuja aingie hapo...so unapata pia ni hard...ukiwa kijana enyewe ni hard unapata challenge mob...mostly wazee wametumulika...” FGD Participant, 2014

“...the youth who engage in water vending inherit from either the fathers or their relatives. This is because their old men engaged in the business so that once their young ones have grown they can take over the business. It is difficult for youths to have their own water lines because the “elders” normally know each other, thus the youth must know someone in that particular chamber...” FGD Participant, 2014

The Youth and Mukuru Power

The youth are used to install and maintain supply lines for both water and electricity. Residents who attempt to obtain connections without involving the youth risks having his lines tampered with and disconnected.

“Maji ama stima unaweza wekewa leo na baada ya siku mbili tatu maji hakuna kwa tap, pipes zishafungua... kuna cartel ya vijana imejiform yenye inaiba transformers na pipes za maji ndio watu wanunue maji kwa water kiosk na pia wasambaziwe stima na wenye wako na stima already...kulingana na vile naona ni kama hawa watu wako na water kiosks na stima ndo wanawalipa waibe...” FGD Participant, 2014

“you can have water or electricity connected but in two days, the same will be vandalized..., the youth have formed a cartel that is stealing water pipes and transformers so that residents will be forced to buy water or electricity from Mukuru power or from established water kiosks...from the look of things, the electricity and water suppliers pay the youth to disrupt supply in the settlement...” FGD Participant, 2014

“...unajua hii mambo ya maji investment yake ni pesa mingi sana kuinvest uakikishe maji imefika mahali unataka unatumia pesa mingi almost Kshs. 20,000 sababu lazima ununue nini ununue hiyo roll tena kazi ingine unaweza sikia vijana wanalalamika hii kazi ya maji inatakanga mtu uchafuke kwa sababu mtu kama hutaki kuchafuka huwezi ukawa unamantain hiyo maji...maji inatakanga saa yote huwe na gumboot kijana hataki

kuonekana na gum boot...hataki kuonekana anachimba anataka kushikanisha hiyo maji...maybe maji imeharibikia kubaya kuna takataka....hataki kuonekana anashikanisha hiyo maji penye kuna takataka.ukitaka utumie pesa utatumia pesa nyingi sababu maji saa yote imekanyagwa na gari, ukiita mtu hapo ni miambili na hata hiyo miambili huwezi ukauza kwa siku. Kwa hivyo ile kitu naweza kusema itachangia upate wazee ndio wako na hii maji. Moja ni sababu ya ile pesa inatumika hapo na tena ni hiyo kazi vijana hawataki hiyo kazi mambo ya kazi chafuchafu....” FGD Participant, 2014

“...in addition the initial cost incurred is often too high for the youth to afford. The cost of installation is approximately Kshs. 20,000/=. The youths also do not like to get their hands dirty. In most cases the piping system gets damaged and if this happens in a dirty place it will require for them to get their hands dirty. In cases of calling someone else to fix the burst pipe they the payment will be approximately kshs.200/=:, because this happens regularly the business may be unsustainable...” FGD Participant, 2014

6.6 Challenges in Service Provision:

Erick Oruta a resident of Gatope village cited that some residents had a habit of not paying the youth who offered the services. This explained partly why some areas in the village were not covered by the solid waste collection service offered by the youth.

Catherine Mwhiki from Feed the Children village pointed at the challenge of lack of land ownership which in turn hampered potential and willing residents from investing in service provision ventures. She observed;

“...sasa kiwanja itakubidi utafute...hata hio ya freshlife, hata mi ningependa, lakini pahali pa kuiweka, ndio shida, Juu huwezi kuenda pahali popote. Kama nyumba yangu imefika hapa, hapa tumewacha njia. Hii ni nyumba ya mwingine, na sitafunga njia. Hata kama hapa kuna corridor, sasa mwenyewe unajua nikiweka hapa hio freshlife itakua faida ni kwangu, huyu mwingine ataniambia hapana, tugawane...”

“...now you will have to look for a piece of land...even that freshlife toilet, I would like to own one, but the place to site it is the problem because you can't just put it anywhere. If my house is here, here we have left a path. This house belongs to another person, and I will not block the road. There will be others who lay claim to land and will demand to share the proceeds from the toilet business...” FGD Participant, 2014

7.0 Implications for Planning and Modelling

Settlement structure and service reticulation nexus

The settlement patterns described earlier on as *“refined”* offer opportunity for settlement upgrading using in-situ approaches. The well laid out streets and paths make it possible to design utility networks and circulation patterns.

The developers have adopted suitable patterns which allow for densification at the same time facilitating traffic movement. However, one short coming is the amount of space allocated for open areas and recreation, which a requirement for better quality of human settlement.

The *“unrefined / organic”* settlements offer opportunities for upgrading but with major adjustments which does not necessarily translate to relocation or displacement. The organic settings witnessed in Gatope village for example have not provided for the provision of adequate water and sanitation facilities. In the modeling phase, the provision of services within built-up areas of this nature will need to be taken into account.

