

Mathare Zonal Plan | Nairobi, Kenya

Collaborative Plan for Informal Settlement Upgrading



a collaboration between

Muongano Support Trust

Slum Dwellers International (SDI)

University of Nairobi | Dept. of Urban and Regional Planning

University of California, Berkeley | Dept. of City & Regional Planning

July 2012

Executive Summary

This report describes an ongoing project aimed at improving the lives and living conditions of slum dwellers in Nairobi through a partnership between Muungano Support Trust, Slum Dwellers International (SDI), the University of Nairobi, and the University of California, Berkeley. The project started in 2008, produced a report for slum upgrading for select villages in the Mathare Valley in 2009, and this report presents findings and recommendations for upgrading infrastructure across the entire Mathare Valley informal settlement. The Mathare Valley - one of the largest informal settlements in Nairobi and East Africa - lacks basic services, including water, sanitation and electricity for a majority of its residents. Infrastructure improvements rank as the top priority of Mathare residents and our report aims to help ensure improved services are delivered to all villages in a timely and efficient manner. *Despite recent national slum-focused planning policies, no comprehensive development plans currently exist that integrate physical and social planning for Nairobi's large slums, including Mathare.* This report is also timely, since Kenya's new Constitution decentralizes governance and will require new processes and plan making by local authorities that include slum dwellers, community-based organizations and universities.

This report aims to act as a first draft of a community-led, comprehensive development plan for Mathare. This report recommends specific strategies, including:

1. Investing in **comprehensive valley-wide trunk and household-level connections for water and sanitary infrastructure**;
2. Improving **roads, pathways and drainage** at the same time as pipe infrastructure;
3. Ensuring each household can connect to **electricity** and the valley has adequate **lighting for streets and public areas** at night;
4. Organizing a **Mathare civil society network** that includes the many community-based and non-governmental organizations working in the settlement to improve cooperation, political accountability and ensure infrastructure investments are implemented by and for community members, and;
5. Ongoing, participatory monitoring of the physical, social, economic and public health impacts of infrastructure upgrading.

As with many planning documents, this report is intended to contribute to an on-going process. A more detailed review by residents and others is necessary before more specific proposals are made. Mathare residents deserve improved services and living conditions and this plan aims to contribute to this outcome.



Project Participants

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Introduction

Collaborative & Comprehensive Planning to Improve Living Conditions in the Mathare Valley

In Nairobi, Kenya, Mathare is an informal settlement that is home to nearly 200,000 people confronting a range of challenges. Mathare is one of the largest slums in Nairobi; a city where over half the approximately 3.5 million residents live in over 180 different slums. Like many informal settlements, Mathare is characterized by unsafe and overcrowded housing, elevated exposure to environmental hazards, high prevalence of communicable diseases, and a lack of access to essential services, such as sanitation, water and electricity. Residents in Nairobi's slums frequently suffer from tenure insecurity, while widespread poverty and violence further increase their vulnerabilities. Yet residents are also resilient and entrepreneurial, politically organized and have a range of skills that allow them to survive in one of the most difficult urban environments in East Africa.

In this report, we offer planning strategies for thirteen villages that we have defined as the Mathare Valley. The analyses and recommendations in this report emerged from an ongoing collaborative project that includes residents, the non-governmental organization, Muungano Support Trust (MuST), the University of California, Berkeley (UCB), Department of City and Regional Planning, the University of Nairobi (UoN), Department of Urban and Regional Planning, and Slum Dwellers International (SDI). From January through October 2011, a team of faculty, students and CBO members conducted data gathering, analyses and collaborative planning with residents to develop improvement strategies focused on infrastructure, livelihoods and well-being in the Mathare Valley. Project leaders included Berkeley Professor Jason Corburn, University of Nairobi Professor Peter Ngau, MuST leaders Irene Karanja and David Mathenge, and SDI project leader Jack Makau.

We focused on all the villages comprising the Mathare Valley because our previous work included only select villages, such as Kosovo and Mabatini, and our partnership recognized that only a comprehensive and integrated plan could serve all residents. Thus, we began a Mathare Zonal Development planning process.

Guiding Principles and Goals of Mathare Zonal Development Plan

The Mathare Zonal Plan aims to integrate the dimensions of our *Relational Model for Participatory Upgrading* on the following page. Using this approach, we developed *Community Planning Teams* comprising of residents from each village in Mathare that focused on valley-wide issues. Through this process, the project worked with residents to build new awareness of the opportunities and challenges for infrastructure planning at the zonal scale. While the Community Planning Teams generate ideas for improving the settlements' physical conditions, we recognize that local action alone is insufficient and broader policy change will also be necessary to improve living conditions and the lives of slum-dwellers. Thus, our approach rejects single-issue slum improvement approaches and instead focuses on the inter-relationships between poverty alleviation, securing infrastructure and services, improving housing, economic opportunities, food security, human health and safety, among other issues.

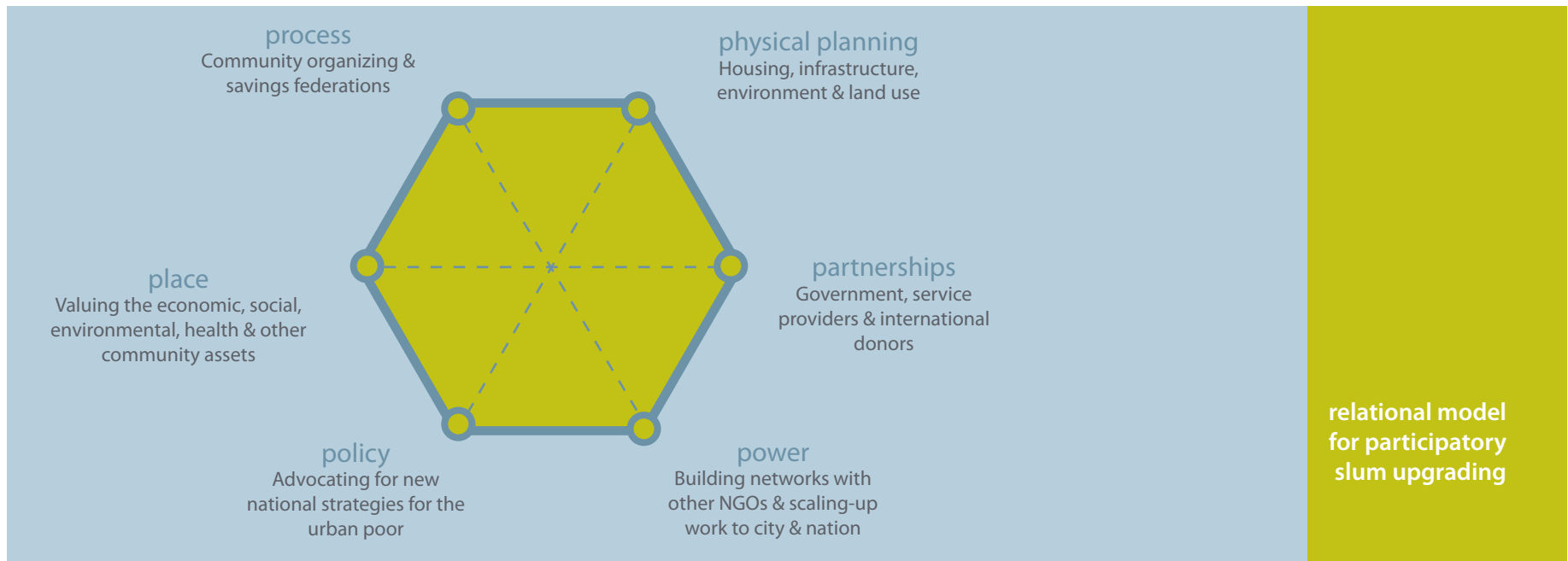
Key project principles and goals include:

Principles:

1. ***Build upon existing community assets and strengths.***
2. ***Use infrastructure planning as an entry-point to address other related issues .***
3. ***Ensure meaningful participation & community ownership.***

Goals:

1. ***Generate Valley-scale analyses of existing conditions and concrete ideas for improving lives and living conditions.***
2. ***Provide evidence & ideas that can strengthen community organizing, leadership and coalition building.***
3. ***Provide a framework for addressing emerging policies and plans at the county, municipal, and national level aimed at slum dwellers.***
4. ***Inspire service providers to invest in valley-wide infrastructure provision.***



Key Participants in the Community Planning Process

Muungano wa Wanavijiji is the Kenyan federation of slum-dwellers, and by 2010 there were over 60,000 active Muungano members nationwide. Muungano's fundamental local unit is the savings scheme, and more than 500 savings groups have been established to date. Members participate in daily savings, conduct regular community meetings, and receive loans to improve their housing or livelihoods. Muungano is also a longstanding member of *Slum Dwellers International (SDI)*, a network of urban poor federations active in 34 nations and headquartered in Cape Town. Together with the national federations, SDI advocates for pro-poor urban policies and builds partnerships with key stakeholders to strengthen the voice of slum-dwellers. Muungano members often participate in exchanges with other SDI federations, helping to enhance learning and solidarity between slum-dwellers in different countries.

Muungano Support Trust (MuST) is comprised of activists, planners, sociologists, architects, surveyors, and organizers headquartered in Nairobi. MuST serves as a technical team to facilitate Muungano members in acquiring tenure security, services, improved livelihoods, and shelter. MuST and Muungano members also engage in advocacy for more equitable urban policies, while demonstrating their own

innovative forms of low-income housing or services provision.

The *Department of Urban and Regional Planning at the University of Nairobi (UoN), Urban Innovations Project*, is spearheaded by Professor Peter Ngau. The UoN team has been responsible for leading the community mapping process, assisting in household surveys and data analyses. This has included an extensive survey of 650 households, exploring the diverse conditions in housing, infrastructure, livelihoods, and health across Mathare's villages.

This report is the work product of students in a graduate studio course at the *University of California, Berkeley, Department of City & Regional Planning* held in 2011, under the leadership of Professor Jason Corburn. Seven students from fields ranging from planning, architecture, African-American Studies, public health and engineering participated in the studio, which included collaborative work in Nairobi with all partners. The students worked with their University of Nairobi counterparts, MuST and Mathare residents to map and analyze existing physical, social, and economic characteristics of life in Mathare, to review influential policies, and to generate a draft set of improvement scenarios.

The Mathare Valley, Nairobi Kenya

Mathare Valley lies approximately 6 kilometers to the northeast of Nairobi's central business district and is bordered by Thika Road to the north and Juja Road to the south. As we have defined the Mathare Valley for this report, the area is comprised of 13 villages: Mashimoni, Mabatini, Village No. 10, Village 2, Kosovo, 3A, 3B, 3C, 4A, 4B, Gitathuru, Kiamutisya, and Kwa Kariuki. The settlement sits within a valley of the Mathare and Gitathuru Rivers. Mathare is one of the oldest and largest informal settlements in Nairobi.

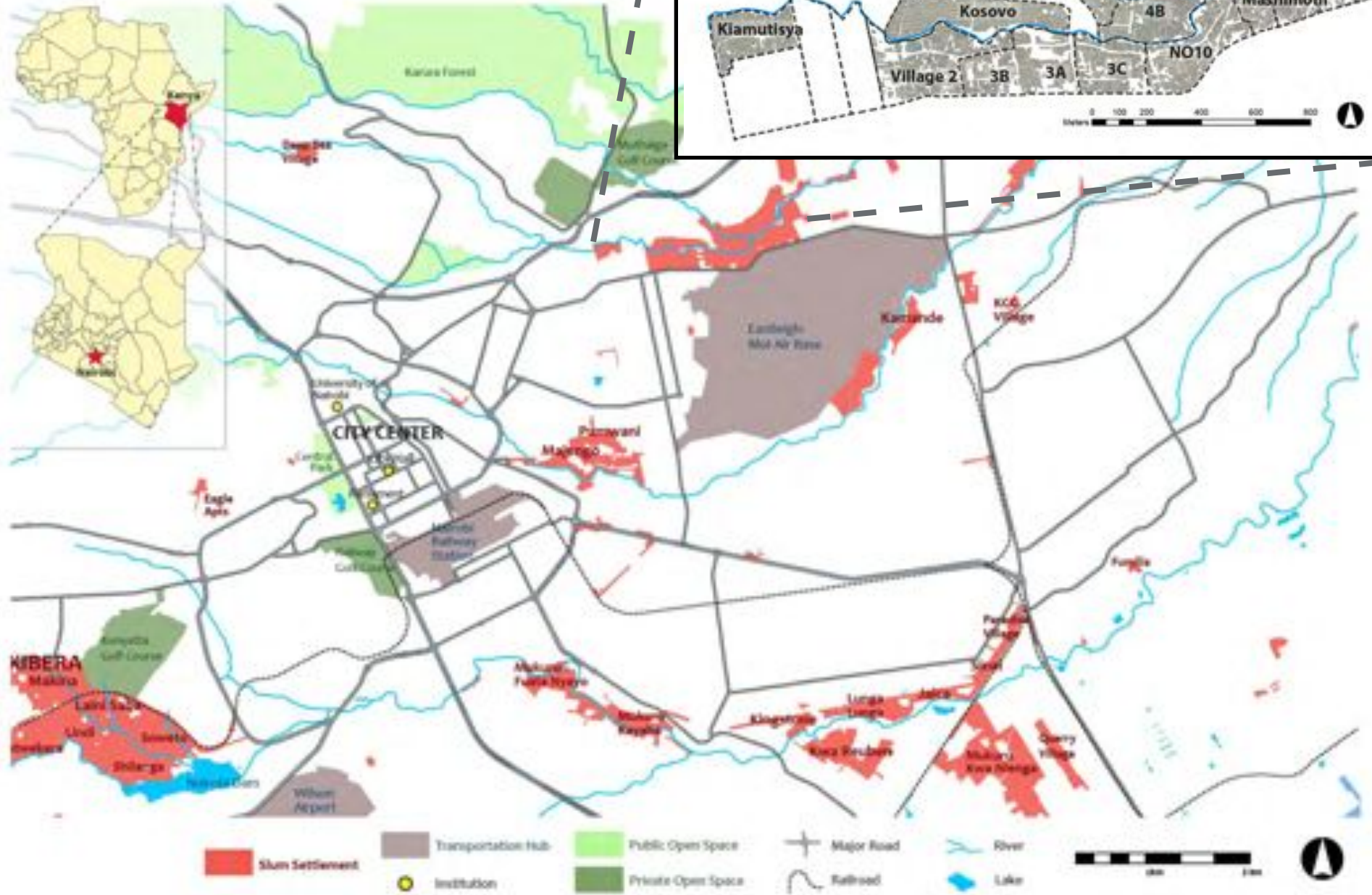


The terms slum & informal settlement

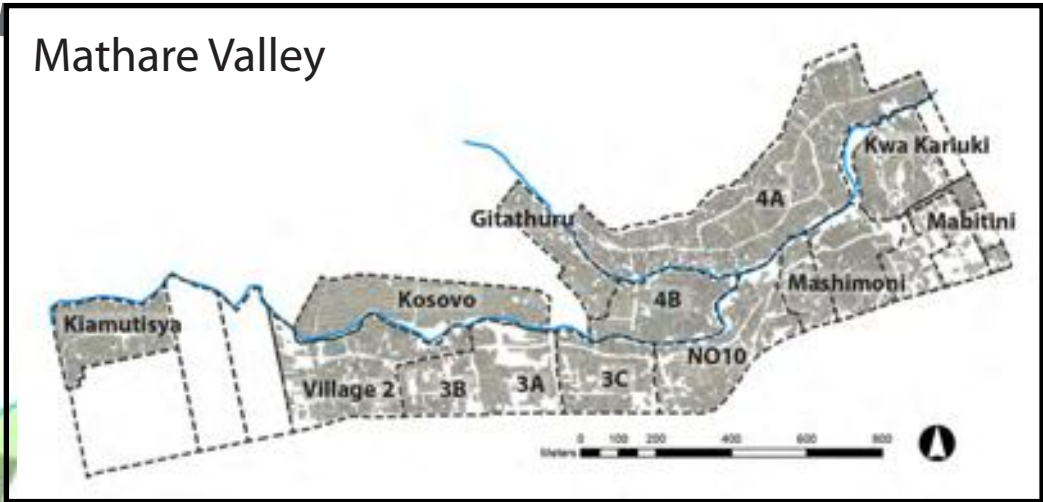
The term informal settlement is often used in preference to that of slum, but in this report the terms are synonymous. We use the UN-HABITAT definition, which defines a slum as a contiguous settlement where inhabitants have inadequate housing and basic services, is often not recognised nor addressed by public authorities as an integral or equal part of the city, and where residents living under the same roof lack one or more of the following: access to safe water; access to sanitation; secure tenure; durability of housing and sufficient living area.



Nairobi Context



Mathare Valley



History of Settlement Patterns in The Mathare Valley

Nairobi was established in 1899 as a transportation and administrative center for the Kenya-Uganda Railway, totaling just 10,000 people in 1906. The British largely neglected urban planning and Nairobi's first Master Plan was completed in 1948 but never fully adopted. Africans and Indians were confined to the east and south of the City Center in flood-prone areas deprived of basic services. This marked spatial segregation of colonial planning continues to define Nairobi's informal settlements.

'Mathare' is a Kikuyu word for Dracena trees, and Mathare Valley has a long history of informal settlement. The first residents began arriving after 1920 and some of Pangani's displaced villagers moved to Mathare in the 1930s. Villages spread from the 1930s-50s along Juja Road and in the eastern edge of the valley. Human settlement was limited by rock quarrying that was occurring in the river valley. Since Mathare villagers actively participated in the nationalist movement, the British razed housing and detained Mathare residents as part of the State of Emergency in 1952. Residents later returned and by 1963 Mathare's villages were rapidly growing again.

In the 1960s, Mathare residents sought to improve their settlements by establishing their own schools, community organizations and advocating for services with the Nairobi City Council. However, in the first years after independence, the City Council regularly demolished structures and failed to provide water or refuse collection in Mathare. Residents formed their own leadership structures, land buying and house building companies, such as Village II's Cooperative Credit Society which had 90 members by 1967.

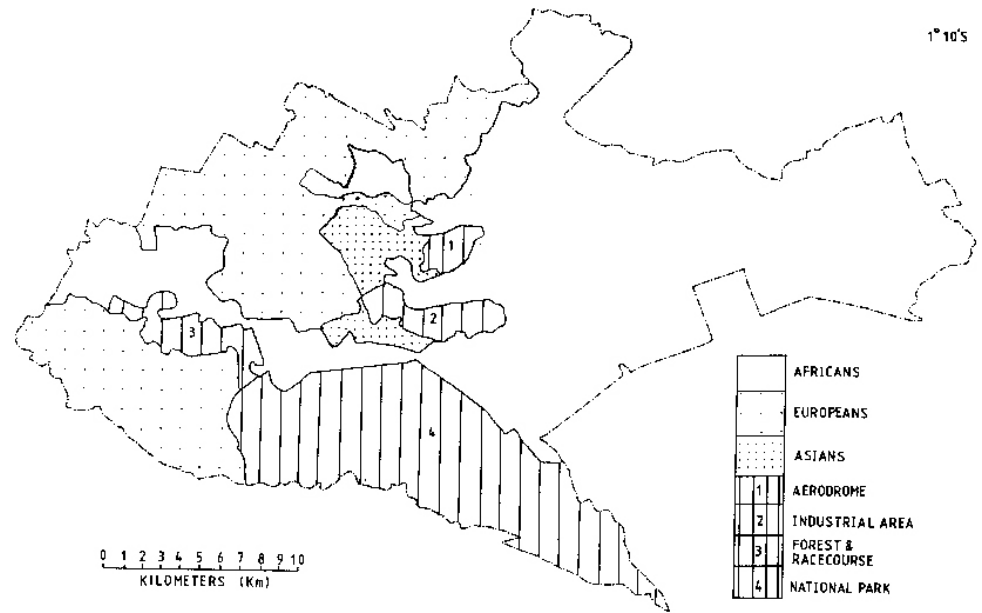
During the late 1960s, Mathare's population grew rapidly and settlement patterns changed significantly as over **20 building companies constructed dense tenements in the Valley**. According to a 1971 report by the University of Nairobi on settlement patterns in Mathare, the area's population in 1969 reached 30,000 residents in nine different villages. Mathare's population doubled from 1969-1971 in part due to the creation of **Land Companies that constructed new housing**. By January 1971, over 53,000 Mathare residents were living in Company-built housing.

Since tenants in company constructed housing paid high rents, construction in Mathare became a lucrative investment. The number of building companies increased and sought to take advantage of Mathare's **location near the City Center by building more housing for the poor, but failed to provide land titles or basic services**. For example, in 1970 in Village II, 5,000 residents shared one water tap. In Village 4A, 784 residents had no water access and shared 31 pit latrines. In Village I, a total of 2 taps and a spring provided water for nearly 4,300 residents. Following a cholera outbreak in March 1971, the City Council began providing free water to some villages in Mathare, but water and sanitary services were never designed to service the Mathare Valley.

The 1971 University of Nairobi report, "Mathare Valley: A Case Study of Uncontrolled Settlement in Nairobi," made several important recommendations, including:

- Pass new legislation to ensure appropriate building standards for slum dwellers that initiate gradual improvement of public utilities, including water, sewage, electricity and roads;
- Support community-led housing strategies that both reduce unemployment & address the need for low-income housing, and;
- Improve communication between Mathare residents and government officials, noting that "better two-way communication is needed to enable the authorities to respond to the needs of low-income families living in urban areas."

