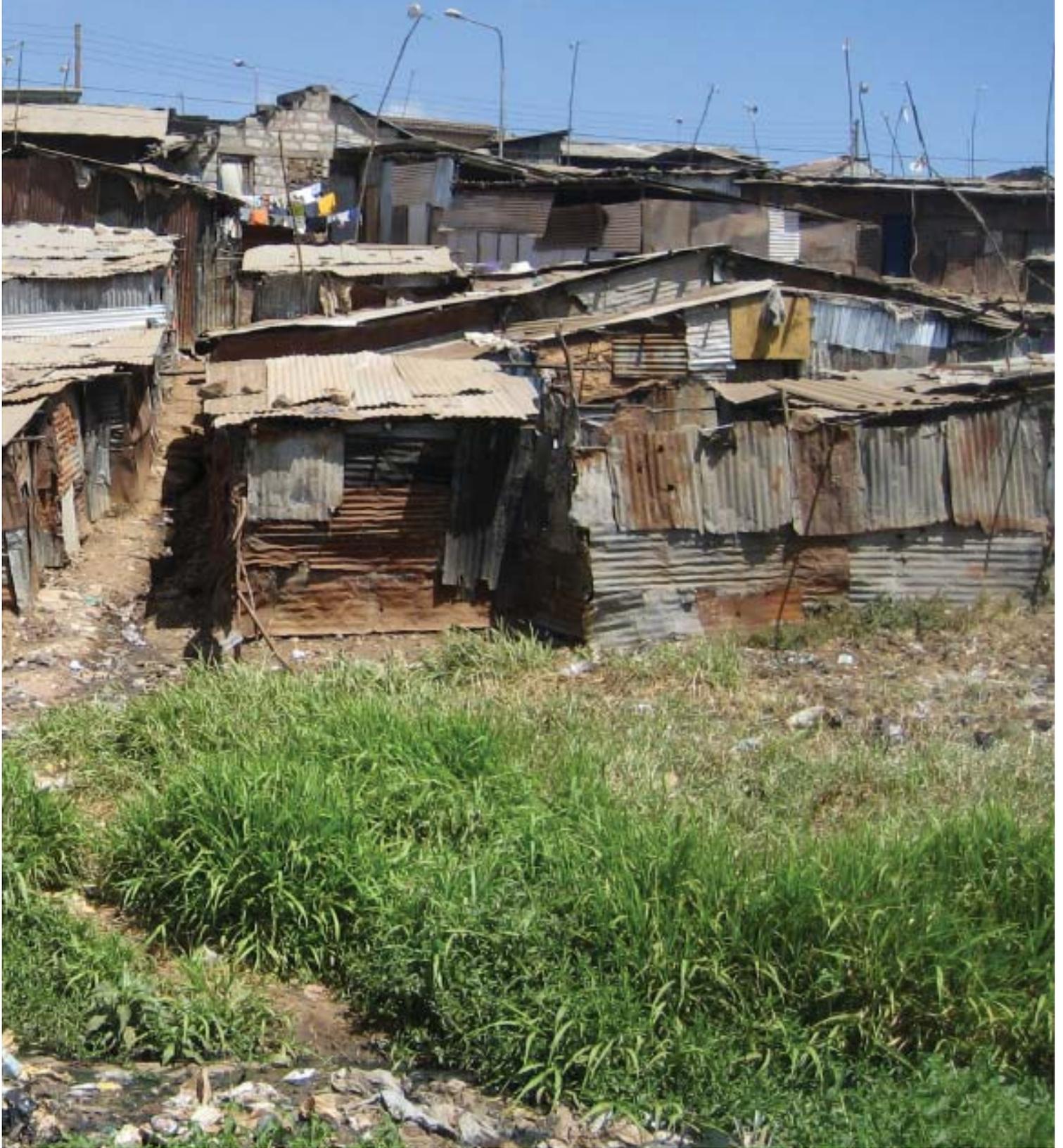


Mathare Valley | Nairobi, Kenya

2009 Collaborative Slum Planning & Upgrading



a collaboration between

UC Berkeley | Dept. of City & Regional Planning
University of Nairobi | Dept. of Urban and Regional Planning
and Pamoja Trust