Service provision models which support public and private partnerships (PPPs)

Centralized or the Decentralized approaches for service provision

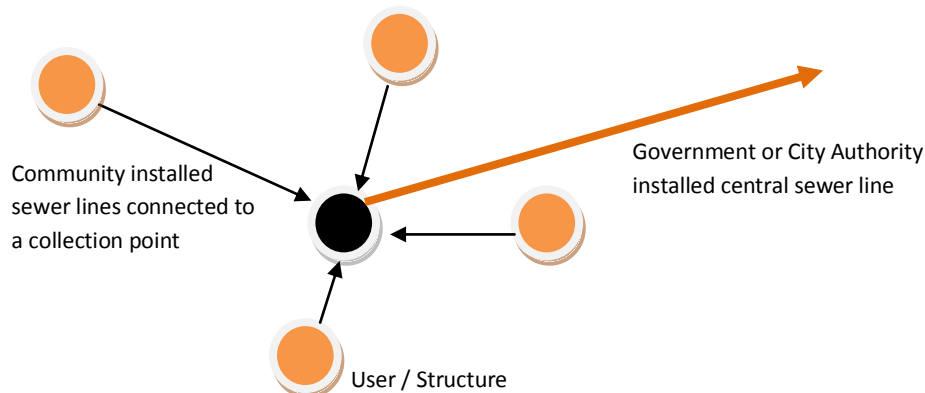


Figure 36 Service provision using PPP model

Communities are willing to meet part of the improvement requirements. Landlords and structure owners may be convinced to provide secondary connections from their structures to a collection point which is connected to the primary / truck sewer (provided by the government or City Government). This model is illustrated above. Public private partnerships in service

provision and management will ensure that the much needed infrastructure is provided with the contribution of all stakeholders.

Land tenure – Which way and Who's Interests?

Secure tenure as precondition for better settlement organization and access to basic services: This study has established that the prevailing land tenure in Mukuru informal settlements has implications both on the settlement typology and on service provision. The triad of service provision, settlement typology and tenure system has been established to be a rather complex one. For example, the prevailing tenure situation has a direct correlation to the resultant settlement typology and level of service provision. On the other hand, service provision models can be used as a basis for reorganizing the tenure system where it seems to have failed to meet the needs of the space in question. This triad relationship requires that before any proposals are made, there is need to understand all dynamics involved in land, settlement and service provision. Indeed as noted by Rakodi and Lloyd-Jones (2002), access to land and shelter, physical ecology, and access to services are rated as the key variables that influence the overall form – physical and functional – of informal settlements. It follows therefore from their argument that access to secure land and shelter is widely accepted as a precondition for access to other services and livelihood opportunities.

In fact, when asked what improvement of tenure security would mean to residents of Mukuru Kwa Njenga, one participant in the FGD noted that:

“In Njenga if we get title today our plots will gain value, those people without means will sale their plots to the rich who can afford to build so Mukuru will look like pipeline or other estates and some people will take mortgage with the plot and use the money to build hence Mukuru will change.”

Informal Tenure is not uniform and variously affects settlement typology and basic services: In the informal category, tenure has internal variations depending on the mode of settlement formation, which further influences the typological and services dimensions. Earlier formations tended to be more spontaneous hence more organic and poorly serviced. The later formations of informal settlement tend to be more comprehensively conceived driven by elements of speculation and optimal utilization of land. This has seen such formations undergo rationalized subdivision of land blocks by land surveyors contracted by land speculators who have realized that there is value addition in involving aspects of planning to such land hence higher returns. This results in higher quality of settlement layouts (more refined) that are also easier to service,

but also give the owners of such land motivation to invest on it, including in form of services installation.

Generally, the importance of secure tenure in Mukuru settlement cannot be underestimated as secure tenure is a major contributor to poverty alleviation, advancing sustainable livelihoods, improving choices and opportunities, accessing services, and for the general recognition of citizenship rights of the urban poor. Security of tenure is associated with a number of benefits for residents. Some of the benefits of tenure security include improved housing conditions, better service provision and the complete ownership of land. Complete ownership of land can bring gains through trade in land, increased investment incentives, and improved access to credit as land can be used as collateral in credit issues.

Nevertheless, just like many other informal settlements across Kenya, Mukuru Informal settlement is faced by insecure tenure which among others has stifled settlement improvement initiatives. UN-Habitat argue that security of tenure which is a basic attribute of human security has continued to remain extremely fragile for hundreds of millions of the urban poor and has continued to deteriorate as land values within cities continue to rise, as affordable land becomes increasingly scarce, and as housing solutions are increasingly left to market forces (UN-Habitat, 2008). This scenario requires a more innovative approach to tenure regularization if much is to be achieved in securing the Constitutional rights of the urban poor to access a clean and healthy environment amongst other economic and social rights as provided under Article 42 and 42 of the Constitution 2010.

Service Provision and Management Approaches

The study observed mixed outcomes of the formal and informal institutional linkages. The role of formal institutions like the utility companies cannot be ignored. They continue to provide services under difficult circumstances including corruption and limited resources in addition to prejudices against informal settlements.

It is important to note that;

- 1 Formal institutions cannot succeed with taking into account community structures and systems such as Mukuru power which is in touch with the people more than KPLC or the water utility company.
- 2 There are models existing in Kenya where the formal institutions have worked well with communities to improve access to services and their eventual management. The Kisumu water supply model where bulk water metering is provided to communities living within

informal settlements has worked well and offers lessons to other communities across the country.

Best Practice Adoption

There are numerous examples of best practices across the country where communities and other stakeholders from private, civil society and government have partnered with success towards settlement improvement and access to services in particular.

Notable examples include the generation of energy from solid and human waste to meet the energy requirements of a significant number of households. These approaches should be supported and up-scaled in the upgrading programmes targeting Mukuru kwa Reuben and Mukuru kwa Njenga