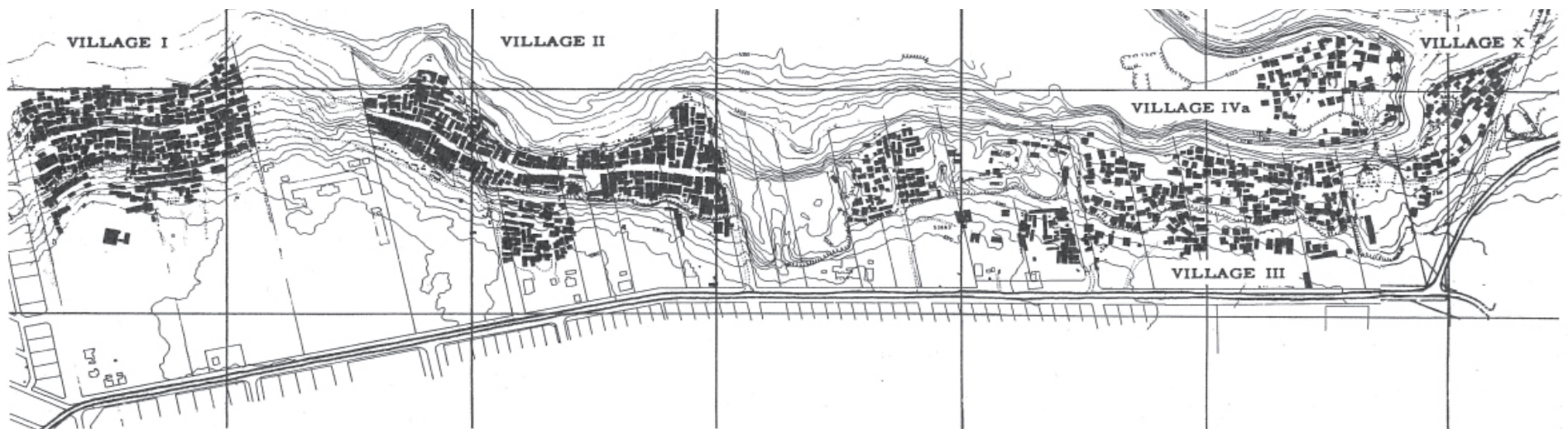
Unfortunately, these recommendations were largely ignored. A new Master Plan for Nairobi was adopted in 1973, but failed to provide a comprehensive development strategy for the growing informal settlements. After almost 40 years, slum planning in Nairobi, if it exists at all, remains piecemeal, fragmented and focused on small boutique projects.



Above: 1909 Map of Nairobi showing spatial segregation.

Left: Photos from Mathare Valley in 1971.

Below: Map of Mathare Valley structures in different villages in 1969.



the participatory planning model

Muongano Wa wanavijiji



Our work has been guided by the participatory planning process of one of our partners, the NGO **Muongano wa Wanavijiji** - the Kenyan federation of the urban poor. The process aims to build community power through organizing and leadership building, micro-savings and providing a social safety-net, household surveying and mapping, and activism and planning. The process is meant to be seen as cyclical and iterative, rather than linear, as upgrading projects are more likely to be successful when they are incremental, adapt to changing needs and have on-going community participation.

saving federations

The core of Muongano's work is to organize neighborhood savings groups, allowing residents to accumulate capital for housing and community infrastructure projects as well as providing a social safety-net for emergencies. The groups are often organized by women and, according to Jane Weru, they "help build an internal community governance structure that has to be in place before a dialogue with the city government can be effective."



enumerations and mapping

Another crucial task in the process is **making the invisible visible** - - or literally counting slum dwellers and documenting and mapping their living conditions. Often, members of the savings group are trained to conduct house-to-house surveys, to count the number of structures and map environmental and other conditions in the community.



upgrading

The goal of the planning processes is to generate specific development and social projects that will benefit the entire community while also ensuring on-going management and ownership over improvements. The savings federations are crucial to not just generate plans but to develop accountability and sustainability strategies. This often requires support from and sharing with other savings groups in the national network of Muongano.



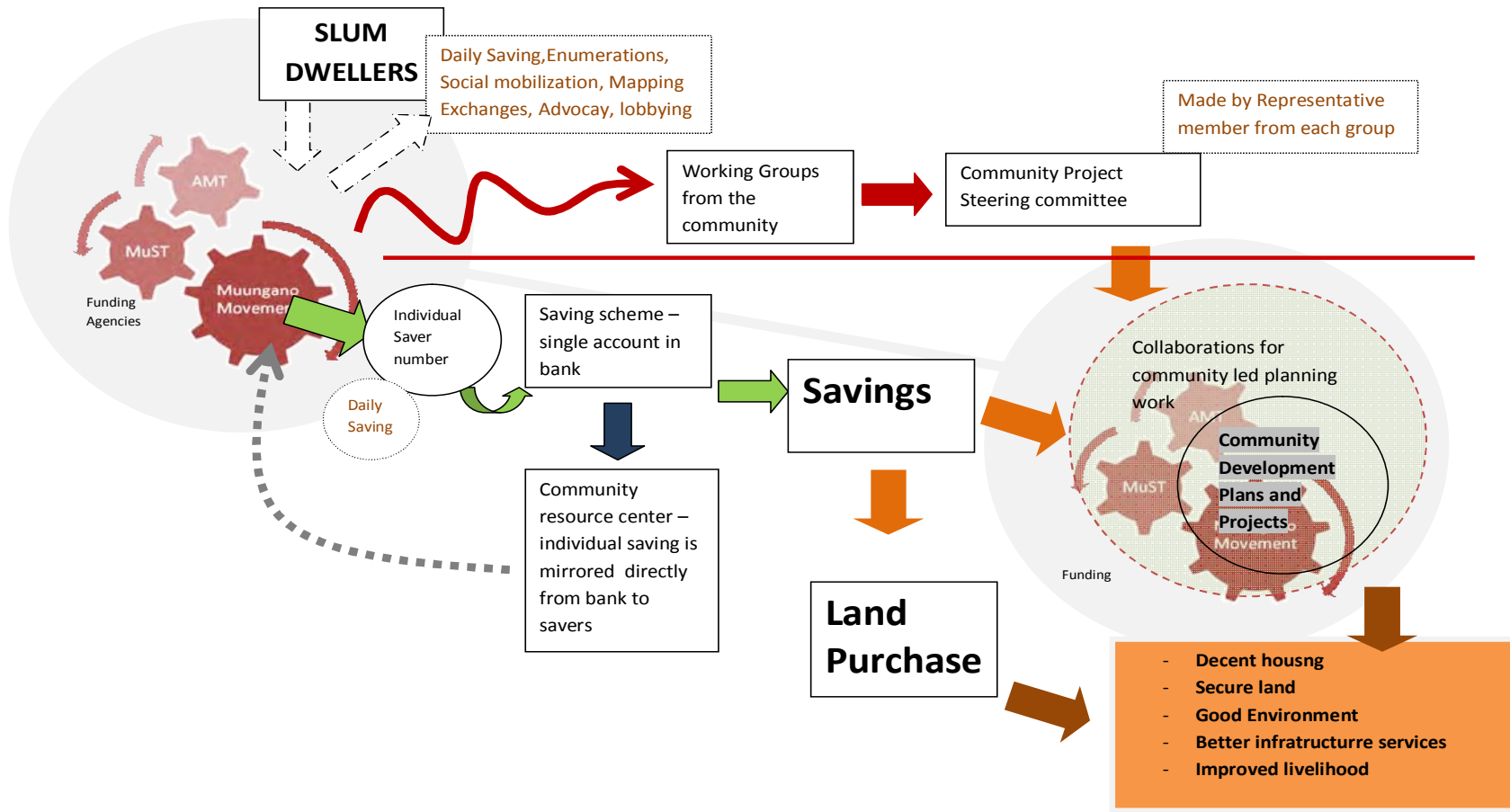
collaborative planning

The enumeration data and maps are used to share information among residents, build working relationships and trust, and begin dialogues about what to do. In these planning processes residents, landlords and local government officials participate and the aim is generally building consensus on upgrading priorities and strategies.

The Mathare Valley Zonal Plan

This report aims to offer collaborative analyses and recommendations focused on the entire Mathare Valley. Our work builds on previous collaborative planning and reports of this team, including the NGO Pamoja Trust. From 2008-2010, we collaborated to develop plans for four villages in Mathare, namely Kosovo, 4B, Mabatini and Mashimoni. A report was issued in 2010 and used by the Nairobi City Council and the Nairobi Water and Sewer Company as a framework to deliver piped water to every household in Kosovo. This was the first project of its kind in an informal settlement in Nairobi. By planning now at the zonal or valley scale, we hope to demonstrate that scaling-up community-led upgrading is possible and efficient, since infrastructure improvements can reach hundreds of thousands of residents. In order to complete a draft of the Mathare Zonal Plan, MuST organized community planning teams at the village level and Mathare-wide. The village-level planning groups have 18 members. The Mathare-wide planning team is comprised of three members from each of the village-level planning teams. The idea is that village-level priorities and needs will be identified, data gathered and checked for accuracy and broad community awareness best conducted by the village planning teams. The Mathare Zonal Planning team will work to integrate village-level priorities at the scale of the entire valley. All teams will work with university and other technical support staff.

Muongano Community Development Structure



Project Timeline



UC Berkeley & University of Nairobi students facilitate a planning workshop in Nairobi in 2009



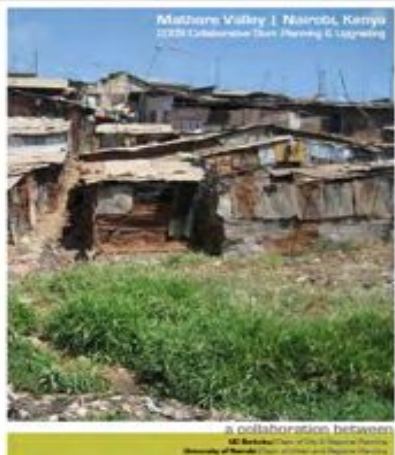
UC Berkeley, University of Nairobi students and MuST members during a collaborative planning workshop in Nairobi, 2011

2008

2009-10

2011

Start of collaboration between Pamoja Trust, SDI, University of Nairobi, & University of California, Berkeley to support planning work in Mathare and other urban informal settlements in Kenya



January-April

Studio Preparation and Analysis

- Team reviewed reports on slum upgrading projects around the world.
- Synthesized enumeration data to highlight living conditions in Mathare.
- Workshops with MuST in Berkeley

May -June

Collaborative planning in Nairobi

- Site visits to Mathare, Kibera & Huruma
- Participated in community meetings in Mathare
- Met with UN & World Bank stakeholders
- Worked collaboratively with UoN and MUST planning teams
- Generated draft analyses, maps and planning proposals



A UC Berkeley student and MuST member co-facilitate a community planning session in Mathare in 2011



A map of Mathare 4A with sampling grid and sample points (red & yellow dots) used for valley-wide household survey in 2011

August-December

Follow-up workshop & report drafting

- Analyses of new household survey & field mapping data
- Workshops with UoN and Mark Hildebrand in Berkeley to review draft report
- Report drafting and editing
- Sharing of report findings with MuST and other stakeholders

2012

Community planning

- Edit report according to community & stakeholder comments
- Issue final report and present to government & other officials
- Develop next stages of Mathare Valley Zonal Planning Process & Implementation

Key Data Sources

A number of data sources were used for this project. Our team analyzed detailed household level surveys conducted by Muungano in Kosovo, 4B, Mashimoni and Mabatini, representing over 12,000 households. Most of these data were geo-referenced, meaning we utilized Geographic Information Systems (GIS) technology to map the location of survey data. Our team also designed and completed a household survey of 650 household randomly stratified across all 13 villages in Mathare in August 2011 (see example above). We also used on-the-ground field mapping data gathered from April through August 2011 and confirmed our data with another mapping project in Mathare called, Map Mathare, <http://mappingnobigdeal.com/tag/map-mathare/>. In addition to these original data, we reviewed tens of policy & planning documents, consultant reports and other documents on Mathare.

Community Planning Process

A series of Community Planning Workshops accompanied the draft release of the Mathare Zonal Plan in January 2012. The aim was to allow residents to shape the analysis and proposed recommendations while also validating the existing conditions analyses. The forum was attended by various categories of stakeholders within the community; structure owners, tenants, federation members, village heads, youth leaders, women leaders, and religious leaders. Community members prioritized proposals focused on; additional water connections, legal electricity connections and lighting musts, improved sewerage systems and expansion of settlement access roads. By the conclusion of the community meetings, residents had agreed to: (1) Plan for a meeting with all stakeholders to discuss plan implementation; (2) Mobilize and organize residents around priority issues of water, sanitation, electricity and access roads; (3) Develop strategies to involve youth in the process.; (4) Establish a community coalition of CBOs and NGOs to move forward the proposals within this Zonal Plan.

Community Planning Workshop I 7 February 2012

Representatives from all 13 villages in Mathare were in attendance and the following tasks were completed:

- Review status and challenges of poor service provision across the settlements (where we are).
- Share results of data analysis and enable validation by community (review gaps and priorities)
- Discussion on strategies and possible planning scenarios
- Discuss community network building (Muungano)

Community Planning Workshop II 29 February 2012

Representatives from all 13 villages in Mathare were in attendance and the following tasks were completed:

- Proposal making on key areas of service provision. Main proposals made were: additional water connections, legal electricity connections and lighting musts, improved sewerage systems and expansion of settlement access roads.
- Sensitization on community responsibilities, role of the youth, and engaging other stakeholders and service providers
- Resolutions on: Community organization and mobilization; establishing community coalition of CBOs and future plan implementation.

March- April 2012

During this period, the project team accomplished the following:

- Updated maps on proposals from Community workshops on services
- Provided missing sections on: land tenure, local institutions and the Mathare planning context.
- Scheduled and held meetings with stakeholders to share draft report (NWSC, KPL, etc).

May - July 2012

During this period, the project team accomplished the following:

- Issued final report and present to government & others
- Developed next stages of Mathare Valley Zonal Planning process and Implementation
- Disseminated of methodology and prototype

Community Planning Process

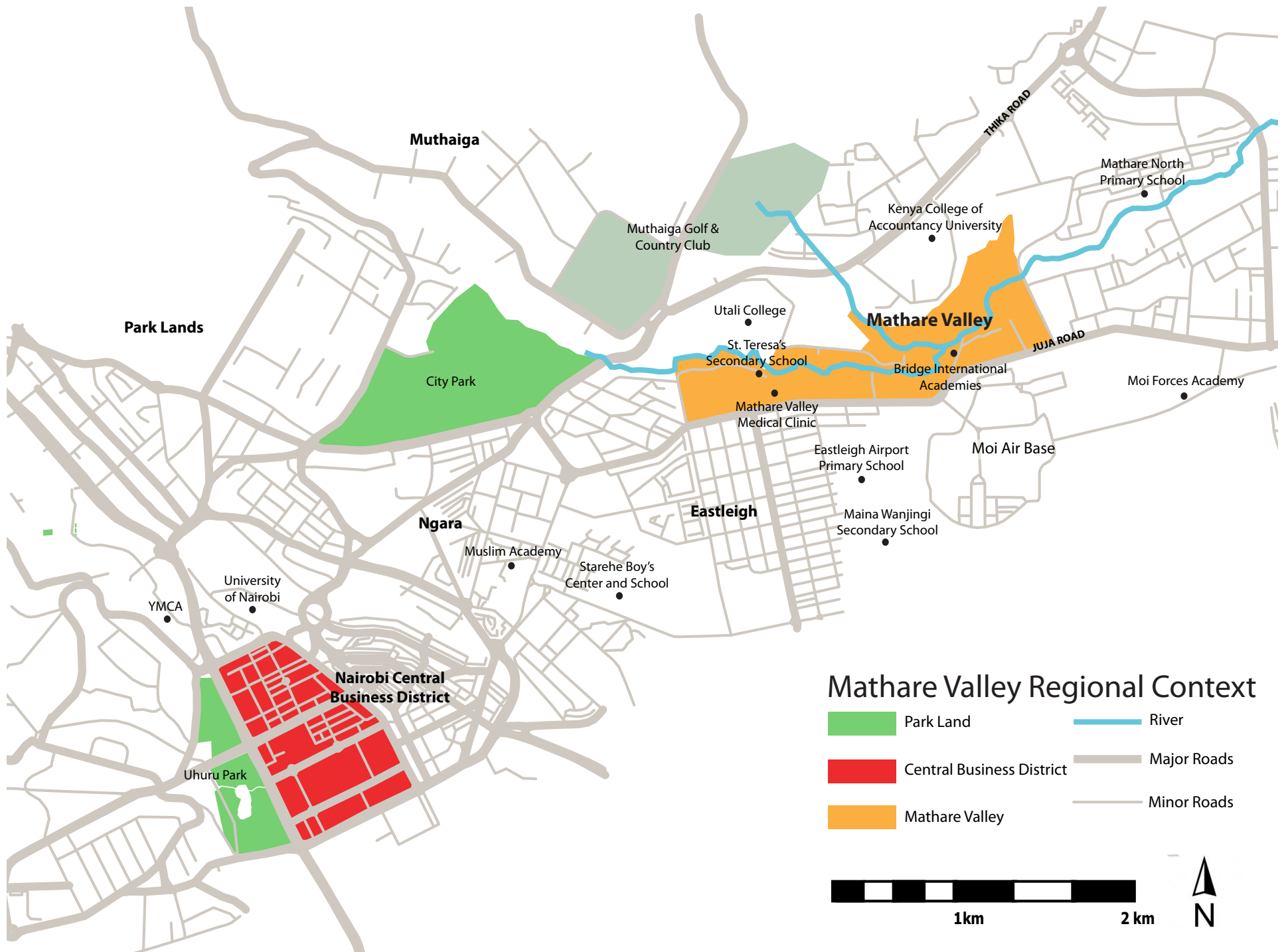


Mathare Valley: Existing Conditions

Documenting the range of inter-related physical, social and economic conditions in Mathare Valley was a significant task of this project. We began by grappling with population figures, as there is no one recognized population count for this or many other informal settlements. *The 2009 Kenyan Census reported 80,309 residents in the 13 Mathare villages where we are planning. However, using our household enumeration and other data, our team estimated the population at 188,183 people.* As with any census, there is likely under counting and other factors that influence accuracy, such as what time of day the counts are taken and the fact that slum dwellers are highly mobile resulting in constant population shifts. *Yet, the 1999 Kenyan Census data estimated about 70,000 residents in the sub locations we are defining as the Mathare Valley, which would imply a reasonable 7% inter-decade population increase.* Nonetheless, the low population figures contrast sharply with resident and CBO knowledge, our household enumeration data and voter registration numbers for the same area for the 2010 Constitutional referendum. Despite these uncertainties, we decided to use the official 2009 Kenyan Census counts for Mathare and recognize that all our findings should be seen as conservative estimates of population impacts.



Mathare Population, 2009 Kenyan Census					
VILLAGE	Total Population	Female	Male	No. of Households	Area- Sq. Km
3A	4059	1896	2163	1530	0.0536
3B	7433	3256	4177	2681	0.0497
3C	5316	2430	2886	1925	0.0761
4A	18776	8565	10211	5627	0.2151
4B	5681	2496	3026	1810	0.061
GITATHURU	3737	1645	2092	1241	0.0464
KIAMUTISYA	5825	2845	3188	2351	0.054
KOSOVO	8085	3642	4443	2846	0.0835
KWA KARIUKI	5290	2353	2937	1878	0.0545
MABATINI	1160	553	607	383	0.038
MASHIMONI	4478	1931	2547	1692	0.0526
NO.10	2594	1350	1604	994	0.0272
VILLAGE 2	7875	3658	4217	2854	0.072
TOTAL POPULATION	80309	36620	44098	27812	0.8837



Community Assets

Key Findings:

- While grappling with poverty & harsh living conditions, most residents are well educated
- A plethora of creative & innovative small enterprises
- Women are leading many CBOs
- Youth are actively engaged in social, cultural, economic, sport & sanitary activities.

While Mathare residents contend with barriers such as limited economic prospects, gender discrimination and violence, the community is also deeply invested in using its own ingenuity to survive and find a pathway out of poverty. Individual innovations, women's groups, community-based organization support networks, and youth activities are some of the many assets in Mathare. This is not to imply that there are not vast and gross inequities in Mathare, but rather to suggest that **any planning process should build upon and lift-up community assets, innovative strategies of resilience and local knowledge**. The settlement is home to over two dozen community-based organizations (CBOs) that together provide educational, spiritual, financial, and social support for residents. These organizations range from women's groups to savings schemes, and from religious institutions to user-generated news outlets.

Community-based organizations fill a vital role in Mathare, and **one third of the all residents report membership in a community organization**. In 3A, 3C, 4B, Mashimoni, and Kwa Kariuki membership is between 40- 50%. Savings groups drive membership in community organizations, with 63% of residents citing financial support as the reason for joining a group. Savings and credit schemes attract the largest numbers, with 67% of residents claiming membership. The savings groups serve an important function within Mathare, as they can act as an entry point for other civic engagement and provide a safety net for families that earn low wages. Other CBOs such as Mathare Youth Sports Association (MYSA) and Maji Mazuri mobilize young residents around community-led sanitation and sports programs. The Mwelu Foundation and Slum Talent Trust organize user-generated news services in Mathare.

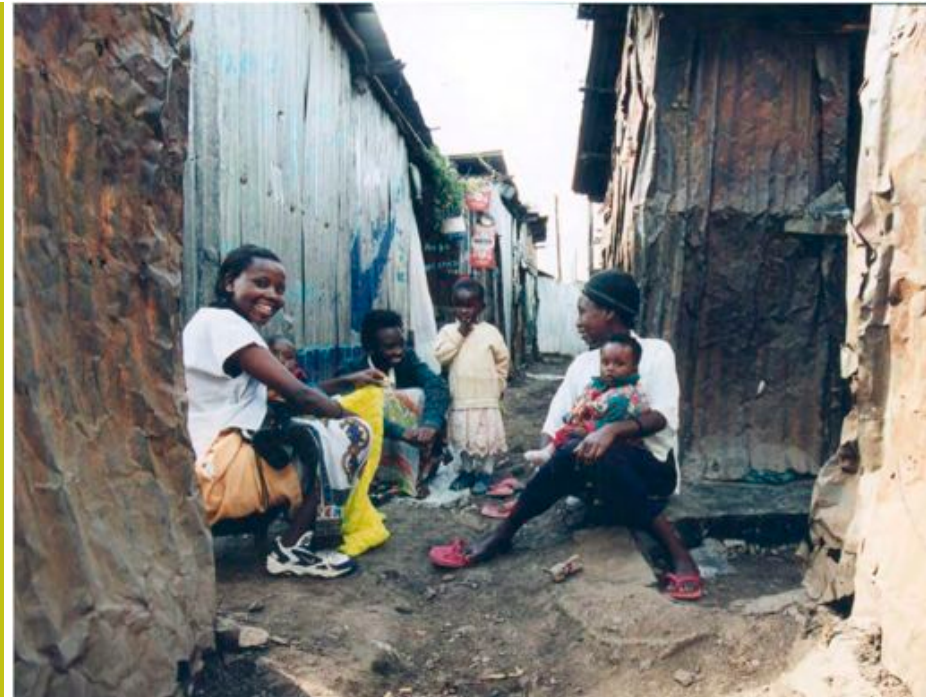


Daily Life in Mathare Valley

Throughout their daily activities and tenacious efforts to earn a livelihood, Mathare residents may face difficult trade-offs and several demands on their time. For instance, accessing healthcare may conflict with residents' livelihood strategies or involve heavy out-of-pocket expenditures. Although government health centers charge a fee of just 20KSh, they usually lack sufficient supplies of medication. Residents may turn to private clinics or pharmacies instead, but the costs of medicine, fees, and procedures quickly become excessive (perhaps reaching 500KSh for lab tests). Transport costs are not a major burden for Mathare patients, according to recent UoN and MuST surveys, but residents usually endure long waiting times. ***Mathare North Health Clinic, a government center, treats about 200 patients per day and residents queue up from 5:30 AM and may wait all day before being treated. At the non-profit Baraka Health Center, 6 doctors treat 250-300 patients daily.*** The center is closed over the weekends and doctors observed that emergencies are more common on Mondays (as patients cannot afford hospital fees and may not access care over the weekends). Health-workers at Mathare North reported that residents may miss their appointments if they find casual labor, underscoring the trade-off between securing livelihood opportunities and accessing affordable health services.