Mathare Valley

Collaborative Slum Upgrade Project

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Introduction

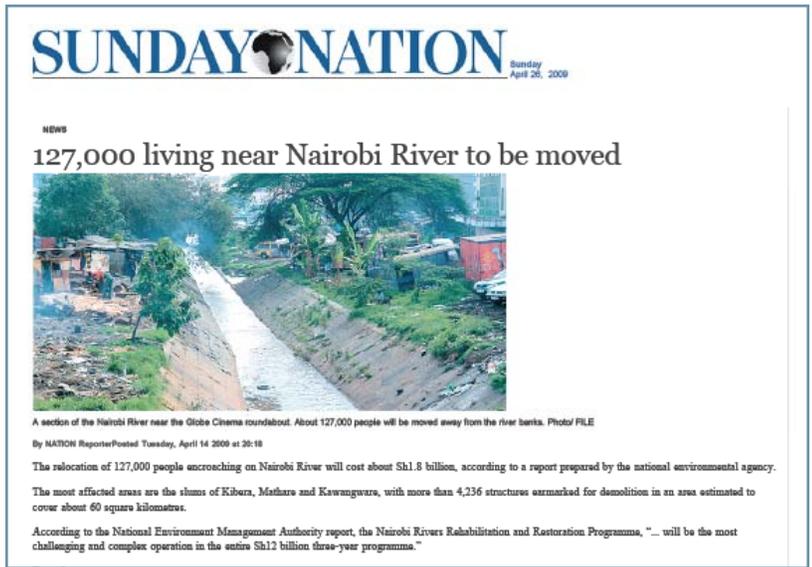
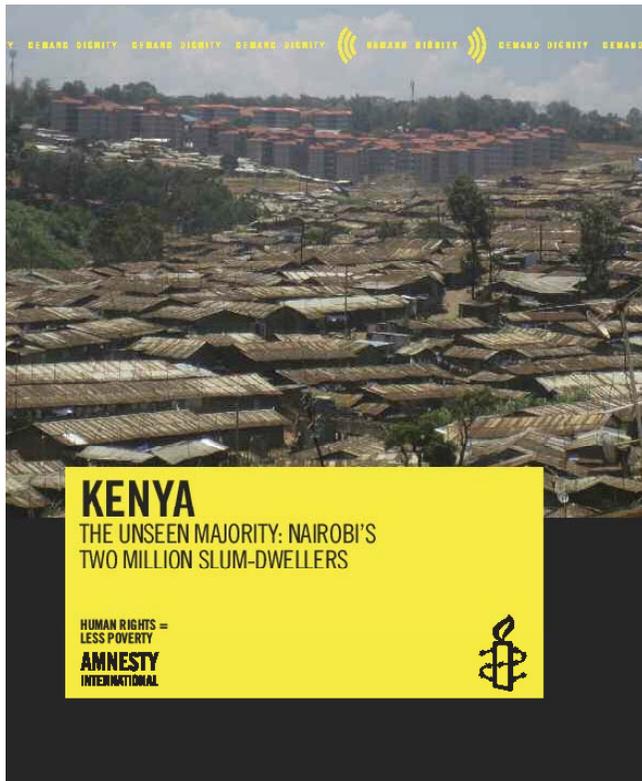
Building partnerships to improve the lives of Nairobi's slum dwellers

Improving the future for slum residents

In Nairobi, Kenya, close to two million people, close to half the population, are crammed into over 180 different slums on only two percent of the land area, and the number of slum dwellers is increasing at about six percent a year. Slums, or informal settlements, are characterized by a lack of access to essential services - such as clean water, sanitation, and other infrastructure - unsafe and overcrowded housing, exposure to environmental hazards, high rates of disease and death, and insecure land rights, or tenure. Residents in Nairobi's slums are vulnerable due to poverty, violence and constant threat of eviction, all presenting challenges for improving the lives and living conditions of urban slum dwellers. This report describes an ongoing project aimed at improving the lives and living conditions of slum dwellers in Nairobi through a partnership between the University of California, Berkeley, Department of City and Regional Planning, Pamoja Trust – a Kenyan-based non-governmental organizations working to improve the lives of the urban poor – and the University of Nairobi, Department of Urban and Regional Planning.