Mathare residents frequently work extremely long hours, but many continue to face challenges such as low incomes, lack of childcare, and rising food prices. ***Interviews with food vendors in July 2011 found that they operated for approximately 14 hours per day, often beginning as early as 6 AM.*** These vendors have been adversely affected by the recent spikes in staple food prices, as consumers resort to cheaper, less nutritious items. With meats, fruit and grains increasingly out of reach, customers prefer beans, fried foods, and vegetables such as kale (sukuma wiki, or 'pushing the week' in Kiswahili). One in five of the vendors interviewed engaged in other informal activities such as washing clothes, suggesting that livelihood diversification was needed in order to secure adequate earnings. Childcare is often another major concern for single mothers in Mathare, who may struggle to pay the typical daily fees of 30-50KSh for daycare.

Recently, MuST and Muungano worked together to initiate low-cost childcare centers in Mathare and Dandora in order to serve local mothers as well as provide business opportunities for mothers. The centers typically serve 15-20 children each day, opening from 6AM until 7:30PM. Other Mathare youth are engaged in successful plastics recycling businesses, and toilet-cleaning is another way to improve local living conditions while earning an income. Beginning in 2005, an innovative partnership with SC Johnson has employed teams of Mathare youths to clean toilets. Regular clients usually engage the Community Cleaning Services teams once per week, who earn Ksh20 per cleaning.



Economics and Livelihoods

Key Findings:

- **Average monthly household income in Mathare is less than KSH 8,500**
- **Average household monthly expenditures are over KSH 9,100**
- **87% of residents are casual laborers or have informal businesses**
- **61% work within Mathare**
- **66% of residents moved to Mathare for economic reasons, noting both affordable rent & employment opportunities (only 7% were displaced from another area)**

The poor constitute 51.5% of Kenya's urban population, which is one of the highest concentrations of urban poverty within East Africa. Casual labor and informal work accounts for the vast majority of the employment within Mathare, and only 10% of Mathare residents are engaged in the formal labor market. The informal sector is often the only means for slum dwellers to earn a wage. With rising informality, workers can only earn extremely low incomes through casual employment and are often unable to meet basic household expenditures.

While microenterprise has been touted as a means to increase economic security within informal settlements most families in Mathare do not operate microenterprises and instead rely on casual labor. Recent household level data from Mathare indicates that 87% of residents are employed in the informal sector, either through casual labor or through small business, and only 10% of Mathare residents are formally employed. Fewer than 40% can find employment outside of the Valley. Common casual employment include clothes washing for women, which earns about Ksh 100 - 200 per day and construction labor for men, which earns Ksh 200-250/day.

Due to the unpredictable nature of casual labor, *families' income tends to fluctuate, and this has a direct impact on their health and food security.* When wages fluctuate, it limits the resources that households can devote to their basic needs such as food, water and health care. Income distribution varies widely between villages, with some residents earning less than Ksh 2,500 per month, and others earning upwards of Ksh 15,000

per month. In the valley as a whole, 30% of the residents earn Ksh 5,000 or less per month, with low wages having the highest prevalence in Kiamutisya.

Poverty in context

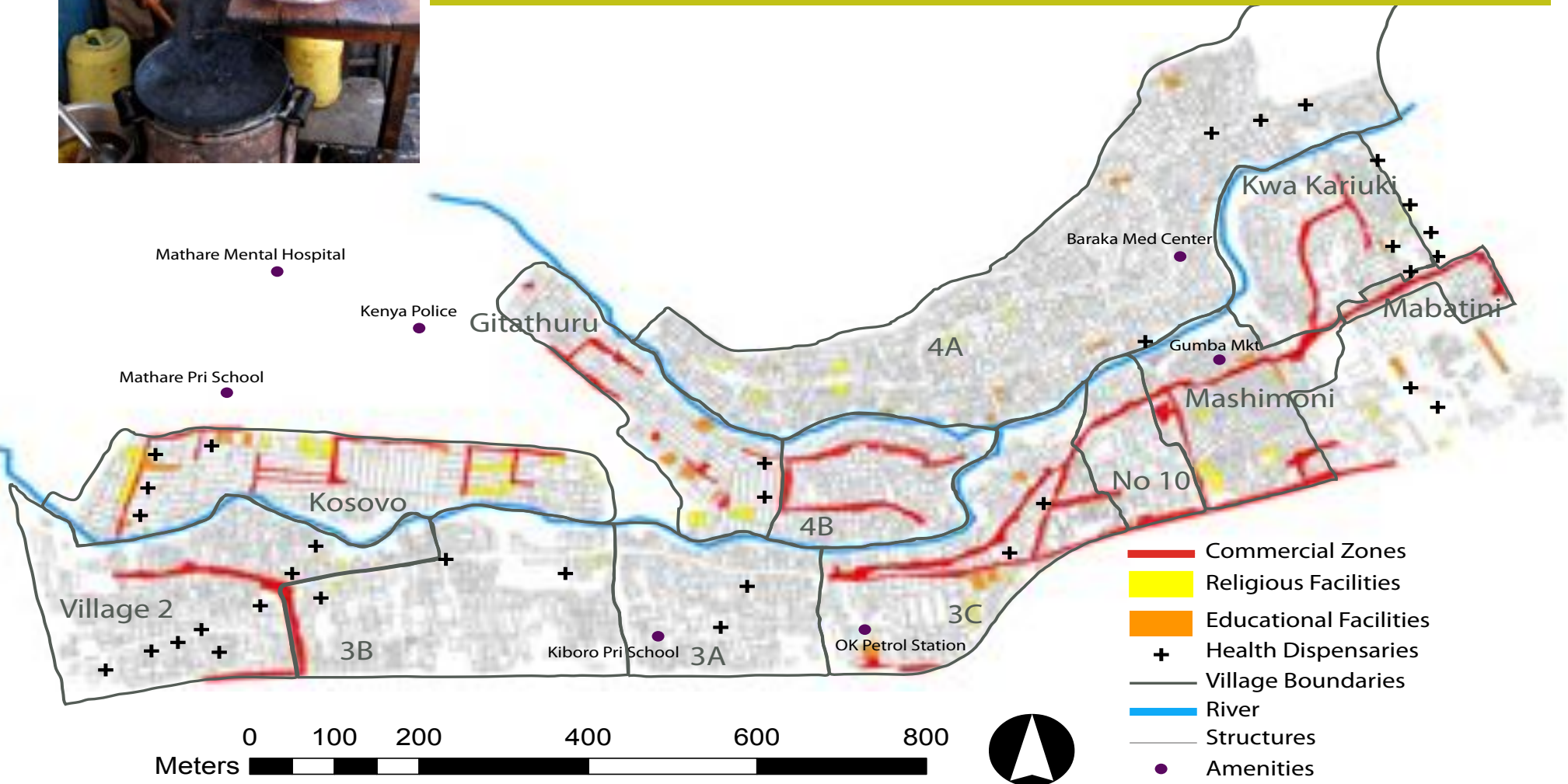
The absolute poverty line in urban Kenya is an expenditure of approximately Ksh 3,250 per adult equivalent per month, excluding rent. We found that *the average Mathare household earns about Ksh 8,500 per month, or US\$100 (85 Ksh = US\$1).* This results in an average monthly per capita adult income of about Ksh 4,250 (US\$50). Yet, average monthly household expenses including rent (approx. Ksh 1,200/month) are approximately Ksh 14,700, or US\$170. *Each adult in Mathare typically faces a monthly deficit of Ksh 3,000 (US\$35),* as expenses continue to outpace income. Our research suggests that Mathare residents use a range of coping strategies to make ends meet and **poverty, however measured, is endemic.**





A Note on Poverty

The Government of Kenya (GoK) applies a range of different poverty measures based on consumption & expenditures. The **food poverty line** is based on the cost of consuming 2,250 kilocalories per adult equivalent per day, while the **absolute or overall poverty line** relates to survival food needs and basic non-food needs. **Hardcore poverty** refers to households that would not meet their minimum food requirements even if they allocated all their income on food. Thus, households are deemed to be **absolute poor** if they cannot meet their nutritional and other basic requirements, **food poor** if they cannot meet all their nutritional needs due to expenditure on other basic nonfood essentials, and **hardcore poor** if they are unable to meet their basic food needs even by foregoing other essentials. *The 2005/06 Kenya Integrated Household Budget Survey estimated the food poverty line in monthly adult equivalent terms as being KSH 1,474 in urban areas and the absolute poverty line in monthly adult equivalent terms was KSH 2,913 for urban areas.*



Household Monthly Income & Select Expenses by Village

Process and Partners

The Mathare Valley

Planning Scenarios

Policy Framework

Village Name	Estimated or reported mean HH monthly income, Ksh	Mean HH monthly school fees	Mean Monthly health care expenses, Ksh	Mean monthly transport expense, Ksh	Mean monthly food expense, Ksh	Mean monthly electricity expense, Ksh	Mean monthly security expenses, Ksh	Mean monthly water expenses, Ksh	Mean monthly toilet expenses, Ksh	Estimated mean household expenses (excluding rent), Ksh
3A	7,500	1,618	758	1,507	6,642	333	1,338	425	483	13,104
3B	5,000	1,913	1,208	2,175	6,430	562	3,300	424	100	16,112
3C	10,000	2,057	371	877	7,286	448	2,033	362	130	13,564
4A	10,000	1,255	452	1,105	6,218	361	1,759	494	151	11,795
4B	9,282	968	561	1,793	5,775	385	2,650	461	72	12,665
Gitathuru	5,000	1,298	1,083	1,900	8,146	460	1,514	313	48	14,762
Kiamutisya	5,000	1,313	1,504	2,813	5,500	476	67	527	50	12,250
Kosovo	15,000	2,111	722	1,261	5,434	308	1,352	421	324	11,933
Kwa Kariuki	10,000	1,193	691	1,955	8,302	363	600	387	342	13,833
Mashimoni	5,372	2,270	673	1,288	6,158	333	1,950	469	306	13,447
Mabatini	6,767	1,860	1,486	3,000	9,600	580	100	588	150	17,364
No.10	12,500	1,621	370	775	10,555	358	154	306	67	14,206
Village 2	10,000	1,797	978	1,482	5,650	432	1,233	475	173	12,220
Mathare Valley	8,500	1,636	835	1,687	7,054	415	1,450	435	184	13,635

Multidimensions of Poverty in Mathare

The Multi-dimensional Poverty Index (MPI) is a new international measure of poverty that we believe more accurately captures vulnerability in places like the Mathare Valley. The MPI was developed by the Oxford Poverty and Human Development Initiative, <http://www.ophi.org.uk/>.

The index covers 3 aspects of deprivation, including:

1. Education

- Years of Schooling: deprived if no household member has completed five years of schooling
- School Attendance: deprived if any school-aged child is not attending school in years 1 to 8

2. Health

- Child Mortality: deprived if any child has died in the family
- Nutrition: deprived if any adult or child for whom there is nutritional information is malnourished

3. Standard of Living

Electricity: deprived if the household has no electricity

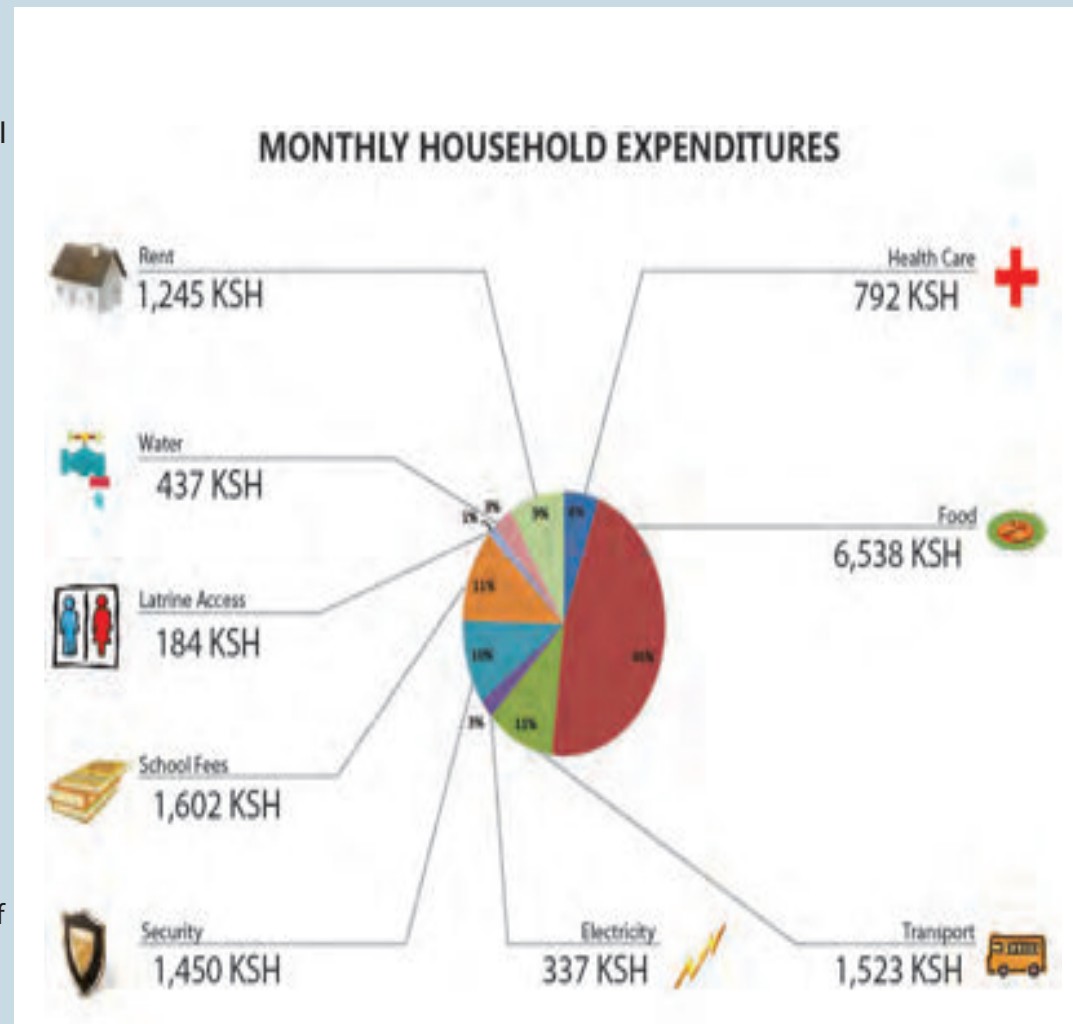
Drinking Water: deprived if the household does not have access to safe drinking water or it is more than 30 minutes' walk away

Sanitation: deprived if they do not have improved sanitation or if their toilet is shared

Flooring: deprived if the household has a dirt, sand or dung floor

Cooking Fuel: deprived if the household cooks with wood, charcoal or dung

Assets: deprived if the household does not own more than one of: radio, TV, telephone, bike, motorbike, or refrigerator and does not own a car or tractor



Roads and Circulation

Key Findings:

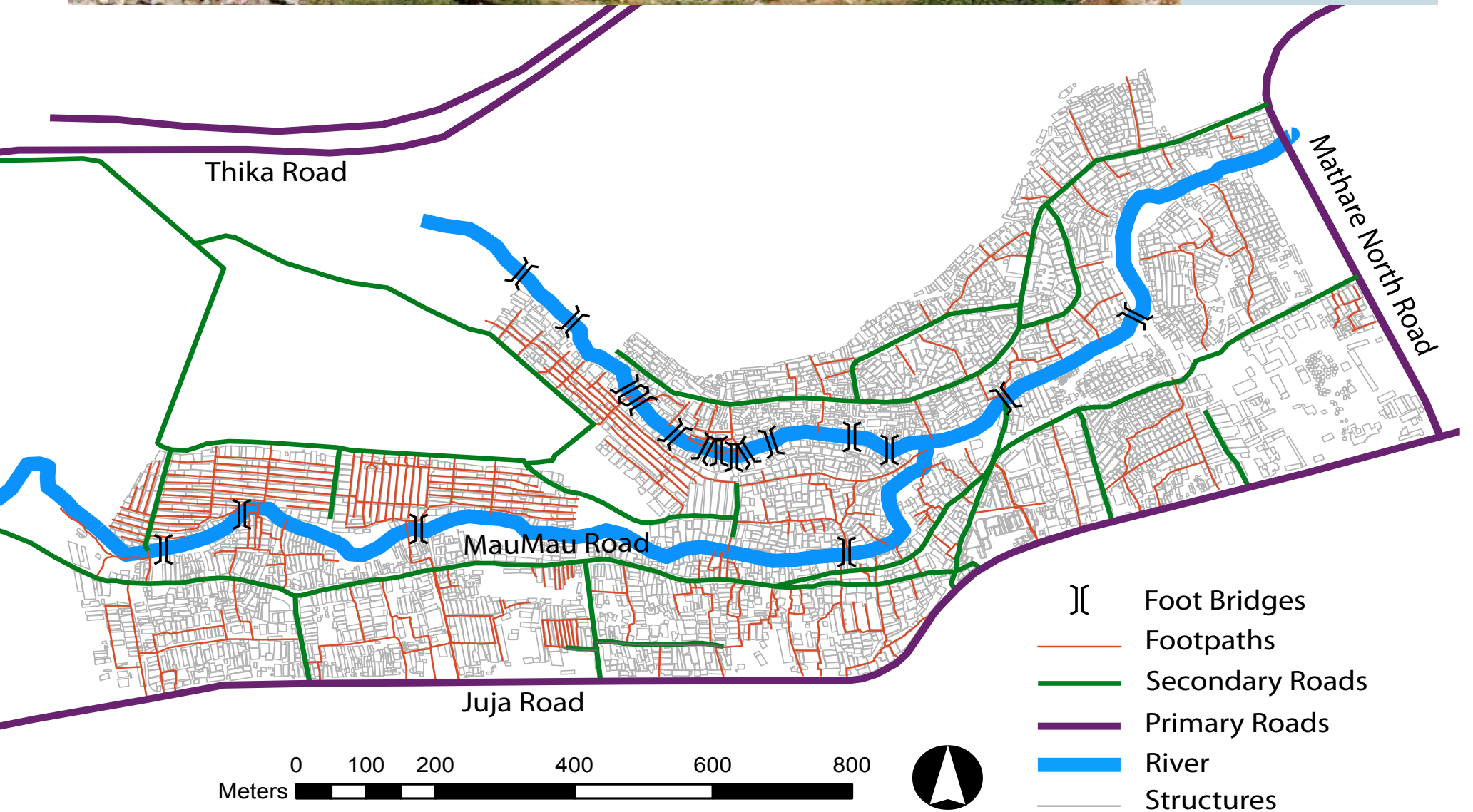
- **88% of residents do not consider the internal roads adequate for safe or efficient travel**
- **There are few motorable roads to get into the settlement, making it virtually impossible for emergency vehicles to service Mathare**
- **Steep slopes and river crossings are dangerous and often impossible for children, the elderly and infirm.**
- **Footpaths and roads act as drainage canals for raw sewage, human waste and other garbage.**

Mathare is bordered by two main highways of Juja Road and Thika Road, but access is poor within the settlements and improving circulation is a key priority. Accessibility is limited within and between Mathare's villages, creating barriers for social relations, economic activities and safety. Many pathways and roads do not have a safe and grade-separated space for pedestrians, and almost all Mathare residents must walk to obtain basic services. Traffic accidents along Juja Road are frequent, creating another health and safety hazard for the urban poor.





Left: secondary roads, open dump sites & sloping terrain of Mathare Valley



Land Use & Environmental Factors

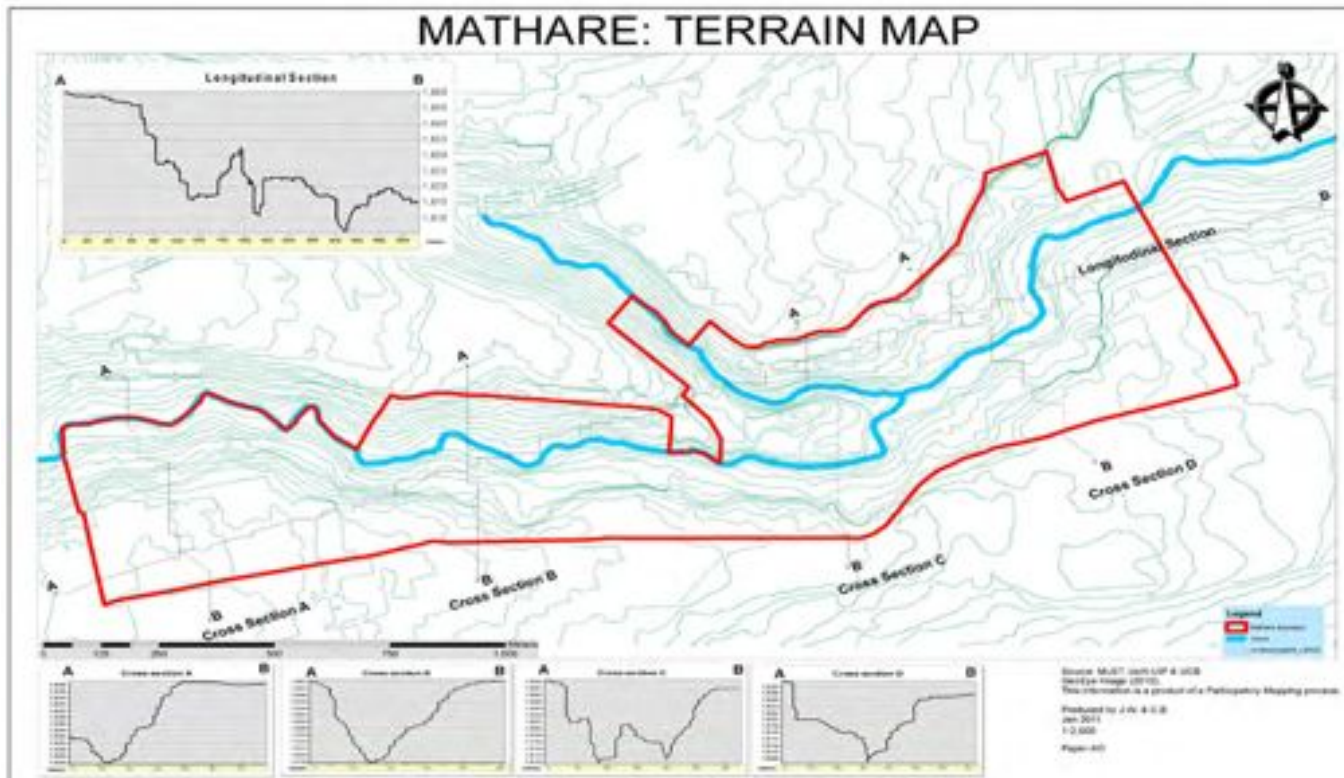
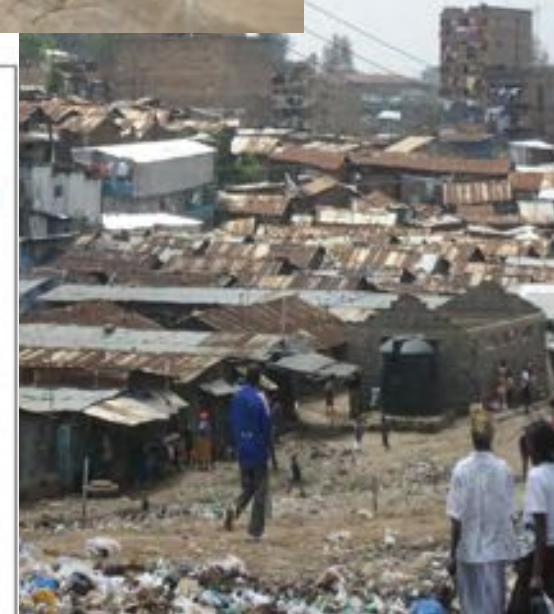
Key Findings:

- Water, sewage and other pollutants drain into the valley from surrounding communities & facilities.
- There are areas in Mathare where a number of people live that are subject to flooding during the rainy season
- Steep slopes are frequent throughout the settlement.
- Quarry activities have left exposed rock and removed top soil.
- Lack of solid waste collection leads to large exposed dump sites.
- There are few open spaces for recreation.
- Limited agriculture activities and keeping of livestock occurs along the river banks.

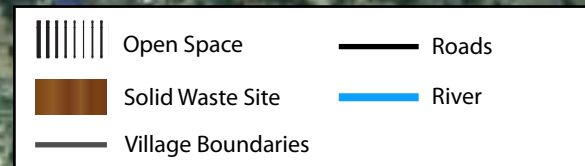
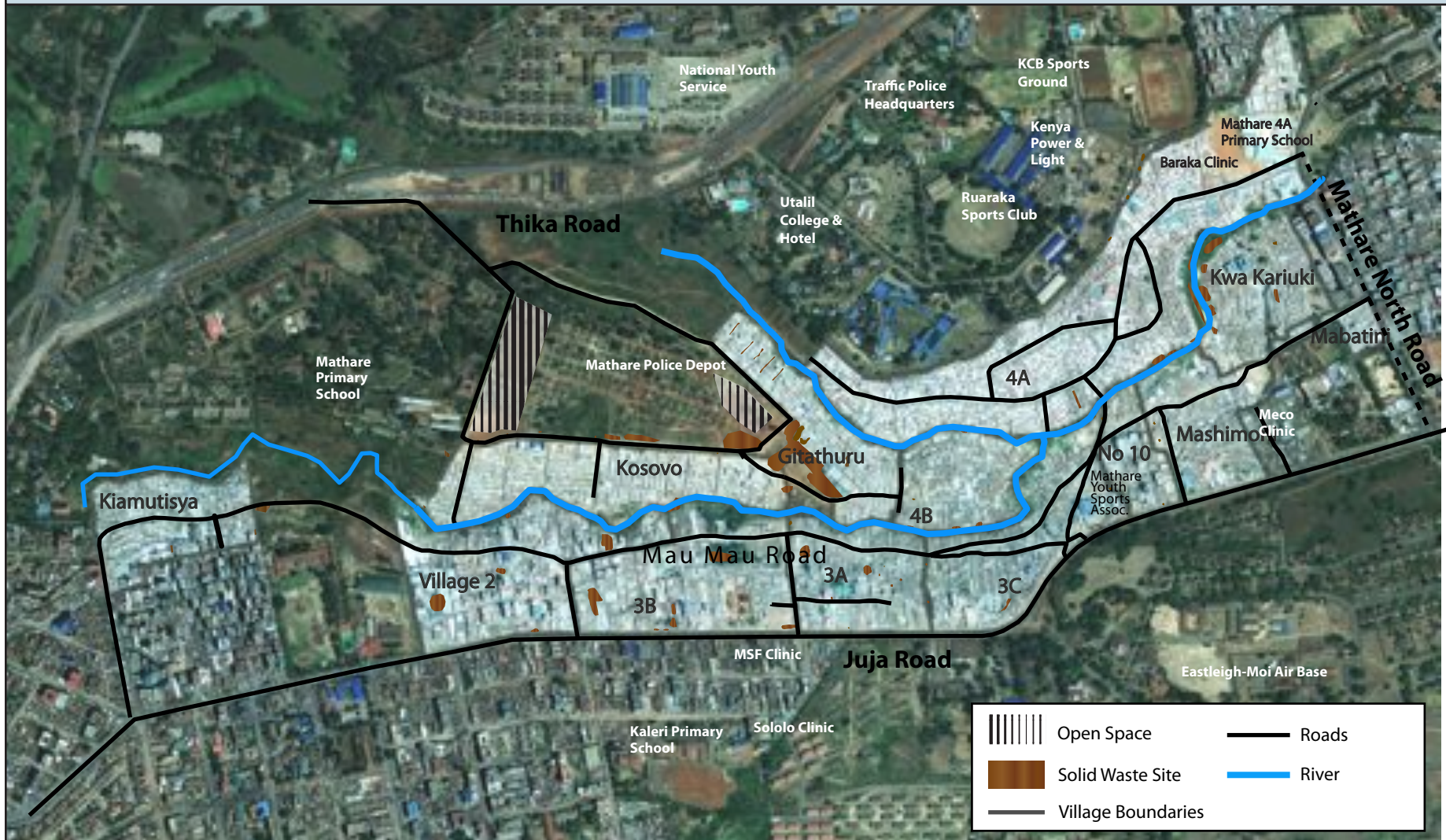


Left: exposed rock of the former quarry site where residents now live.

Below: sloping terrain & river valley where most residents live.



Mathare Land Uses



Water & Sanitary Infrastructure

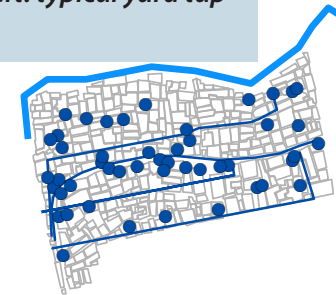
Key Findings:

- **90% of residents do not have in-home piped water.**
- **Water quality & reliability is inconsistent, with frequent contamination from vandalized pipes and shut-offs.**
- **Many community yard taps are controlled by cartels and price spikes are frequent, especially during droughts.**
- **Unsafe, unsanitary & unlit toilets are contributing to sexual violence against women at night across Mathare.**
- **Solid waste/garbage pollution is a major concern for residents.**

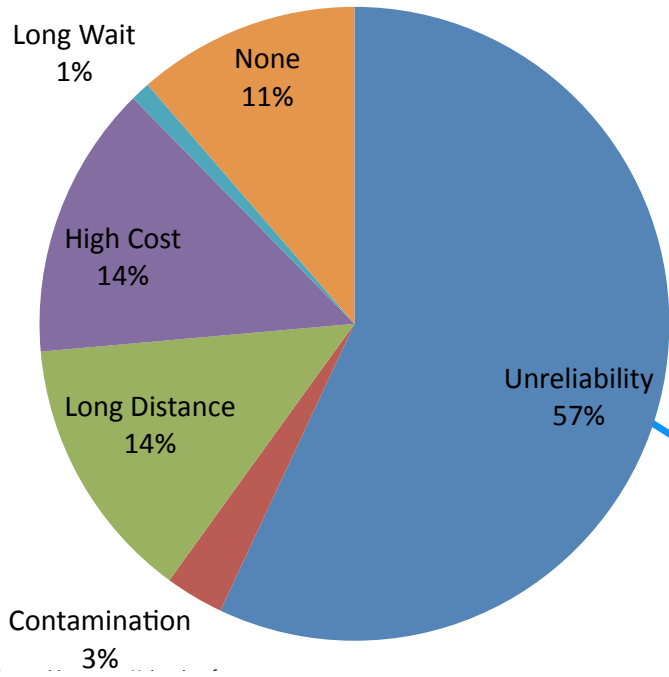
Water provision throughout Mathare Valley is generally either via stand points or water kiosks. Only 11% of residents in the valley have private in-yard or in-house municipal water connections while the rest of the populations pay on average Ksh2 for a 20 litre jerry can from private sellers. The geographic spread of water points is fairly good as 76.3% of the population in Mathare live within a 50 meter walk to a water point and 100% within the 500 meters that Sphere standards recommend. The area of much greater concern is that the total number of water points is far too low to adequately and efficiently serve the communities. Base on our field work estimating the number of functioning water points and toilets in Mathare, a single water point serves , on average, 315 people which is above the emergency threshold of 250 as set by sphere standards. Furthermore, irregular water supply combined with long wait times has led to serious water access problems for Mathare residents. The high demand on the existing water system and poor maintenance has caused the system to frequently leak, leading to low pressure flows, intermittent supply and dry taps. The large number of illegal connections is further contributing to low water pressure and contamination of clean water supplies. Long wait times are frequent at water points and this burden falls disproportionately on women and children. Overall, water supply is insufficient and irregular, quality is poor and costs are obstructive to the poor.



*Above: random exposed water pipes, frequently contaminated by sewage
Left: typical yard tap*



Barriers to Water Access



Water Systems Map

- Water Points - Functioning
- Waterlines

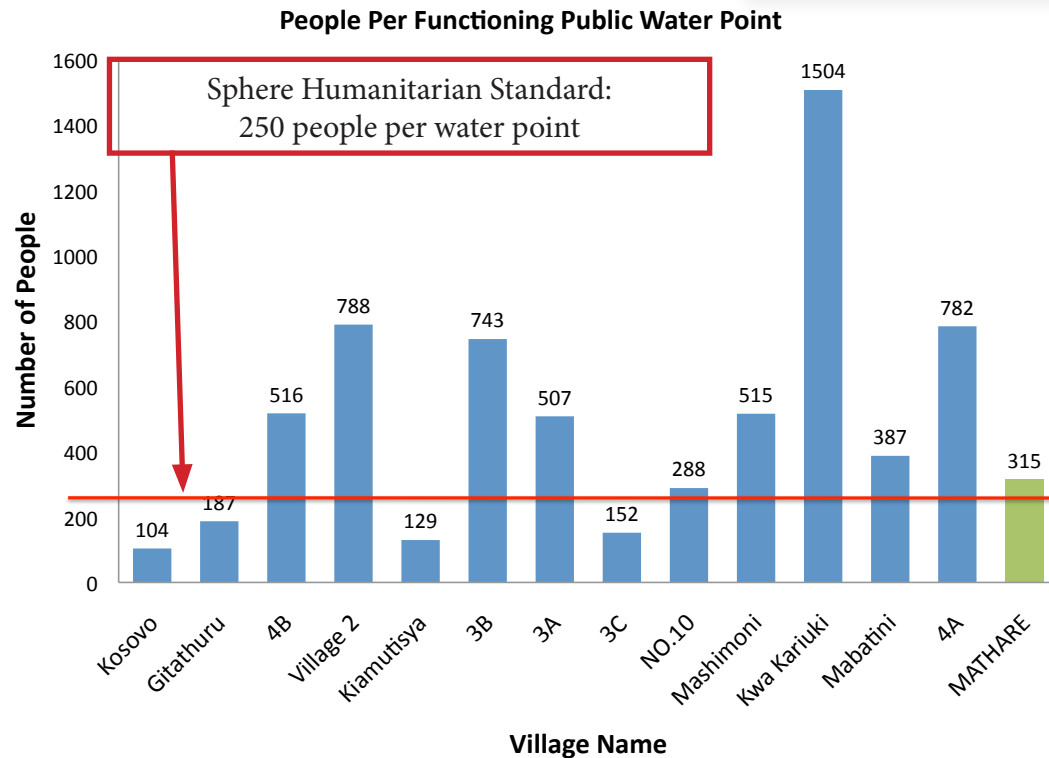
Water Infrastructure

Functioning public water points were defined as those locations that were delivering water as a public accessible good. The majority of these were water kiosks which tend to charge Ksh2-4 per 20 liter jerrican. Locations that were non-functioning, private or under construction were not included in our analysis. Almost every village fails to meet the minimal Sphere Humanitarian standard of no more than 250 people per water point, with some villages having as more than 700 and 1,500 people sharing one public water tap. We also found that Mathare Valley residents travel an average of 53 meters from their homes to collect their water. Considering women and children do most of the water collection and steep slopes and dangerous paths are common, this distance also represents a significant inequity.

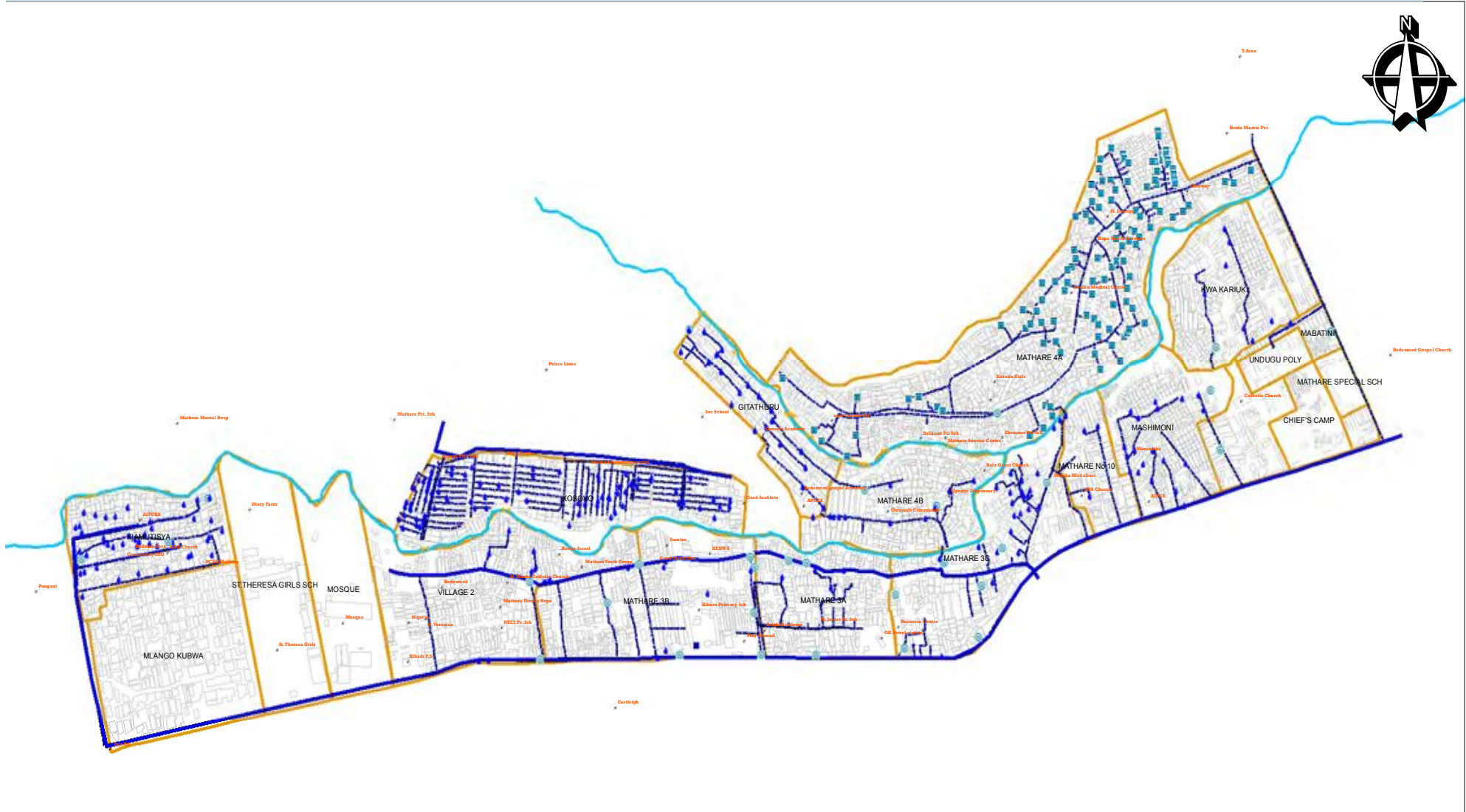


Sphere Standards

The Sphere Handbook is one of the most widely known and internationally recognized sets of common principles and universal minimum standards in life-saving areas of humanitarian response. Given the lack of universally accepted indicators for comparing slum conditions, this project utilized the Sphere Standards. The fact that infrastructure conditions in Mathare fail to meet the minimal Sphere standards further highlights the urgency of and necessity to improve basic, life-supporting services such as water and toilets. Currently, the infrastructure service provision is, in our view, gross violation of human rights.



Water Access Points



Legend

- Places
- WET CORE
- Water points
 - ▲ Stand point tap
 - ⊕ Water kiosk
 - Water tank
- Type
 - Main Water line
 - Distributor lines
 - Foot bridge
 - Structure
 - rivers
 - Mathare Villages

Source: MuST, UoN-UIP & UCB
 GeoEye Image (2010).
 This information is a product of a Participatory Mapping process.

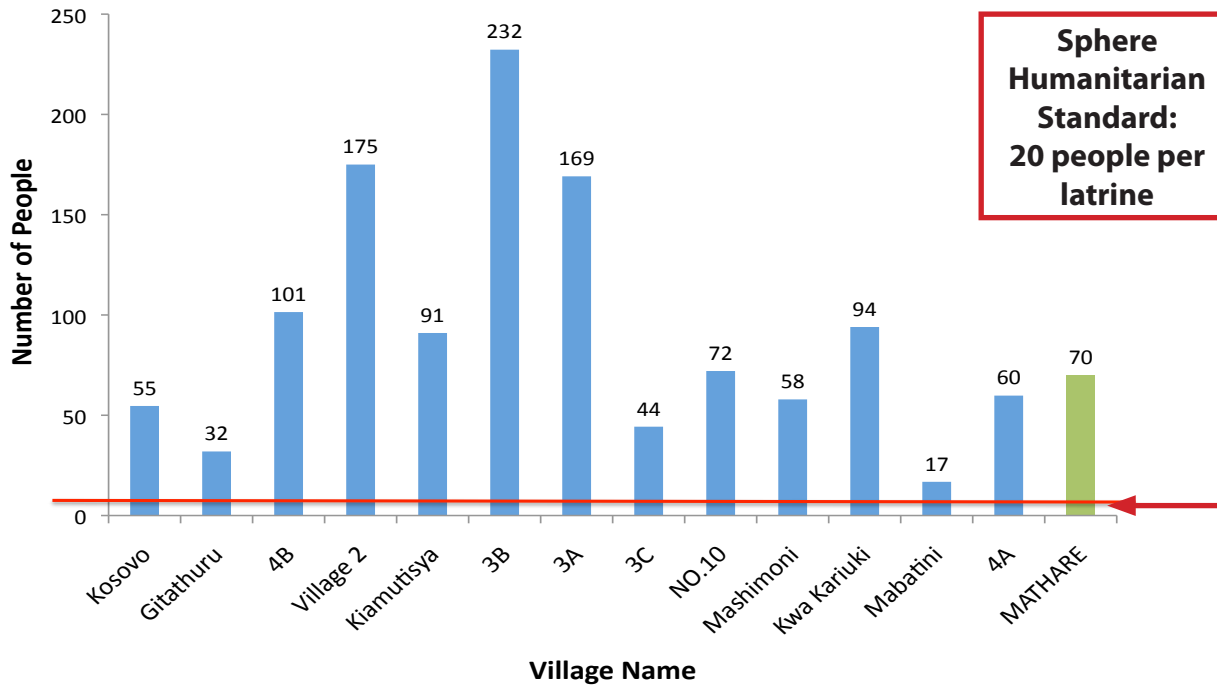
Drawn by J.W. & C.B.
 Jan 2011
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Sanitation

The sanitary infrastructure in Mathare is equally bad and in many cases worse than the water. There are too few ablution blocks for the population, the sewerage pipe system is in total disrepair, and there is limited or no solid waste management. Toilets vary greatly in type and spatial distribution across the valley. For the purposes of this report, only sanitation blocks which were functional and allowed public access were utilized for accessibility calculations. It should be noted that the term functional is purely used to indicate that households are using the facility. Most of these "functioning" sanitation blocks are in fact not connected to the larger sewer system and drain directly into the river. Average cost per use for a toilet is Ksh5



People Per Functioning Latrine (individual + block)



Sphere Humanitarian Standard: 20 people per latrine



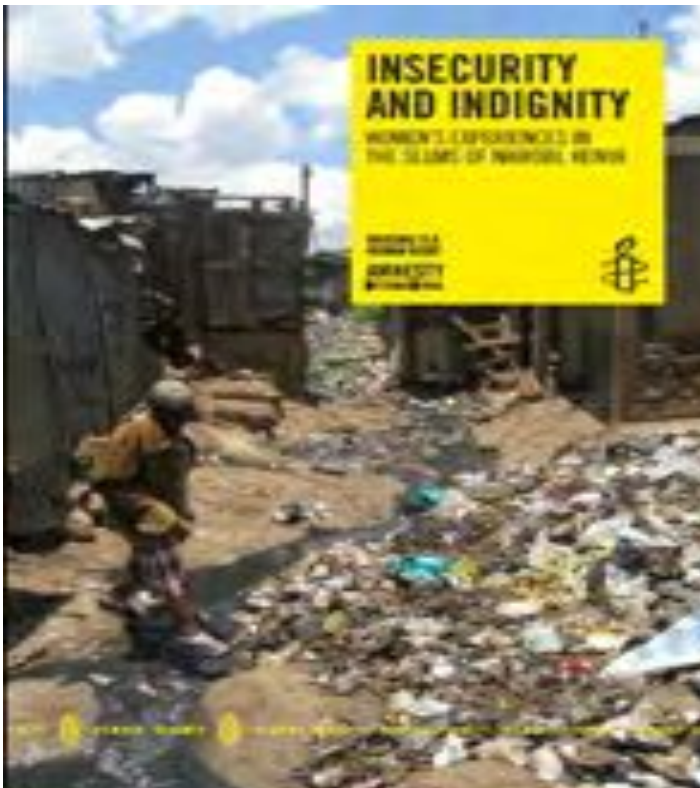


Sanitation Services Map

- Sanitation Blocks
- Sewer Pipes

Toilets

Toilet accessibility across the valley is very poor. **Only 17% of residents have access to a private individual (usually in-home) toilet and only 29% of households live within 30 meters of a functioning public latrine block.** This is especially problematic for women and girls who are forced to travel long distances under poor lighting to use an insecure toilet. **According to Amnesty International, unsanitary, insecure and poorly lit toilets in Mathare are contributing to rape and sexual violence and fueling the spread of infectious diseases, including HIV.** Poor quality of latrines and the far distances to access them has led to open defecation and the use of flying toilets (defecating in a bag and throwing it out). The sewer lines which do exist are non-functional or drain the sewage directly into the streets, homes and eventually the rivers. Only 28% of households report being served by a waste collection group (formal or informal), which has resulted in the majority of residents merely dumping their garbage at a few central locations or burning it. Sphere standards for sanitation recommend that a single latrine be used by a maximum of 20 people and the general environment where the population lives be free from human feces.