The partnership was brought together in 2008 after the Kenyan Ministry of Environment and the United Nations Environment Programme (UNEP) announced the latest phase of the Nairobi River Basin Programme, that included a plan to clean up the river by razing informal structures within a 30 meter 'riparian reserve' along the Nairobi River. This environmental project would likely displace over 127,000 slum dwellers from their homes and businesses and destroy schools, health centers, and urban agriculture. The Nairobi River project and the plight of slum dwellers in Nairobi has gained international attention, as Amnesty International visited the slums of Nairobi in June 2009 and issued a report, "The Unseen Majority: Nairobi's Two Million Slum Dwellers", calling on the government to cease all evictions, meaningfully involve residents in the river clean-up planning process, and ensure adequate access for all slum residents to essential services, particularly water and sanitation. Even before the slum evictions from the river project were announced, Pamoja Trust was working with slum dwellers living in the informal settlements along the Nairobi River and its tributaries to organize savings federations, perform household surveys and community mapping, negotiate with service providers for water and power, and advocate for housing and land rights.

The community-academic collaboration described in this report reflects a commitment to confront unjust living conditions, forced evictions and misguided policies by developing participatory strategies that address the immediate basic needs of residents living in slums – water, infrastructure, food and safe housing– while also contributing to long-term strategies for improving the lives of slum dwellers, including securing land rights, political power, economic opportunities and the drafting of new local and national policies. This report summarizes the collaborative slum upgrading work of UC Berkeley, the University of Nairobi and Pamoja Trust from January-November 2009.



UNEP Nairobi River Basin Programme in the news
 An Amnesty International report (left) and a local newspaper (top) highlight human rights issues raised by the Kenyan government's new plan.

Our project: Participatory planning to generate lasting slum solutions

In early 2009, a team of faculty and students from the University of California, Berkeley, Department of City & Regional Planning, the University of Nairobi (UoN) Department of Urban & Regional Planning and the Nairobi-based non-governmental organization Pamoja Trust, began collaborating to develop plans and strategies for upgrading informal settlements in Nairobi's Mathare Valley. Project leaders included Berkeley Professor Jason Corburn, Mark Hildebrand (former UN-HABITAT director), Nairobi Professor Peter Ngau, and Pamoja Trust Directors Jane Weru and Jack Makau. This project was initiated by Pamoja Trust and its partner organization, Muungano va Wanjivivi, who were seeking solutions to mitigate the planned eviction of over 100,000 slum residents under the UNEP-Kenyan government's Nairobi River Basin Programme.

Goals

Project goals focused on both short and long-term needs of slum dwellers in the Mathare Valley, particularly four informal settlements named Kosovo, Mathare 4b, Mabatini and Mashimoni. These four settlements were selected by Pamoja Trust because residents faced likely eviction, each had organized savings schemes and begun planning, and all were on government-controlled land. Pamoja Trust charged the team with drafting land use plans that could achieve the following goals:

- Offer options for improving housing quality and density in order to avoid displacement;
- Facilitate the granting of land tenure to residents;
- Combine infrastructure upgrading, including water, sanitation and roads, with those for housing, and;
- Explore alternatives to the 30 meter riparian buffer while still achieving ecologic improvements to the river.

Importantly, this project built on the successful upgrading project lead by Pamoja Trust and Muungano in the Kambi Moto village of Huruma, another informal settlement in Nairobi. Since 2003, residents in Kambi Moto have planned for infrastructure, designed housing and built - *in situ* - their homes incrementally. Using the process and designs of Huruma as a model, we set out drafting ideas for Mathare. While the short-term goals of the partnership were specific plans for

preventing eviction and improving housing and infrastructure in Mathare, the long-term objectives were to build trust and working relationships for meaningful collaborations that promoted action-oriented research for slum upgrading and improving the lives of slum dwellers more generally.

Process

From January through May 2009, teams in Kenya and Berkeley analyzed population and spatial data, reviewed models of slum upgrading in Kenya and around the world, and drafted preliminary housing, infrastructure and land use plans. Draft analyses were shared among all team partners. The teams met with local residents and representatives from UNEP, UN-Habitat, the WorldBank, and other stakeholders to gather information and inform them about our project. Pamoja Trust and the UoN drafted Memoranda of Understanding (MOU) outlining the roles and responsibilities of all partners, including residents, the Nairobi City Council and the Nairobi Water and Sewer Company.