Amnesty International recently highlighted the key linkages between poverty, insecurity, violence against women, and inadequate sanitation in Nairobi's informal settlements. Gender-based violence is endemic in slums, but Amnesty argues that it usually goes unpunished and "significantly contributes to making and keeping women poor" (p. 37). For instance, 19 year-old Amina recounted being attacked one evening in Mathare. As she walked for 10 minutes from her plot to a shared latrine, she was nearly raped but chose not to report the incident. Using latrines or toilets at night is often out of the question for women in Mathare and they can become prisoners in their own homes. Few issues have such a profound effect on a woman's wellbeing as access to sanitation and yet this tragedy continues to be shrouded in silence.





A

Garbage is generally dumped in open spaces and drains down towards the river.



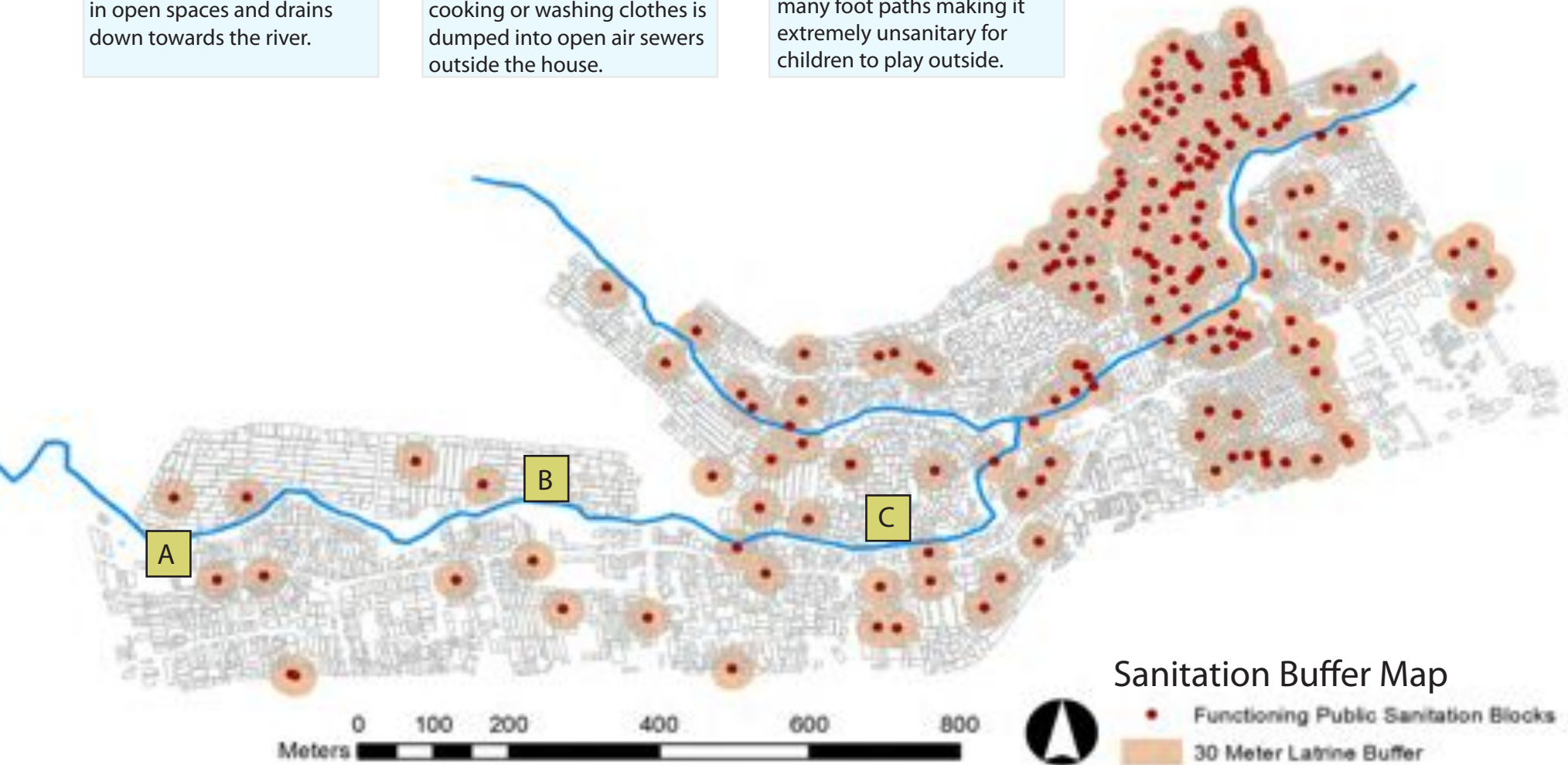
B

Household waste water from cooking or washing clothes is dumped into open air sewers outside the house.



C

Sewage openly flows down many foot paths making it extremely unsanitary for children to play outside.



Electricity & Cooking Fuel

Key Findings:

- Only 9% of residents have a formal, metered electricity connection, 68% tap into the electric grid informally and 22% have no electricity at all.
- Household pay an average of Ksh 403 (US\$5) per month for electricity.
- Illegal electricity connections pose a constant risk of fires and electrocution (due to haphazard connections).
- Charcoal & paraffin are the most frequently used cooking fuels.
- Households pay an average of Ksh 1,368 (US\$16) per month for cooking fuel.

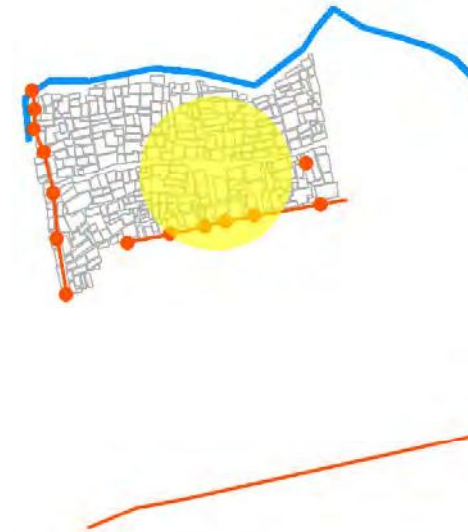
Within Mathare Valley residents use electricity for lighting, powering electronic equipment and for businesses. Access to electricity continues to be a major concern and struggle for many Mathare residents. The police and Kenya Power and Light Company (KPLC) often harass residents for having an 'illegal' electricity connections. Yet, according to most residents, KPLC only provides 7 Amps of power with a connection to a power pole, after which the circuit breaks and the power supply is shut off. This means that either very few electronics can be run off of one pole or wire, or residents are forced into making multiple connections to the electricity grid to service their needs. In most villages, the electricity supply is controlled by a few individuals who have been able to access power directly from KPLC. These individuals arrange the 'illegal' connections for other residents. In general, electricity supply needs improved systems for power distribution and management.



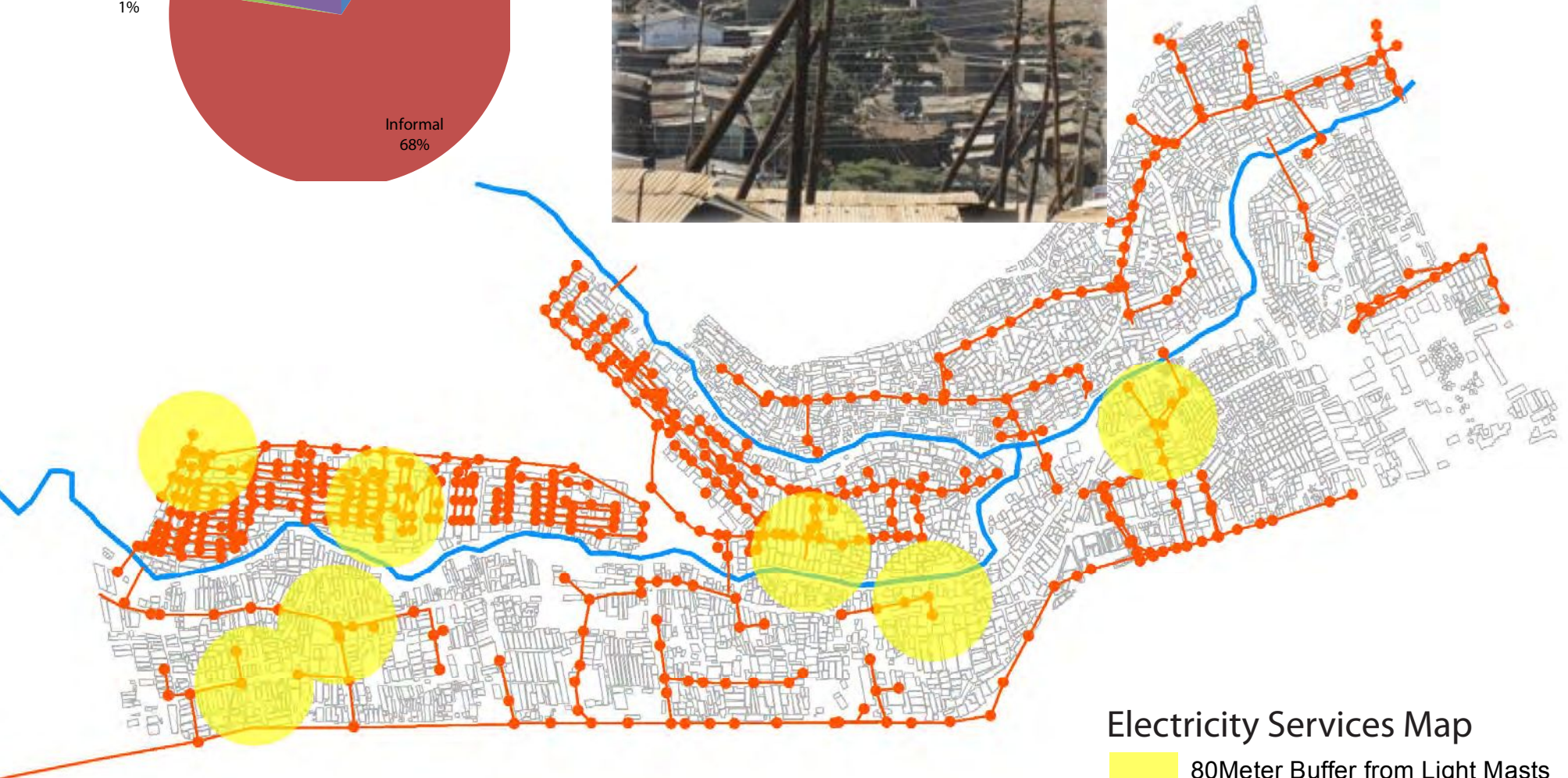
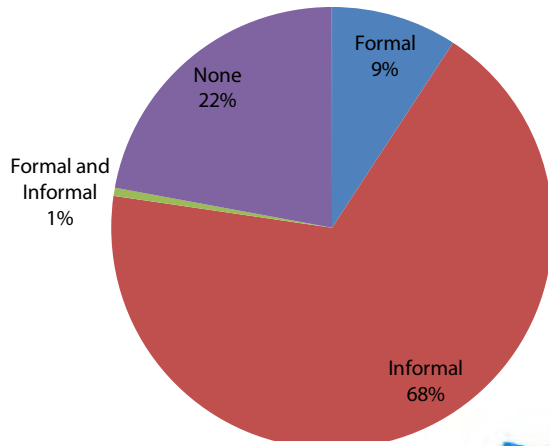
Above: Mathare at night






Left: A network of power poles, wires and lighting masts



Electricity Connection



Electricity Services Map

-  80Meter Buffer from Light Masts
-  Powerposts
-  Powerlines



Land Tenure & Housing Conditions

Key Findings:

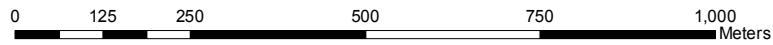
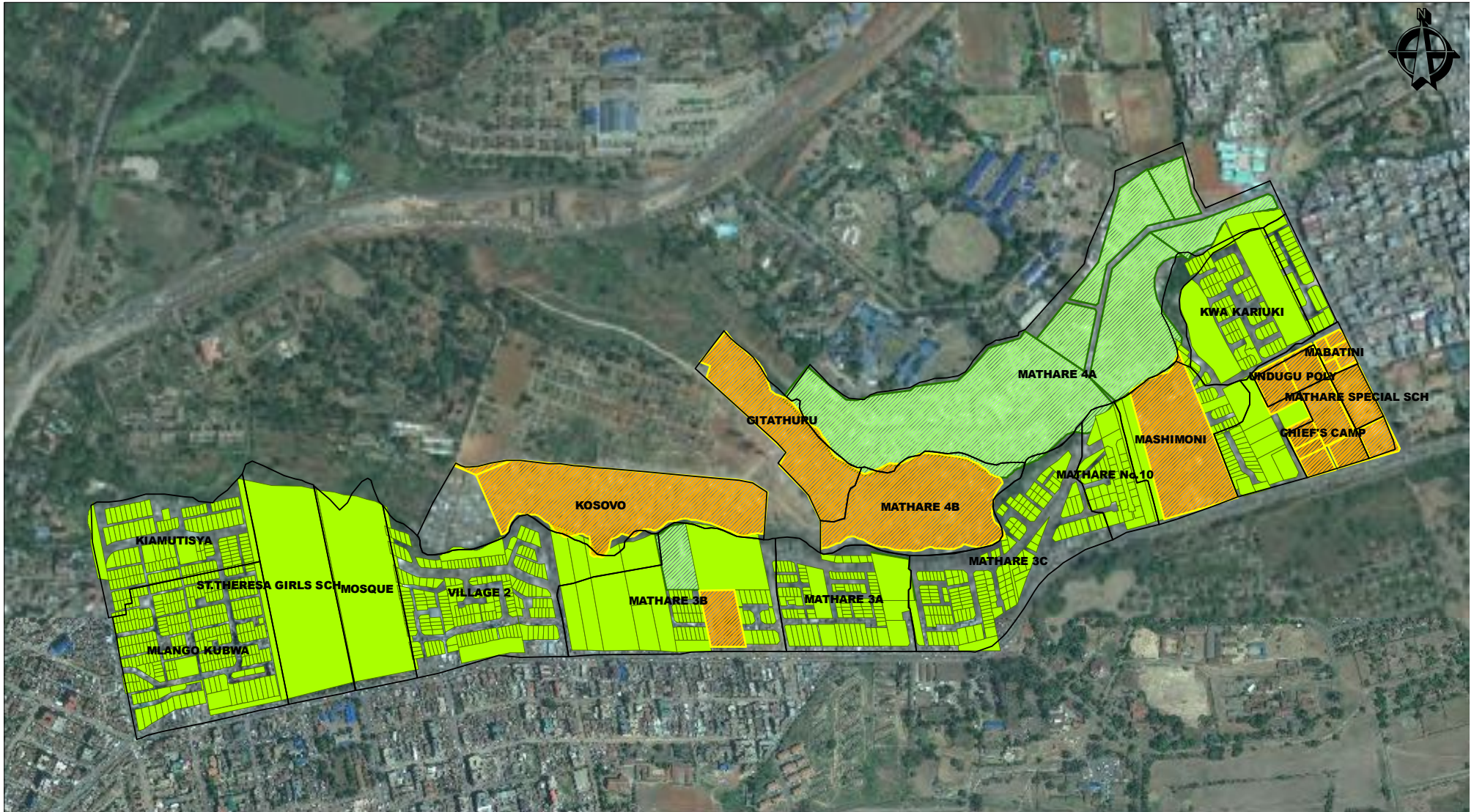
- **83% of residents are renters while 17% own their structure**
- **The average household size is 4 persons**
- **Typical housing construction materials are iron sheet roof & walls with over 53% having dirt floors**
- **At least five villages, Kosovo, 4B, Gitathuru, Mashimoni and Mabatini, are all or partially government owned and controlled land.**
- **Other villages have greater private and other land control.**

Housing demand is rapidly outpacing construction and overall supply, and the units that are built are often out of reach for low-income residents. The lack of other viable affordable housing options leaves low-income urban Kenyans few options apart from living in informal settlements. In Mathare, 30% of residents cite affordable rents as their reason for moving to the settlement. Forcible evictions remain a major concern and 25% of Mathare residents have relocated from other informal settlements in Nairobi, often as a result of eviction threats.

For the first time in many years, the government of Kenya seems to be committing to regularizing tenure of households living in informal settlements. A new National Land Policy and new constitution recognize the need for tenure security for all Kenyans, including residents of informal settlements. The land policy also states that the government shall (a) facilitate the regularization of existing squatter settlements found on public land for purposes of upgrading or development, (b) develop, in consultation with affected communities, a slum upgrading and resettlement program under specified flexible tenure systems, and (c) put in place measures to prevent further slum development. Importantly, the constitution explicitly states that a principle of the land policy is the elimination of gender discrimination in law, customs, and practices related to land and property.

Village	Tenure status & Issues
Kiamutisya	Privately owned land –initially owned by City Council. Land contestation by two cooperatives: Mucookaniriria Society and Mathare United Traders
Kosovo	Government land; Members hold allocation ballot numbers and efforts have been made to seek formalization of the settlement
Mathare 4B	Government land (Police Reserve), structure owners hold allocation ballot papers
Mashimoni	Government land (Kenya Air force) structure owners hold allocation ballot papers and certificates
Mabatini	City Council land, residents have allocation ballot papers. Recently (2011) part of it was fenced and built by developer who claimed allocation by CCN
Mathare 3A/ Bondeni	Privately owned land. Land bought by a cooperative society known as Bondeni property and subdivided it among the members (about 1000 people). Macharia owns large plot & residents rent.
Gitathuru	Government land; Police reserve but structure owners hold allocation ballot papers. The structure owners say they bought pieces of land at around. Police threaten with evictions
Village 2	Privately owned land but current court case over land
Mathare 3B	Privately owned land; owners have title deeds; The main owners of the land are Bondeni properties.
Mathare 3C	Privately owned land; Individual owners Mathare traders ltd. but no documentation of ownership.
Mathare No. 10	Privately owned land; The land is traced to a former member of Parliament, Argwing Kodhek who registered it under his Shamba boy known as Mr. Nyangau.
Mathare 4A	Privately owned by German registered NGO, Amani Housing Trust, which is affiliated with St. Benedict Church. Controversy over ownership & legal challenges.
Kwa Kariuki	Privately owned land by the Kariuki family and the rest by others who have appropriated it.

MATHARE VALLEY - LAND TENURE MAP



Legend

- Public Land
- Private Land
- Other (e.g. NGO)
- Village Boundaries

Source: MUST, UON-UJP & UCB
 Drawn by: J.W. & C.B.
 March 2012

Disclaimer: This map has been produced through a participatory process. It is not an authority to land ownership in Mathare.

Community Health & Safety

Key Findings:

- **80% of residents report being a victim of a crime in the past year**
- **82% of residents do not feel safe in their village**
- **High cost and far distance are the two greatest challenges for accessing health care**
- **Respiratory illness is an extremely prevalent disease among children under five.**
- **Lack of food prevents residents from taking anti-HIV medications**
- **Food insecurity leads to meal skipping and forces some into risky decisions, such as trading sex work for food.**



VILLAGE	Self rated health as Fair or Poor (%)	Compared to a year ago, health is much worse (%)	Quality of health services are unsatisfactory or extremely poor (%)	Children under 5 years are sick at least once a month or more (%)
3A	19	18	47	44
3B	44	44	50	68
3C	38	30	47	53
4A	50	33	45	56
4B	19	23	38	45
GITATHURU	28	22	48	48
KIAMUTISYA	39	24	44	44
KOSOVO	17	31	41	66
KWA KARIUKI	12	29	41	44
MABATINI	60	67	70	26
MASHIMONI	23	35	38	50
NO.10	27	5	30	63
VILLAGE 2	42	34	43	75
Mathare Total	32	30	45	52

Food Insecurity

Food is the single largest expense for residents in Mathare, accounting for nearly half of household expenses. A large number of Mathare residents are currently experiencing food insecurity, which can primarily be attributed to an increase in commodity prices while wages remain constant. While food commodities remain available within Mathare, the poor economic situation has decreased food affordability. The high rate of joblessness and low wages within informal settlements leads to overall decreased food security for residents.