The Berkeley team launched an intensive 8 week studio course involving ten students in June 2009, where more advanced data analyses, research and design options were generated. Information constraints and a desire to get into more depth lead the teams to focus on Kosovo during the summer session. The Nairobi partners met with Mathare Valley residents during this time and generated their own social, spatial, and political analyses of existing living conditions and planning challenges. All of these efforts were brought together during an intensive two-week effort in Nairobi during August 2009, where the teams worked together and with slum residents to refine plans and present draft upgrading options to government officials and other stakeholders.

The ideas presented here are not final solutions, but rather reflect an on-going process of and commitment to participatory slum upgrading and urban poverty alleviation by all partners. While we present specific plans for addressing the multiple and diverse needs of slum dwellers in Mathare, we also hope to contribute to the development of new policies, programs and partnerships for urban slum upgrading.

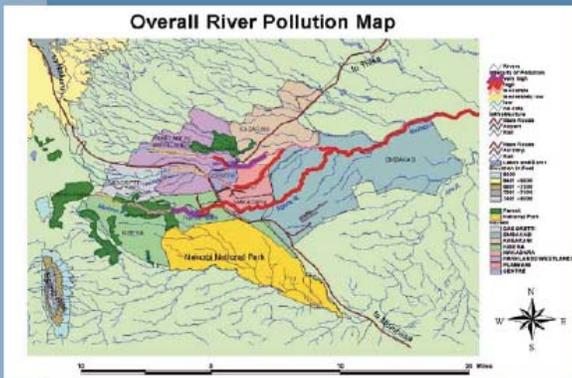
Pamoja Trust

This project was initiated by and oriented to support the ongoing work of Pamoja Trust and Muungano wa Wanavijiji, the organization of savings federations involving of over 50,000 households living in 400 informal settlements across Kenya. Pamoja Trust is a non-governmental organization founded in 2000 to help urban poor communities organize themselves to oppose demolition and forced evictions, and to develop their own plans to secure land rights, adequate housing and basic services. According to its 2008 Annual Report, the activities of Pamoja Trust reflect its recognition of the complex and multidimensional nature of poverty alleviation in cities of low-income countries and include:

- Establishing and strengthening savings and credit schemes;
- Strengthening Muungano Wa Wanavijiji, the federation of Kenyan slum dwellers;
- Household surveying, mapping and data analysis;
- Urban planning, design, house modelling and community-led construction;
- Networking with other federations and NGOs throughout Africa and beyond;
- Enhancing participatory research, advocacy and lobbying;
- Supporting an Urban Poor Fund, that leverages the political and financial capital of micro-savings groups for additional resources from formal banking institutions, the State, and international donor agencies, and;
- Fostering partnerships with both state and nonstate actors to promote collaborative action.



DIALOGUE UNEP-KENYA COUNTRY PROGRAMME



an environment program's controversial river cleanup plan

In 1999, the Nairobi Metropolitan Development ministry entered into a technical arrangement with UNEP to implement "green initiatives." The two most immediate projects on their agenda were cleaning up the Nairobi River, which has been polluted with heavy metals and nutrients, as well as developing a solid waste management plan for Nairobi.

The Nairobi River Basin Programme has focused to date on raising public awareness about river pollution and water issues through an educational campaign. However, the latest phase of the project, launched in July 2008, proposed a 10-point intervention plan which includes:

1. Creating awareness and assessing social impacts
2. Surveys and delineation of the riparian reserve
3. Stopping discharges
4. Completing a 2.5 Km demonstration project
5. Relocating displaced economic activities & informal settlements
6. Developing integrated solid waste management
7. Restoring the Nairobi Dam
8. Installing sewerage and associated infrastructure
9. Landscaping and beautification of riparian zone
10. Developing a Master Plan for main tributaries.

Pamoja Trust is also a member of Shack/Slum Dwellers International (SDI), the international network of slum dweller federations and NGOs that work individually and collectively to improve conditions for slum and shack dwellers, <http://www.sdinet.co.za/>.

Muongano wa Wanavijiji

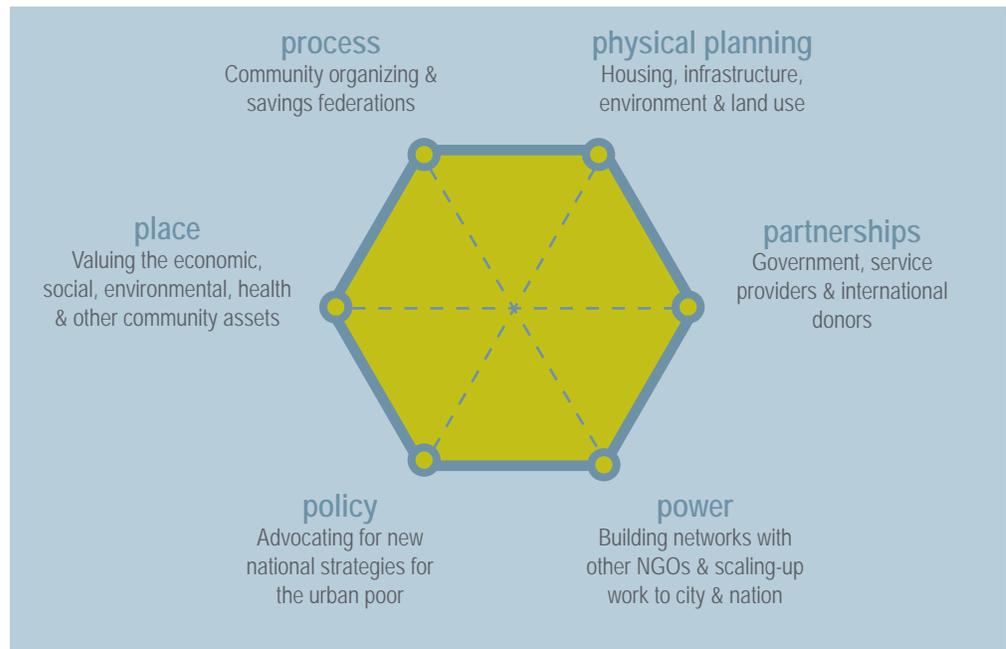
Pamoja Trust collaborates closely with Muungano wa Wanavijiji, which organizes micro-saving and credit schemes for the urban poor and provides a community-based structure for governance and planning. Members of a savings scheme go door-to-door each day collecting money for savings, loan repayments and sharing information. Muungano demands that each savings scheme develop a constitution for the group, register with the government, nominate collectors and treasurers, organize daily collection walks, open a bank account, fill in each member's savings book and record savings and loan information. Each savings scheme also consists of six resident teams: (1) surveying and mapping (2) welfare (3) savings and loan (4) land and housing (5) advocacy, and (6) auditing.

Multiple saving schemes within a village are linked to a slum-wide network (i.e., Mathare Valley). Different slum networks are connected into regional networks (i.e., such as the entire Nairobi metropolitan area), and regional networks across Kenya are linked to a National Executive Council. The micro-savings federations are crucial for 'scaling-up' slum upgrading work because they give donor agencies and governments committed to poverty reduction partners that:

- Represent the voices and needs of the urban poor;
- Give women central roles in social, political and economic decision-making;
- Have the capacity to plan and build homes, roads, and some infrastructure;
- Manage new and upgraded infrastructure & deliver services;
- Negotiate agreements with local groups, such as slum landlords, that external agencies cannot, and;
- Innovate with cheaper, often more locally-relevant and sustainable over the long-term, strategies for reducing poverty & improving livelihoods.

Muongano works to change the power relationships between the urban poor, service providers and government authorities. In 2006, Pamoja Trust and Muungano established Akiba Mashinani Trust to provide large loans for the federations' construction and income generating activities.

relational model for participatory slum upgrading



University of Nairobi, Department of Urban & Regional Planning

The Department of Urban and Regional Planning at the University of Nairobi is under the Chairmanship of Professor Peter Ngau. This project was part of the Department's Urban Studio and consisted of fourth-year undergraduates. Students selected an aspect of Mathare to study for their project and conducted historic analyses, field work and mapping of land use data. Students on the project interviewed residents of the Mathare slums and many were hired as interns by Pamoja Trust to help organize community meetings, gather and analyze spatial data.

Relational Model for Collaborative Slum Upgrading

The goals of this project were not to create a single, finalized plan for all settlements in Mathare, but instead to create a range of options that could be adapted to fit the community's priorities and an ever-changing social, political and economic context. Consistent with the approach of Pamoja Trust and Muungano, our process was intended to relate multiple parts to one another in an iterative and participatory process. We highlight the key dimension of our relational approach to slum upgrading in the figure at the top of this page.