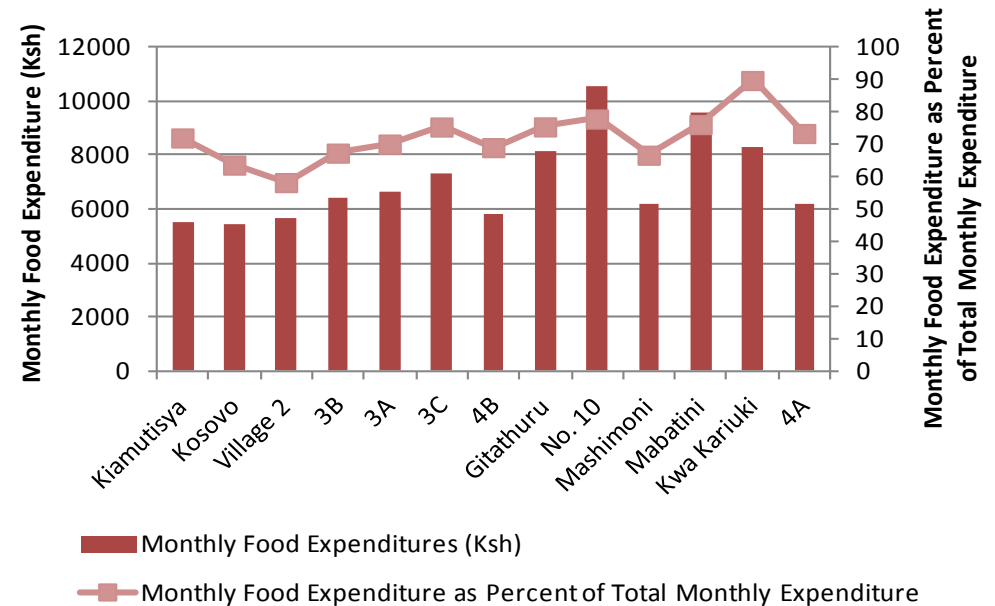
Malnutrition plagues many residents, especially vulnerable populations such as children. In Kenya's informal settlements, twenty percent of children under five are malnourished, and *according to a 2009 Oxfam survey, 80% of Mathare residents had reduced their meal size in the last 30 days, and 60% had skipped meals.* During the severe drought in East Africa in 2011, our team found through surveys that Mathare residents were again experiencing dramatic spikes in staple food prices and coping strategies included removing children from school, purchasing food on credit, and purchasing more cooked food from street vendors rather than cooking at home in order to save money on fuel. Many respondents indicated knowledge of someone in the community who has begged, stolen, or undertaken sex work for food and money.

Kenyan's have also begun to reduce their intake of non-essential food items, such as fruits and vegetables. During June, July and August of 2011, vegetable consumption dropped by 8.3% and fruit consumption fell by 25%. From our surveys, we found that protein intake was very low through only legumes and milk taken with tea; meat is culturally desirable but rarely consumed due to high prices.

Due to the already dense population, increasing food security through urban agriculture is a difficult- if not impossible- option for many residents. While urban agriculture has proven successful in limited cases, it is not a realistic means for increasing food security for Mathare's wider population. During our summer 2011 surveys, we found that

residents were very interested in urban agriculture as a means of supplemental nutrition, but they cited critical limitations including lack of space, water cost and delivery, theft, and vandalism. Because residents of Mathare purchase the majority of their food, when food prices fluctuate, residents experience these shocks. It is estimated that between 50% and 75% of household income is spent on food purchases.

Household Food Expenditure in Mathare



Improvement Scenarios: Infrastructure Gaps Analysis

In order to generate draft scenarios for upgrading the entire Mathare Valley, we focused on the priorities we heard from community members and the planning teams. Our approach also included using our survey and field data to identify significant service gaps and extremely vulnerable places, using our relational model of upgrading as an analytic framework.

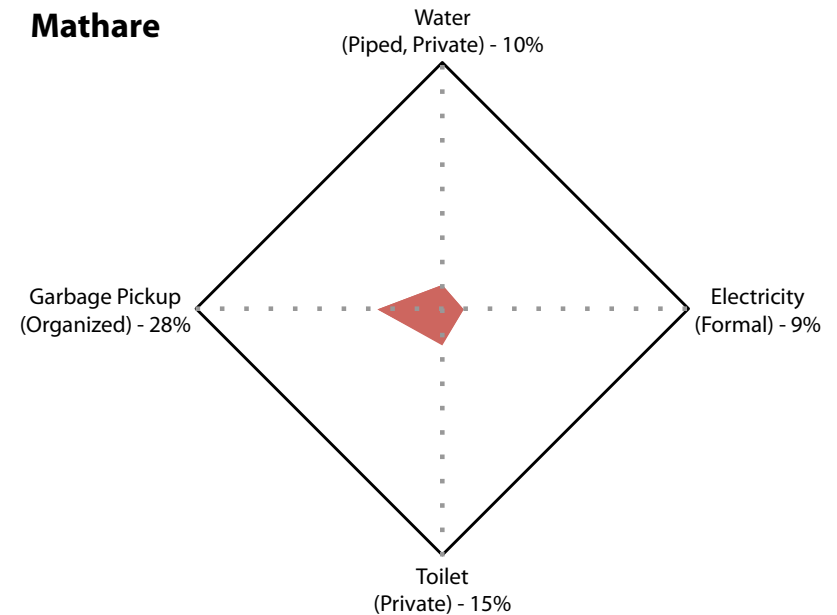
Community Upgrade Priorities in rank order:

- 1) Sanitation
- 2) Water
- 3) Electricity
- 4) Roads
- 5) Garbage/environment
- 6) Tenure/land & housing rights/security

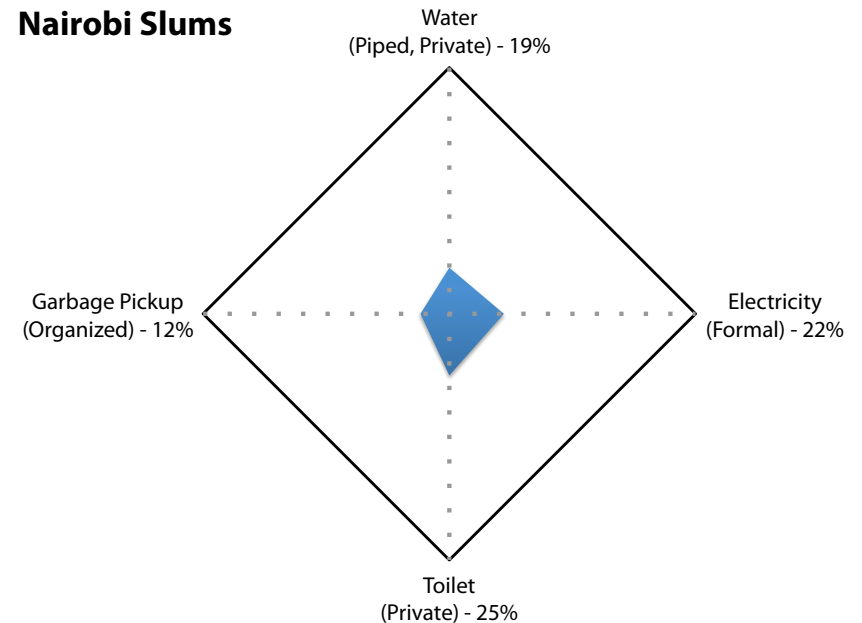
The figures on this page and the radar graphs on the following page aim to compare, in a relational way, infrastructure services across the entire Mathare Valley and each village. Compared to the other slums in Nairobi, Mathare is doing comparatively worse as measured by the percentage of households with in-home piped water, electricity and toilet. Mathare is slightly better-off than other slums in Nairobi in terms of organized garbage collection. As noted earlier in this report, there is significant variation across villages in terms of private and formal water, toilet, garbage and electricity services.

In general, no village has adequate infrastructure services and one of our key objectives is to suggest infrastructure improvements that move toward 100% of each graph being shaded -- meaning that all households have in-home, quality infrastructure. While we recognize there will always be a need for community-scale facilities - particularly abultion blocks -- we do not view these as long-term equitable solutions. While short-term improvements may necessitate additional community facilities to improve living conditions, safety and hygiene, our long-term objective is for slum dwellers to have all the dignity of a private in-home drinking water tap, bath, toilet, electrical connection and municipal waste collection.

Mathare

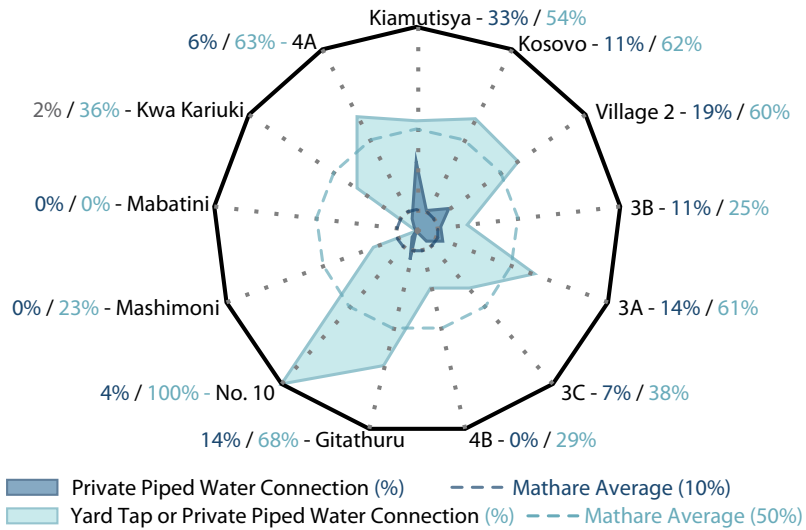


Nairobi Slums

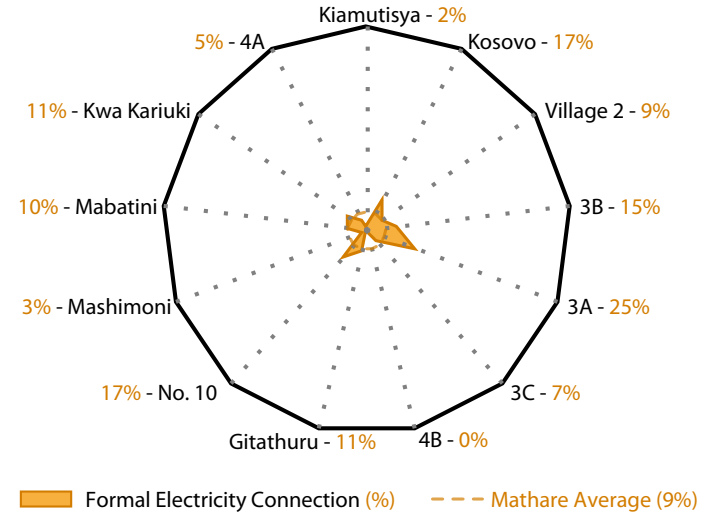


Select Infrastructure Services: Percentage of households served by village

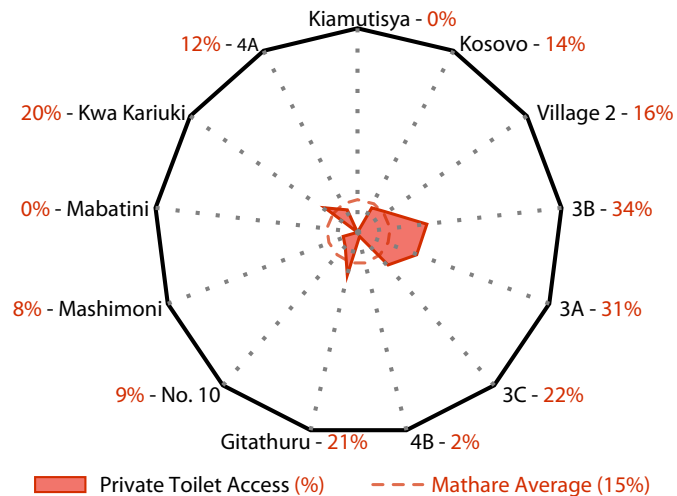
Private Piped Water or Yard Tap Access



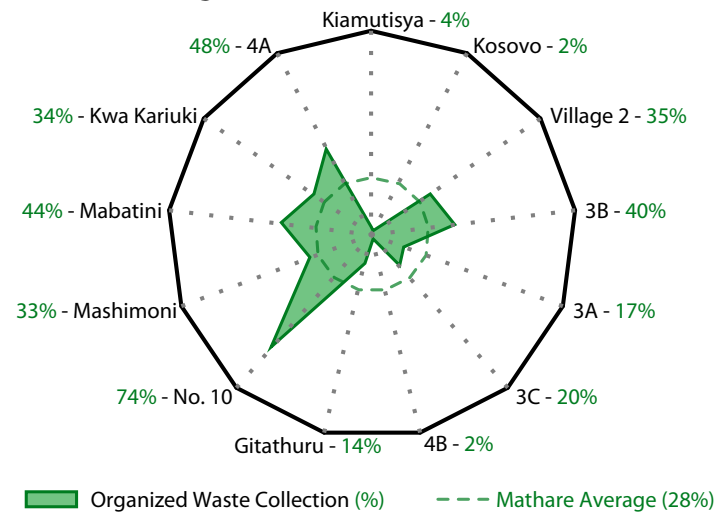
Formal Electricity Connection



Private Toilet Access



Organized Waste Collection



Vulnerability Analysis

Our vulnerability analysis is a qualitative review of seven dimensions of community well-being from land tenure and housing to different infrastructure services to livelihoods and economic opportunities to environmental and human health risks. Our analysis aims to synthesize our quantitative findings from enumerations and other surveys, community planning processes, field reports and observations and our geographic information system (GIS) spatial mapping and analyses. Instead of generating a quantitative value or index for these categories, we borrow from the concept of human security to offer a qualitative ranking of our dimensions of vulnerability.

On the following page we offer our cumulative vulnerability analysis by ranking each village in Mathare on a scale using three colors of a traffic signal: red, yellow and green. Red signifies extreme vulnerability, imminent risk to human security and life, and high priority for improvement. Yellow signifies severe vulnerability, risk to human security and life, and priority for improvement. Green signifies some vulnerability and risk and less short-term priority for upgrading.

Human Security: 1994 UN Human Development Report

The concept of security has for too long been interpreted narrowly as security of territory from external aggression, or as protection of national interests in foreign policy or as global security from the threat of holocaust. It has been related more to nation states than to people. ... Forgotten were the legitimate concerns of ordinary people who sought security in their daily lives. For many, security symbolized protection from the threat of disease, hunger, unemployment, crime, social conflict, political repression and environmental hazards. (p.22)

The categories are biased in that they rank the key issues prioritized by Mathare residents and include:

1) Tenure and housing

Residents are vulnerable to eviction by land lord, structure owner or government at any time. Housing quality is poor, such as dirt floor and unstable walls and roof. Rents are high for low-quality, small, often over-crowded space.

2) Water

Lack of consistent access to clean water, not too far from home, and affordable.

3) Toilet

Toilets and bathing facilities for women, men and children are not available, hygienic, safe at night or affordable.

4) Roads

Pedestrian paths are unsafe, not well-lit, and hard to connect within and out-of Mathare. Roads do not allow for emergency vehicles, river crossings and other vehicle-related services.

5) Electricity

Formal connection with consistent power, often metered, or informal or no electricity.

6) Health Care Access

How far residents have to travel for affordable and quality health care, including emergency treatment, hospitalizations, primary prevention and medications.

7) Environmental Health

Steep slopes, low-lying flood prone areas, pollution from garbage, exhaust & other sources.

8) Community resources

Inadequate access to, poor quality of, and/or unaffordable schools, community centers, markets and other community-building institutions.

9) Community power

Lack of organizations and/or membership in organizations that can provide social safety net and advocate for resident's needs.

Vulnerability Analysis



Red = Extreme Vulnerability

Yellow = Severe Vulnerability

Green = Moderate Vulnerability

	3A	3B	3C	4A	4B	Gitathuru	Kimatysia	Kosovo	Kwa Kariuki	Mabatini	Mashimoni	No.10	Village 2
Tenure & housing	Green	Yellow	Green	Green	Red	Green	Green	Green	Yellow	Green	Red	Yellow	Green
Water	Yellow	Red	Red	Yellow	Red	Green	Yellow	Green	Yellow	Red	Red	Green	Green
Toilet	Yellow	Yellow	Yellow	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red
Roads	Red	Yellow	Yellow	Green	Red	Yellow	Green	Yellow	Green	Green	Yellow	Green	Yellow
Electricity	Yellow	Yellow	Yellow	Yellow	Red	Red	Red	Yellow	Green	Yellow	Yellow	Yellow	Green
Health Care Access	Green	Green	Green	Green	Red	Yellow	Yellow	Yellow	Green	Green	Yellow	Red	Yellow
Environmental Health	Yellow	Yellow	Yellow	Yellow	Red	Red	Red	Yellow	Green	Yellow	Yellow	Yellow	Yellow
Community Resources	Yellow	Red	Yellow	Green	Green	Yellow	Yellow	Green	Green	Green	Yellow	Red	Yellow
Community Power	Red	Green	Red	Green	Red	Green	Yellow	Green	Yellow	Yellow	Red	Green	Green
Cumulative Vulnerability	Yellow	Yellow	Yellow	Green	Red	Yellow	Yellow	Green	Yellow	Yellow	Red	Yellow	Yellow

Improvement Scenarios

Key Recommendations:

(1) *Trunk Water & Sewer Infrastructure Valley-wide*

Improve, repairing and/or replacing the aged and non-functioning systems with new trunk water and sewer pipes servicing the entire Mathare Valley.

(2) *Road and Bridge Repairs and Upgrades Valley-Wide*

Formalising some existing roads, expanding new roads and completing a series of river crossings to provide greater ease and safety of pedestrian movement and to ensure emergency vehicles can access the entire Mathare Valley.

(3) *Performance-based Riparian River Buffer*

Instead of a 30 meter riparian zone around all areas of the rivers that traverse Mathare, an ecological buffer based on urban watershed performance standards is necessary to protect the river and preserve the social and economic activities adjacent to the rivers.

(4) *Mathare Valley Settlement Network*

A new umbrella network of CBOs and NGOs concerned with planning improvements is necessary to provide the political momentum and community engagement necessary to implement projects at the Mathare Valley scale.

(5) *Participatory Implementation, Monitoring & Evaluation*

As upgrading proceeds incrementally, a plan for ensuring implementation accountability and monitoring the impacts of projects on families and others will be necessary.

We offer more detail for each improvement scenario, but recognize that these are ideas that require further community consultation.

Water Infrastructure

New Trunk and feeder pipes across Mathare Valley.

Water is essential for life and is a human right. Our proposal is for new trunk water pipes to service all villages that can be connected to feeder pipes that are capable of in-household, metered water connections. This means that the water main needs to be large enough to carry an adequate supply of water to service not only today's population but also projected population growth. We have estimated, using a conservative 6% population growth rate, that the Mathare Valley population in 2030 will be at least 200,000, but the water mains should be designed to service daily water needs of 500,000 people. The 500,000 population estimate is from our model of current and projected 2030 population. This capacity will also ensure adequate fire flow, or water for fire fighters to extinguish fires. We recognize that water pressure and reliability are constant issues, and also recommend that a water tower, most likely on the highest point near the police land above Kosovo and Gitathuru, be constructed to house water and improve pressure throughout the new system.

Cost Estimates (materials):

Trunk Water pipes: 3,200 metres x Ksh 4,500/m = Ksh14.4M = US\$170,000

Feeder water pipes: 6,400 metres x Ksh 4,500/m = Ksh28.8M = US\$340,000

New public water kiosks: 30 x Ksh 650,000 each = Ksh1.95M = US\$23,000

TOTAL WATER INFRASTRUCTURE COSTS = Ksh 45.15M = US \$540,000

Sources for cost estimates:

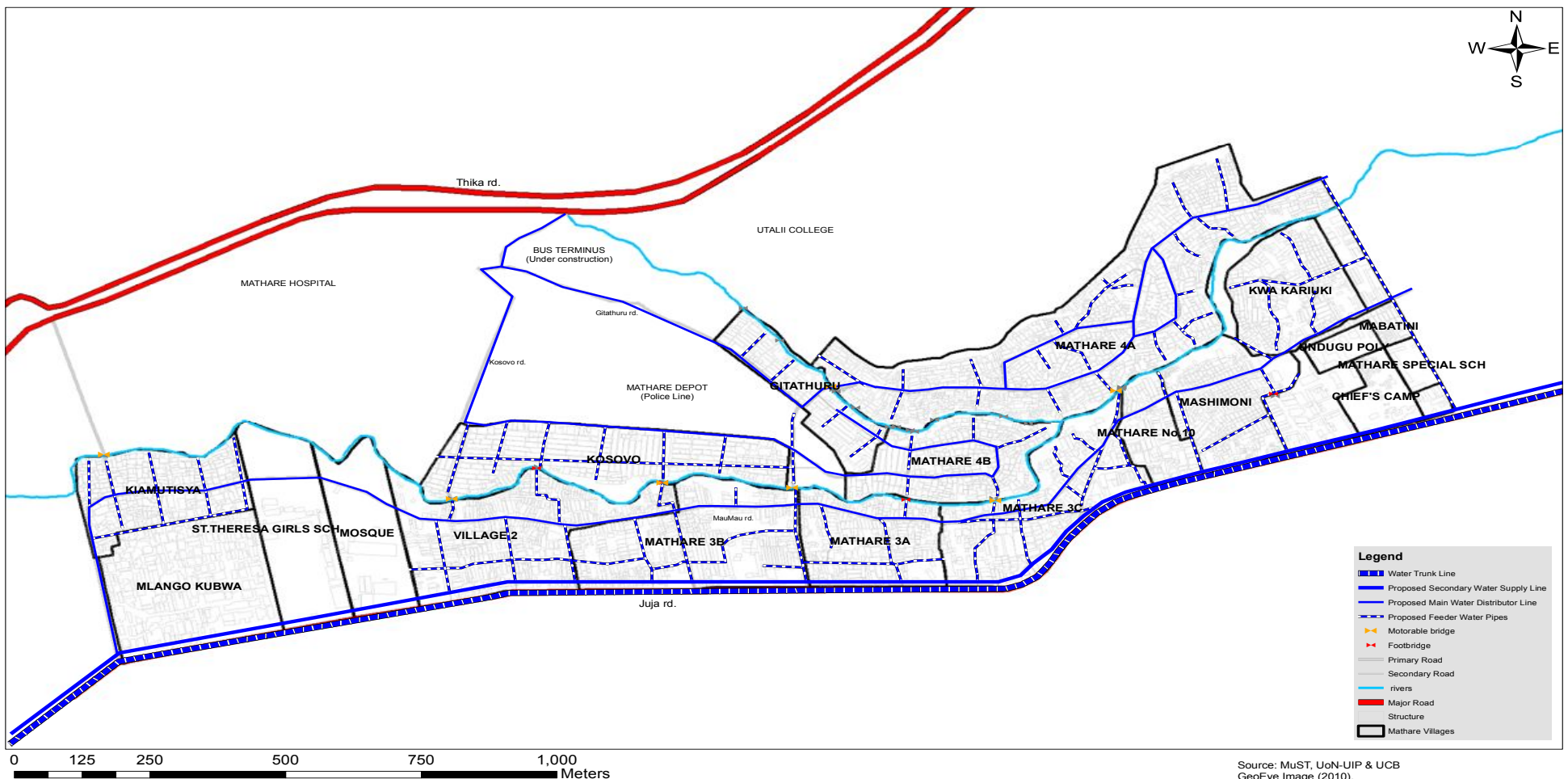
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Planning Scenarios: Trunk Water Improvements

Kosovo Water Upgrade Project

In 2009 the studio proposed infrastructure plans mainly for sewers, water, roads, and open space for four communities in the valley. This work led to upgrading in the community of Kosovo as well as provided the impetus for upgrading across the valley. One outcome of the 2009 studio and accompanying report was an endorsement by the Nairobi City Council of the plan for Kosovo. This endorsement combined with continued community mobilization and available resources, set the stage for the Nairobi Water and Sewer Corporation (NWSC) to invest in piped water construction for Kosovo. From there, work began to bridge the informal and formal management of water distribution within Kosovo. The community sought to end the control of their water distribution through cartels, and the NWSC was eager to minimize revenue leakage due to informal connections. By June 2011, 180 households had individual household connections, hundreds more were in the process of getting metered connections in their homes, and thousands of households now obtain their water from at least three new water kiosks that are community owned and operated.

MATHARE: PROPOSED WATER DISTRIBUTION NETWORK



Source: MuST, UoN-UIP & UCB
GeoEye Image (2010).
This information is a product of a Participatory Mapping process.

Produced by J.W.
March 2012
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Planning Scenarios: Trunk Sewer Improvements

Bringing water into the community is necessary but may also create a waste-water challenge if sanitary infrastructure is not also simultaneously improved. We are proposing repairing, replacing and/or reconstructing the trunk and feeder sewer pipe network across Mathare. This upgrade will capture waste water from within the valley, but should also handle run-off from facilities that currently drain their waste water into Mathare and designed to capture storm water run-off. Designed and constructed at this scale, the sanitary infrastructure will achieve both human health and ecological objectives. Importantly, this system should be designed to accommodate household-level toilets and sewer connections as well as connecting existing and new community ablution blocks.

We also propose that the initial implementation be designed to accommodate a simplified sewer system that can be constructed and managed at low cost and minimal impact to residents. A simplified sewer system or condominium sewer uses smaller pipes that are not placed as deep in the ground as conventional sewer systems and the pipes can run in front or back of houses or under sidewalks. Importantly, simplified sewerage systems require a community-based organization to manage household connections and to maintain the system, particularly to remove pipe blockages.

Cost Estimates (materials only):

600mm Trunk Sewer pipes -

$3,200 \text{ metres} \times \text{Ksh } 5,000/\text{m} = \text{Ksh } 16\text{M} = \text{US\$}185,000$

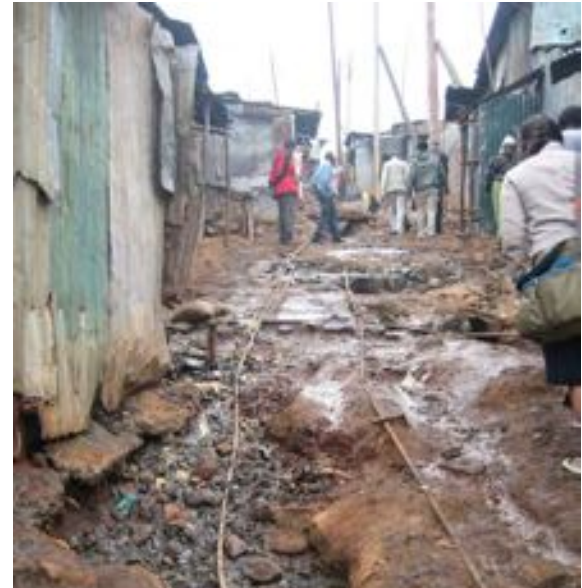
225mm diameter simplified sewer collection pipes -

$6,400 \text{ metres} \times \text{Ksh } 3,000/\text{m} = \text{Ksh } 19.2\text{M} = \text{US\$}225,000$

Ablution blocks - 30 x Ksh 1.5M each = Ksh 45M = US\$530,000

TOTAL SANITARY SEWER COSTS = Ksh 80.2M = US\$ 945,000

Sources for cost estimates (see previous page, water infrastructure cost estimates).



Planning Scenarios: Roads & Drainage

As with trunk infrastructure, our proposals for road, pathway and drainage improvements are intended to serve all Mathare residents by providing more safe and efficient options for moving within and in and out of Mathare.

Issue: Lack of motorized transport throughout the valley as well across from Juja to Thika Road. This reduces the ability of emergency services, such as fire trucks and ambulances, to serve the area.

Recommendation:

- Tarmac MauMau Road with drainage & sidewalks
- Improving select internal roads to 5-6 metres to allow for emergency vehicles
- New bridges to cross the valley from the Juja to the Thika Road side by vehicle.

Issue: Lack of storm water drains.

Recommendation: Paved sidewalks with depressed covered storm drainage canals connected to municipal pipe sewer system or a designated catch-basin.

Issue: Inadequate and unsafe pedestrian bridges

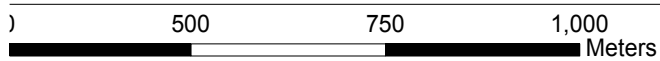
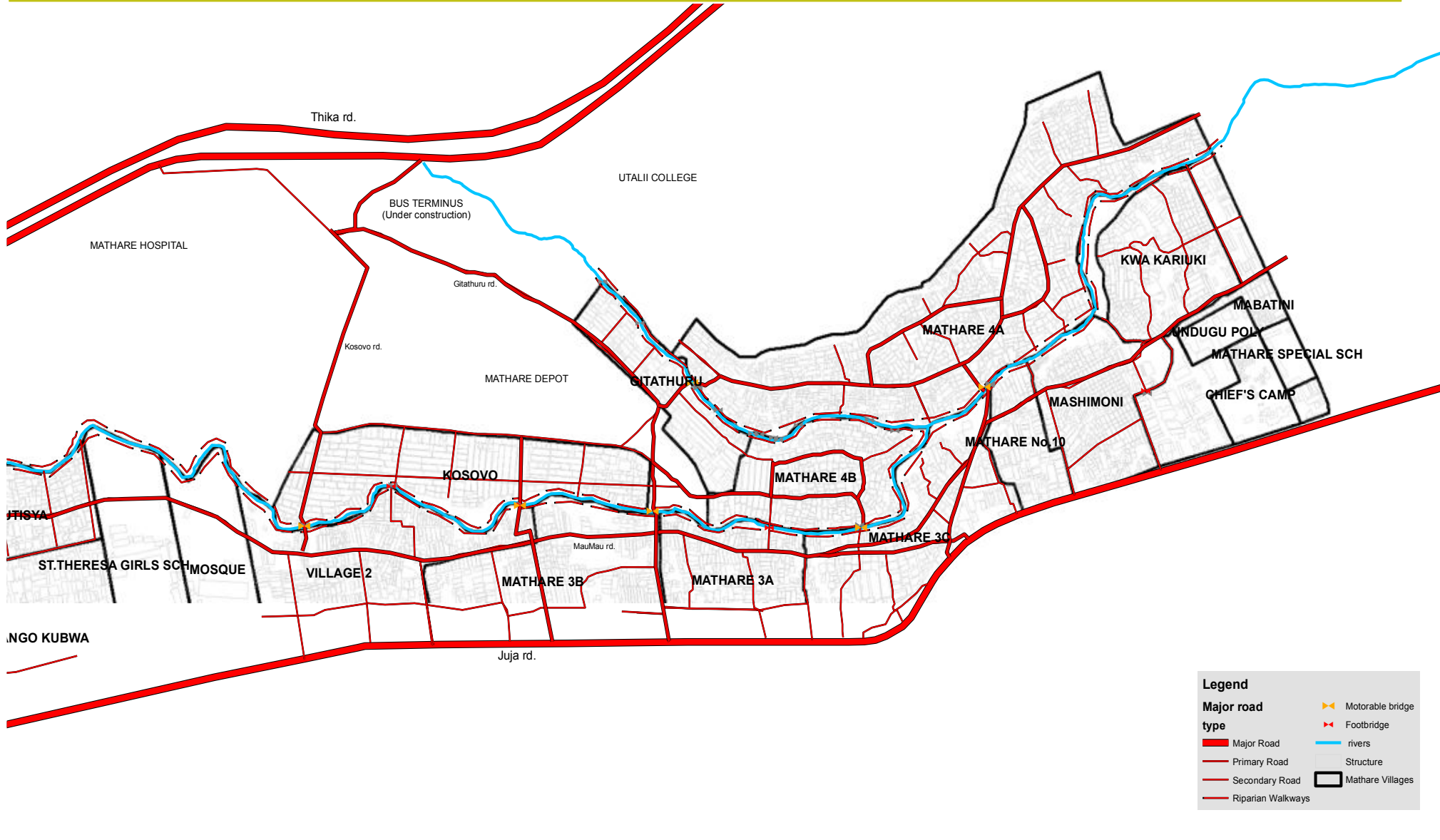
Recommendation: Improve existing bridges and add new pedestrian bridges that can accommodate hand carts and bicycles.

Issue: Lack of public transport access within Mathare

Recommendation: Identify zones and areas for bus stops within Mathare and ensure road width can accommodate sidewalk, bus stop and through-traffic.



Planning Scenarios: Roads & Drainage

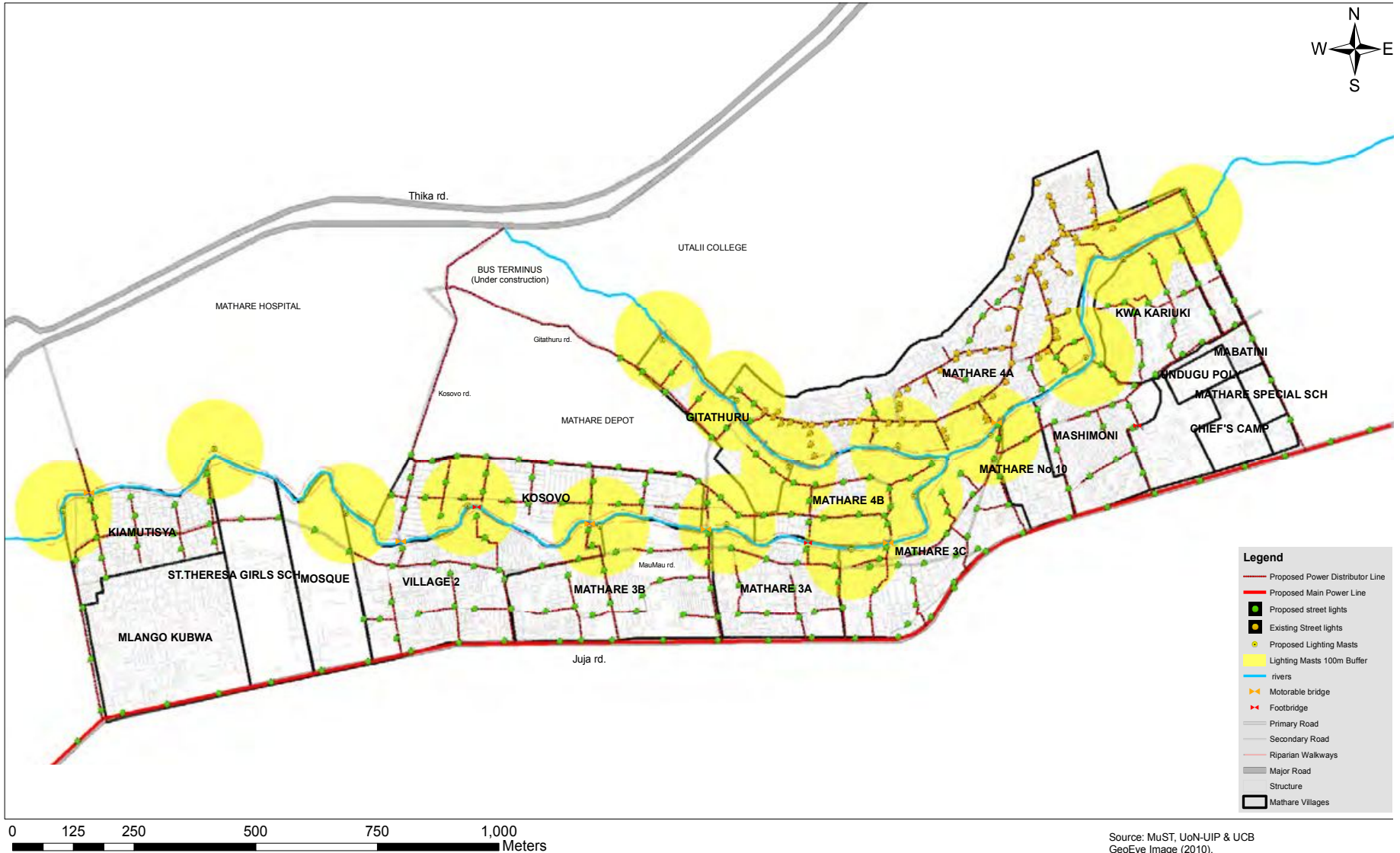


Source: MuST, UoN-UIP & UCB
 GeoEye Image (2010).
 This information is a product of a Participatory Mapping process.

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Planning Scenarios: Electricity

MATHARE: PROPOSED POWER DISTRIBUTION NETWORK

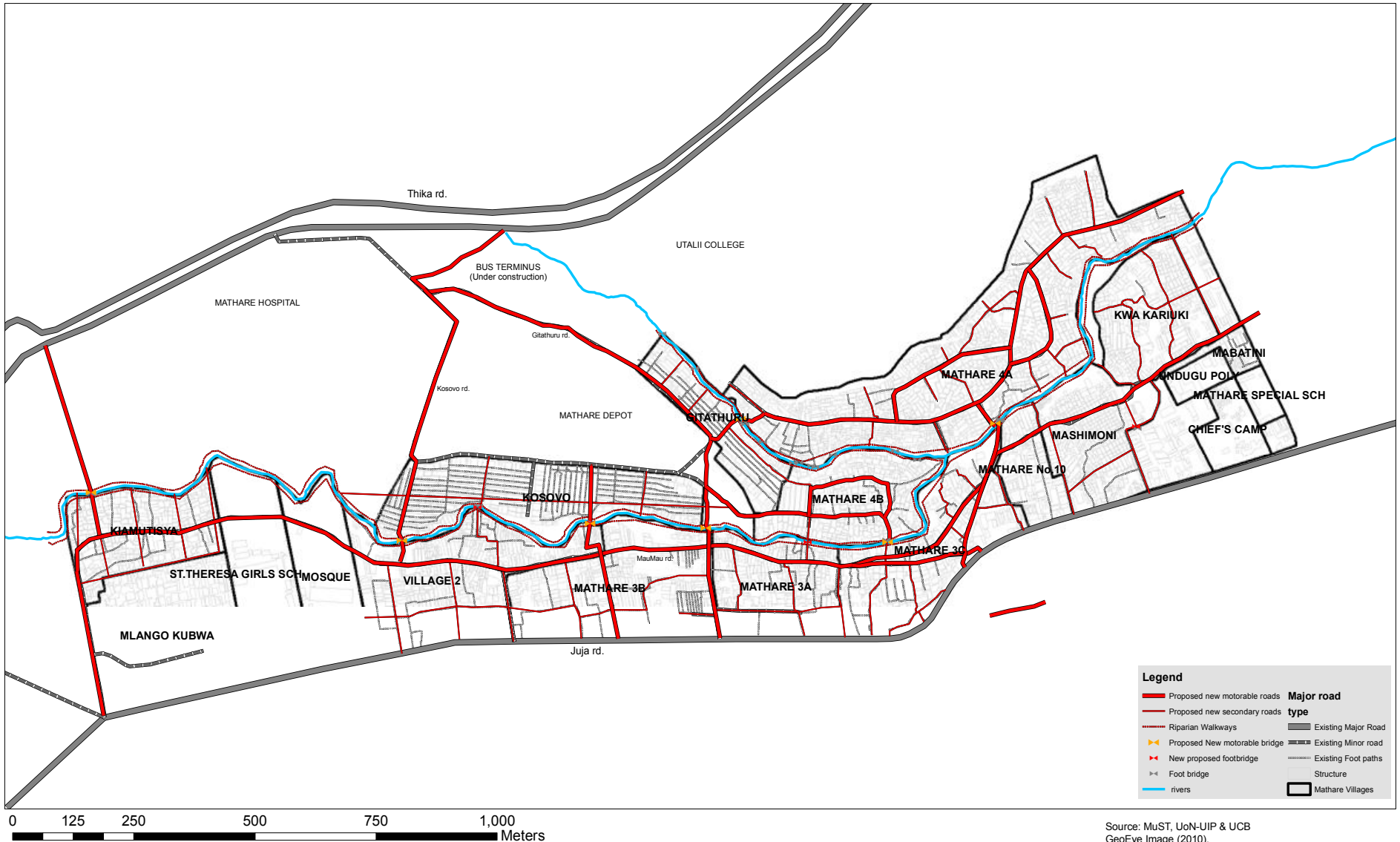


Source: MuST, UoN-UIP & UCB
 GeoEye Image (2010).
 This information is a product of a Participatory Mapping process

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Existing & Proposed: Circulation

MATHARE: EXISTING AND PROPOSED CIRCULATION NETWORK



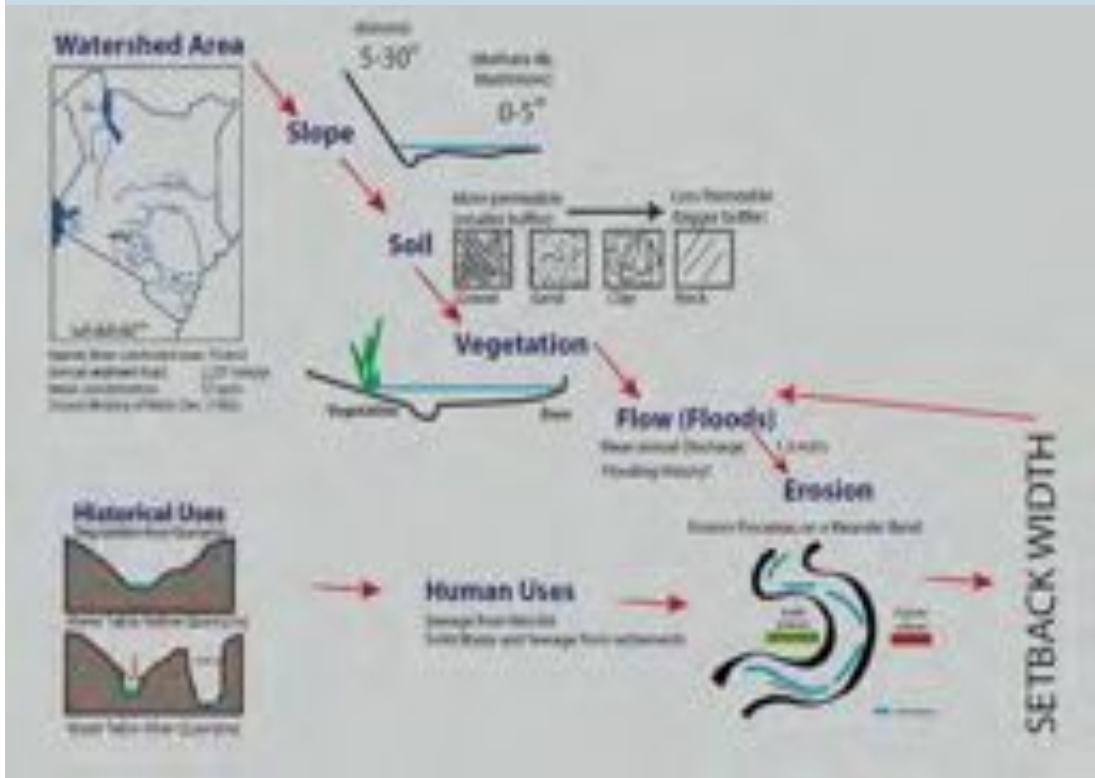
Source: MuST, UoN-UIP & UCB
 GeoEye Image (2010).
 This information is a product of a Participatory Mapping process.

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Planning Scenarios: Riparian

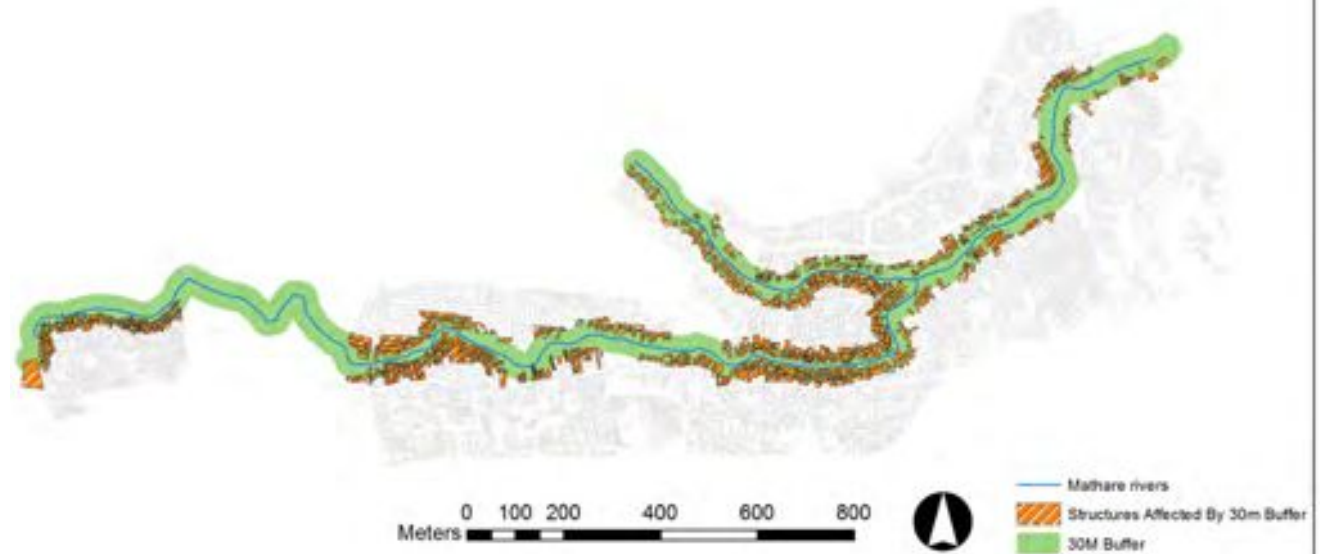
In 2008, the Kenyan Ministry of the Environment and United Nations Environmental Programme (UNEP) announced that as a component of the Nairobi River Basin Programme, a 30 meter wide riparian buffer would be established along the Ngong, Nairobi and Mathare rivers. Currently, these rivers are highly polluted as human sewage and commercial waste flows directly into the waters. Proponents of the plan lauded it as an opportunity to rehabilitate the Nairobi river basin, create business and employment opportunities, improve health of communities bordering the river, and increase recreational space. Despite its praise, many turned a blind eye to the fact that this same 30 meter buffer cuts through some of the largest slums in Nairobi and as such would displace thousands of residents. The Riparian Buffer plan mentions “relocating displaced economic activities and informal settlements”, however it provides very few details on how they intend to address this highly contentious topic. Riparian zones are necessary ecosystems to help improve water quality, secure stream bank stabilization, and provide habitats for organisms. However, in an urban watershed ecologic and contextual factors must be considered before establishing an appropriate buffer size. As such, we have calculated a more appropriate performance buffer using the following considerations: watershed water volume, slope, soil type, existing vegetation, flood patterns, erosion control and human uses.

Considerations for calculating a performance-based riparian buffer in an urban watershed



NEMA & UNEP 30 Meter Riparian Buffer Impacts

A universal 30 meter riparian buffer would have significant effects on all of the major informal settlements lying along the Mathare River. In the Mathare Valley alone, *a riparian buffer would displace 20% of households or approximately 22,146 residents and would further destroy 1,116 structures, of which at least 6 are schools, 8 religious institutions, 3 markets, 31 latrine blocks and 43 water points.*



Our Performance Riparian Buffer Impacts

Our performance based buffer is variable in size. Our performance buffer would achieve greater ecologic protection of the river (especially when combined with our sewer & drainage infrastructure proposals) than an arbitrary 30m buffer alone. *Our buffer would only impact 147 existing structures and 3 schools.*



Mathare Valley Planning Network

Turing the draft improvement scenarios in this report into final upgrade proposals will require additional community mobilization and participation. While Mathare has at least 30 different community-based organizations (CBOs) and non-governmental organizations (NGOs) working to improve lives and living conditions, few of these groups work in collaboration. Individually, CBOs are often weak when confronted with such large challenges as infrastructure planning and implementation and when negotiations also include different government agencies, utilities and donors. One result is that there tends to be many pilot or 'boutique' projects and innovations, but few of these projects challenge the structural forces that keep slum infrastructure and living conditions inadequate. Further, we found that few pilot projects generate a strategic plan to change living conditions at the scale we are aiming for, namely the entire Mathare Valley.



Our fourth recommendation is for increased cooperation and coordination of CBOs and NGOs in Mathare to collaboratively generate, support, implement and monitor valley-wide improvements by building a new network or organisations. We believe a network, such as the one established in South Africa, called the Informal Settlement Network, can be a model for bringing together the range of local stakeholder organizations in Mathare that will be necessary to build the political momentum and accountability for change.

Spotlight on South Africa's Informal Settlement Network (ISN)



The Informal Settlement Network (ISN) has created a flexible yet potent alliance of urban poor organizations, which has already scaled-up grassroots initiatives across South Africa. ISN's goals are to organize and build capacity of the urban poor; forge a national network to promote learning between communities and to lobby government officials; and to fundamentally transform urban planning in

South Africa so as to include and respond to the urban poor.

ISN is a loose network of community- and national-level informal settlement organizations that are active in several cities, including Johannesburg, Durban, Port Elizabeth, Cape Town, and Pretoria. Although ISN is supported by the Community Organization Resource Center (CORC) and Slum Dwellers International (SDI), it has no organizing structures besides a coordinating committee. Instead, the network derives its strength from linking up existing groups such as StreetNet, Federation of the Urban Poor (FEDUP), and Abahlali base Mjondolo, thereby creating solidarity and promoting exchanges across informal settlements. Activities range from the local to national scale, and the network has launched pilot projects in 5 cities. For instance, the Land and Right to the City Campaign has established city-wide forums with civil society organizations, local officials, and service providers to discuss proposed pilots, registered and surveyed informal structures city-wide, and identified key projects such as improving access to land, infrastructure, services, and upgrading. Cape Town's Mayor has highlighted the role of ISN and noted that it could make a valuable contribution to the city's 5-year Integrated Development Plan, help resolve planning conflicts and establish an accurate database of informal settlements.

Sources: <http://www.sasdialliance.org.za/about-isn/> (for background on ISN) <http://www.sdinet.org/blog/2011/08/16/south-african-sdi-alliance-cements-partnership-may/> (for Cape Town)

Implementation, Monitoring & Evaluation

We group implementation, monitoring and evaluation into our recommendations sections because too often these aspects of project planning are an after-thought and not integrated up-front. Slum improvement planning and implementation is complex and difficult, but absent a community-driven implementation and monitoring plan, the project is likely to be even harder to track. Below we have drafted some indicators for project tracking that can help residents, CBOs, NGOs and government measure project impacts incrementally and a designated intervals. We offer this monitoring matrix as an example of the types of issues a more complete evaluation tool would need to address.

Indicator	Measures	Frequency of Measure	Data sources	Responsible implementing parties
Households (HH) with piped water connections	<ul style="list-style-type: none"> Percentage of households Water quality & affordability 	<p>Documentation should occur periodically but at a minimum at the following 3 intervals:</p> <ol style="list-style-type: none"> short term - first 1-2 years Intermediate term - 3-4 years Long term - 5+ years 	HH & field surveys	NWSC, Athi Water Board
HH with new sewer connections	<ul style="list-style-type: none"> Percentage with in-home toilet connected to sewer 		HH & field surveys	NWSC, Athi Water Board
HH with improved access to roads	<ul style="list-style-type: none"> Percentage reporting improved roads Length roadway accessible by emergency vehicle Pedestrian injuries/pathway safety/bridge crossings 		HH & field surveys	NCC
HH with formal electricity	<ul style="list-style-type: none"> Percentage with 24/7 service Affordability of electricity 		HH & field surveys	KPLC
New street & security lighting installed	<ul style="list-style-type: none"> Number of lighting masts Street lighting at night 		Field surveys	KPLC
Land tenure	<ul style="list-style-type: none"> Number of villages in negotiation with NCC and others for land titles and/or other forms of land control 		Resident reports	MoH, NCC, others
Riparian reserve	<ul style="list-style-type: none"> Variable riparian buffer implemented 		Field surveys	NEMA
Operations & maintenance	<ul style="list-style-type: none"> Villages with community & utility developed O&M plan 		CBO reports	NWSC, KPL, others
Health outcomes	<ul style="list-style-type: none"> Adult & childhood diseases Self reported health/safety Incidents of violence 		Clinics	Ministry of Health

Policy Context

With decentralization, land policy reforms, and a new constitution, Kenya's policy landscape has recently undergone several changes. A national referendum in 2010 resulted in nearly 70% approval of the constitution, which will be phased in over the next 5 years. Executive powers will be reduced and **authority increasingly devolved to county governments** for areas such as primary health care and transport; at least 15% of the national government's revenues will go to the 47 county governments. The constitution formally recognizes the rights to housing, health care, food, and education, as well as the need to advance gender equality. In another major commitment, **the National Land Policy (2010)** will seek to regularize all informal settlements on public lands and develop upgrading programs with flexible tenure systems. These major reforms and key aspirations may provide important openings for residents of informal settlements, yet outcomes are still uncertain and will critically depend upon forging pro-poor policies.

Many Kenyan housing programs have focused on upgrades with middle income communities, where tenure has already been established, and in doing so, have neglected allocating resources for the upgrade of informal settlements. In order to actually keep pace with the demand for housing within Nairobi, the Ministry of Housing would need to construct or support 15,000 housing units per year, but on average, only 3,000 are built. The 2004 **Kenya Housing Policy** addresses the need for increased affordable housing within urban and rural areas- including within informal settlements- and outlines a four-pronged strategy for rapidly increasing the affordable housing stock, particularly within urban areas. In an effort to reduce the proliferation of informal settlements within Kenyan cities, this policy document outlines strategies to increase affordable housing for low-income residents.

Kenya Vision 2030 is the country's new long-term national planning strategy or 'development blueprint' covering the period 2008-2030. It falls within the mandate of the **Ministry of Planning**, National Development and Vision 2030. Responsibility for providing an urban development policy to guide local authorities to plan for, and manage, urban growth lies with the **Ministry of Local Government's Urban Development Department**.

National Slum Improvement Policies

There are several large-scale slum upgrading projects underway in Nairobi, signaling an important recognition of the urban poor. In 2004, the Ministry of Housing in partnership with UN-HABITAT launched the **Kenya Slum Upgrading Programme (KENSUP)**. The programme includes the upgrading of housing and related infrastructure such as water and sanitation, access roads, and lighting. KENSUP is a major shift for the Government of Kenya because they acknowledge informal settlements exist and the state has a responsibility to improve the lives and living conditions for this growing portion of the country's population. **KENSUP will spend approximately US \$11bn between 2005 and 2020 to "improve the livelihoods of at least 5.3 million slum dwellers in Kenya."**

In 2011, the World Bank approved the US \$100m **Kenya Informal Settlements Improvement Project (KISIP)** in 15 municipalities, which will strengthen tenure security, upgrade infrastructure and services, and strengthen the institutions of the Ministry of Housing and Lands as well as municipal institutions. A separate **Nairobi Metropolitan Services Project** will be initiated in 2012, again focusing on institutional strengthening, infrastructure, and services.

The Ministry for Nairobi Metropolitan Development (MoNMD) was established in 2008 to implement **Nairobi's Metro 2030 Vision**, Kenya's development plan that outlines how the country will adapt to rapid urbanization and sustain economic growth. The blueprint addresses the need for planning at a regional level, and the immediate need for adequate housing for slum dwellers. However, the blueprint does not explicitly state how Kenyan land and housing ministries plans to ensure that slum housing will be upgraded, and little more than a nod is given to the fact that 60% of urban dwellers currently live in slums. Questions have also arisen about duplication and coordination problems with the City Council.

The Constituency Development Fund (CDF) is a form of devolved and parallel funding, which was introduced in 2003 to facilitate Members of Parliament bringing development closer to, and in line with the priorities of, their constituents. 75% of the fund is allocated equally amongst all 210 constituencies, whereas the remaining 25% is disbursed on the basis of constituency poverty index. The administration of the fund required the setting-up of a complex set of new organisational arrangements and procedures from national down to district and locational level. The system has been dogged by controversy, with many CDF projects either stalling or failing to start.

The Local Authority Service Delivery Action Plan (LASDAP) were introduced to improve services and foster local participation in funding decisions. The LASDAP are intended to be inclusive processes that identify and prioritize community needs to improve service delivery. The local authority is charged with ensuring that communities participate in this process so that their priority needs are considered. A particular focus is supposed to be placed on meeting the service needs of low-income groups. Yet the funding has rarely reached low-income communities: as the table indicates below LASDAP spent only Ksh 9.1m in the informal settlements of Mathare Valley from 2002-8. Expenditures in informal settlements overall have totaled Ksh 125.6m, or less than 12% of the Ksh 1.057 bn in LASDAP funds spent in Nairobi from 2002-8. Thus, residents of Mathare and informal settlements more generally have struggled to benefit from recent reforms.

Project Type	Total budget (millions of Ksh)	Distribution expenditure in millions of Ksh 2002-2008					
		Mathare	Korogocho	Viwandani	Kibera	Laini Saba	Uhuru
Roads	47	2.0	5.5	8.5	9.3	3.5	8.0
Bursaries	17.9	0.9	3.0	0.8	4.1	8.1	4.7
Council schools	40.5	-	2.4	4.2	3.8	-	-
Lighting	21.6	4.9	3.7	-	-	0.8	4.9
Health centres	25.3	-	-	0.8	-	-	-
Birdges	10.8	1.3	-	0.3	1.0	-	-
Public toilets	6.4	-	-	-	-	-	-
Water & sanitation	5.6	-	-	-	-	-	-
TOTAL	175.1	9.1	14.6	14.6	18.2	12.4	17.6

The Nairobi City Council (NCC) is also a key stakeholder for Mathare upgrading. The NCC is the local government authority responsible for the management and administration of the city including the provision of services to its citizens. It consists of over 50 elected councillors representing their wards, and some 18 nominated councillors, including a Mayor and Deputy Mayor, who are elected from within.

The Nairobi Metro Authority a new agency created by the Ministry for Nairobi Metropolitan Development, may help develop a more strategic approach toward urban development and coordinate planning for the over 180 informal settlements in Nairobi. As the country adopts to a **Counties system of governance**, there is need for joint planning and linking infrastructure development at the regional scale.

The Metropolitan Areas Bill, proposed in 2011, would create five metropolitan-wide authorities that will have powers to issue regulations, including:

- Metropolitan Economic Development and Investment Authority
- Metropolitan Transport Authority
- Metropolitan Water and Waste Management Authority
- Metropolitan Disaster and Emergency Services Authority, and
- Metropolitan Spatial Planning Authority

These new institutions could help create regional planning frameworks that could integrate conflicting development plans in local jurisdictions, coordinate infrastructure investments, and provide a new strategic plan for improving informal settlements.

Source: Hendriks, B. 2010. "City-wide governance networks in Nairobi: Towards contributions to political rights, influence and service delivery for poor and middle-class citizens?" Habitat International 34: 59-77. Table adopted from pg. 72.

Policy Context

Process and Partners

The Mathare Valley

Planning Scenarios

Policy Framework

Water Sector Reforms

Reforms in the water sector have also been significant, though many residents of informal settlements continue to purchase expensive water from small-scale providers. *In 2002, the City Council devolved powers to the Nairobi City Water and Sewerage Company*, as part of liberalized water strategies emphasizing devolution and separating policy and management from service provision. The Company has partnered with Pamoja Trust and Muungano in developing a delegated water management model, discussed below. Still, major challenges remain in providing affordable, reliable water to slum-dwellers in Mathare and beyond. For most informal settlements in Nairobi, “water is frequently scarce, sometimes costly, and its supply uncertain.” In Korogocho and Viwandani, nearly 90% of households buy water from ‘water entrepreneurs’ and vendors. According to the 2006 Human Development Report, the cost of a legal water connection can represent about 6 months’ income for the urban poor in Kenya.

While access to clean water remains a pressing issue for most of Kenya’s slum dwellers, village-level pilot projects have proven successful, and can be used as best practice examples for future implementation within informal settlements. *The Kosovo village of Mathare Valley* was faced with many of the same challenges that confront residents of other informal settlements: exorbitant fees for access to water; cartel control of water connections; long wait times for securing water; and the threat of water-borne diseases due to the consumption of contaminated water. Through a partnership between Pamoja Trust, a pro-poor NGO that has a record of working within informal settlements, and the *Water Services Trust Fund, Ksh 2.8 million was secured to complete initial water upgrading schemes*. The project include the construction of three water kiosks, feeder pipes, and some household connections in Kosovo have proven successful, and have provided 98% of the village residents with access to clean water.

The partnership could signal a transition from top-down infrastructure upgrading projects to community-driven schemes that prove successful because they have the support of residents within the given community. The success of these projects is not only dependent upon the successful construction of required infrastructure, but it is also dependent upon the continual monitoring of the new services to ensure that cartels do not once again assume control, and that full access remains available to residents.

In 2010, the Athi Water Board Services (AWBS) and Pamoja Trust partnered to complete a baseline survey of existing water and sanitation conditions within four Mathare villages: Mashimoni, Gitathuru, 4B, and Mabatini. The survey sought to establish information about access to water and sanitation services; satisfaction with services; distance to water points; queuing times; availability of continual water connections; coping strategies during shortages; and willingness to pay for improved services.

The success and sustainability of water and sanitation services in Mathare is contingent upon long-lasting partnerships between residents, CBOs already working in Mathare, Nairobi Water and Sewerage Company, and staff from the Athi Water Services Board.

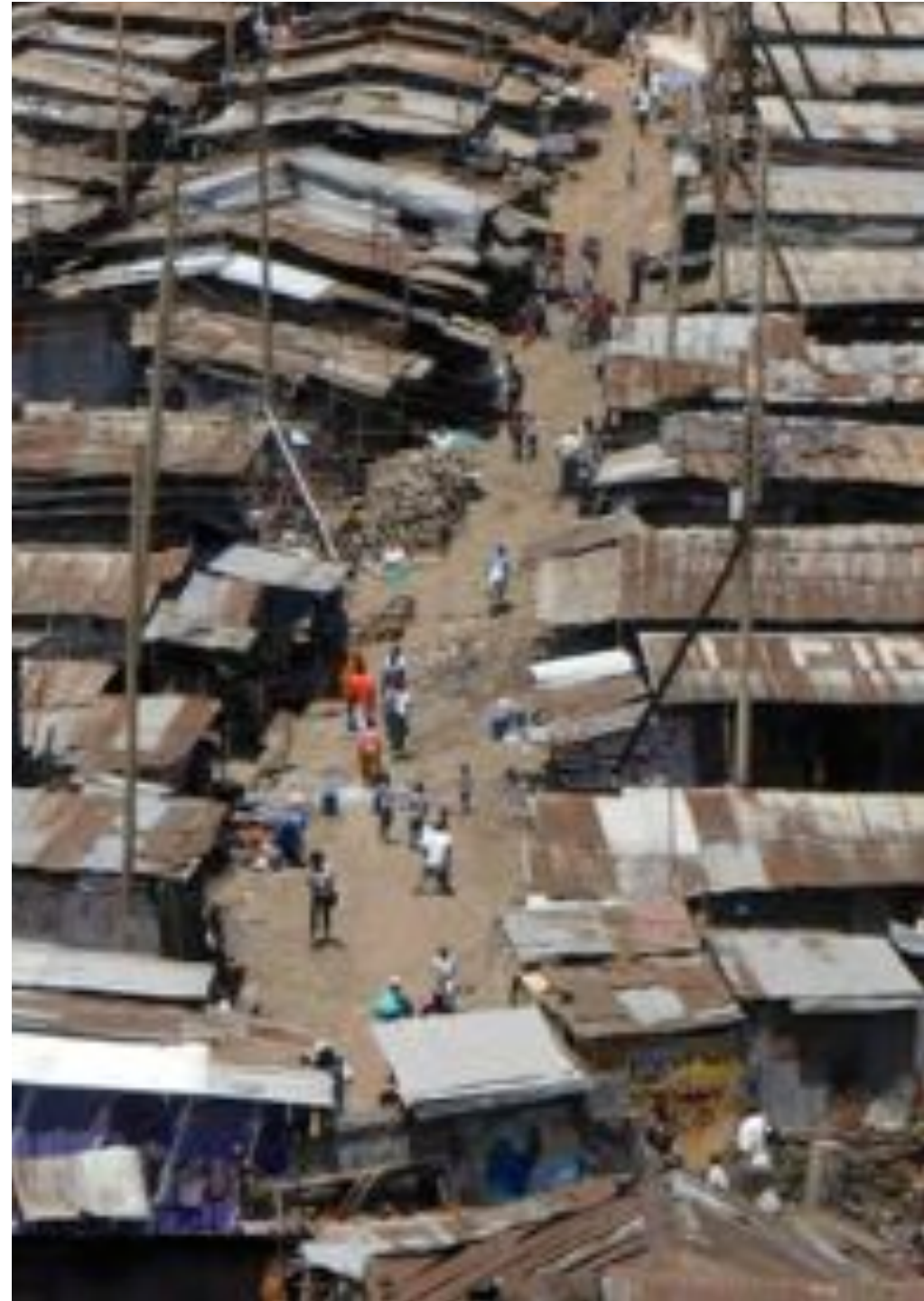
Athi Water Board Services recommends involving the local community at a number of critical junctures, including local hiring; locating areas in dire need of upgrading; raising awareness about the goals and importance of the upgrading projects; and overseeing the implementation of construction. The more direct involvement residents have with the upgrading itself, the more ownership they feel, which is an important aspect of the ongoing success of the upgrading schemes.

Conclusions & Next Steps

This report has summarized the collaborative analysis and planning efforts of UC Berkeley, the University of Nairobi and Muungano Support Trust (MuST). The work reflected here is the result of our second major collaborative project aimed at improving the lives and living conditions of slum dwellers in the Mathare Valley and all slum dwellers in Kenya. The recommendations in this report are intended to act as conversation guides and not definitive conclusions. Additional community-based planning is necessary before final improvement plans are generated.

While community ownership is central to any successful upgrade plan, this document can help facilitate that process and offer concrete data and ideas. We have also aimed to identify key policies at the national, regional and metropolitan scale that are now emerging and will likely influence the shape of and resources dedicated to informal settlements for decades to come. As much as our planning process is aimed at the entire Mathare Valley, we hope our ideas will also influence policy making and implementation at a larger scale so that comprehensive slum planning is an integral part of development and governance in Nairobi and Kenya more generally.

Our hope is that the south-north partnership we have developed - led by slum dwellers with NGO and academic support - can act as a model to ensure that the rapid urbanization happening in Nairobi, Africa and around the world is accountable to and serves the life-sustaining needs of the urban poor. We hope this report can move planning discussions from merely analyzing problems toward generating solutions. The resilience of residents of Mathare Valley informs this draft plan for making their home a more safe, healthy and vibrant community. We encourage policy makers and others committed to alleviating urban poverty to show the same resolve and commitment to a comprehensive Mathare Valley improvement plan.



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