We borrowed this framework from others (D'Cruz and Satterwaite 2006; Gulyani and Bassett 2007) who suggest rejecting single-issue strategies, such as only focusing on housing, infrastructure or securing tenure. We also aimed to reject "development" strategies that tend to focus on alleviating poverty by promoting household enterprises and education initiatives but ignore living conditions, land rights, human health, the environment, culture and other issues. Instead this project aimed to integrate the multiple dimensions of slum upgrading and emphasize how these relate to one another in project planning and implementation.



Life In Nairobi's Slums

More than half of Nairobi's population lives in over 180 different slums across the metropolitan region. While sprawling cities within a city, Nairobi's slums constitute only about 5% of the total land area of the city leading to population densities in slums of close to 50,000 persons per square kilometer compared to about 2,000 persons per square kilometer in the rest of the city. While each slum is unique, these settlements tend to be on marginal land, such as former quarries, low-lying marshy areas, near railway lines and next to dumping sites. The average slum household has three members, nearly 1/3 of all households are single-person, and the average age of a slum dweller is 35 years old. Rapid population growth combined with constant threats of eviction make life for close to 2 million slum dwellers in Nairobi dire and unjust.

Nairobi's slum dwellers grapple daily with poverty, high housing and service costs, a lack of water and sanitation, violence and disease. According to a World Bank study by Sumila Gulyani and published in 2008, 73% of Nairobi's slum dwellers live below the official poverty line, defined as Ksh 3,174 (US\$42) per month. The mean per capita monthly income for poor slum dwellers is Ksh 2,776 (US\$37), while monthly expenses average:

Food	Ksh 1050 (US\$75)
Transportation	Ksh 180 (US\$2.50)
Water	Ksh 90 (US\$1.20)
Electricity	Ksh 295 (US\$4)
Rent	Ksh 753 (US\$10)

According to a 2007 UN-HABITAT report, less than 22% of slum households has a water connection, 65% rely on water kiosks and street water vendors and each slum dweller uses about 23 liters of water per day. Approximately 22% of slum households have an electricity connection and 77% use kerosene for lighting. Only 15% of residents note that streets have lighting.

Sanitary infrastructure is particularly inadequate. The use of "flying toilets" - defecating into a plastic bag and throwing it away - is common. Only 1/4 of slum dwellers report having access to a private toilet, such as a pit latrine, while 3/4 of the population share a public toilet with at least 70 other people. Women are often forced to avoid communal toilets, especially at night, for fear of rape. Fewer than 12% of toilets are connected to sanitary sewers and close to 80% of all slum dweller's garbage is dumped in their informal settlement since there is practically no municipal waste collection service in Nairobi's slums.

Housing consists of a range of materials, but most live in dirt floor shacks with sheet metal walls and roofs. Only 12% of the housing stock has a permanent external wall, constructed with brick, stone or block. There are 2.6 persons per room and approximately 1.6 rooms per unit.

Close to 92% of slum households are rent-paying tenants and 8% owner occupiers. This is consistent with Nairobi as a whole, where close to 82% of residents are tenants. Structure owners (also known as landlords) make up about 5% of the slum population and tend to own the structure and collect rents, but do not have title to the land.

The high-cost of food and health care, lack of water and sanitation, poor housing conditions and risky envi-

ronments contribute to disease and premature death in Nairobi's slums. According to a 2002 African Population and Health Research Center report, respiratory tract infections, diarrhea, tuberculosis, typhoid, malaria, AIDS and malnutrition are the leading illnesses in Nairobi's slums. Infant mortality in Nairobi's informal settlements (91 per 1000 live births) is over twice that of Nairobi's non-slum population (39 per 1000).

Kenya Slum Upgrading Programme (KENSUP)

Our project recognizes and aimed to learn from the Kenya Slum Upgrading Programme, a collaboration between the Kenyan Government and Un-HABITAT launched in 2004. The national government's commitment is essential for the success of any slum upgrading efforts. Through KENSUP, the national government has begun to outline goals and strategies for poverty alleviation, allocated resources in the national budget and initiated city and slum specific planning and pilot interventions.



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The following narrative by Daniel Partai, a resident in the Kosovo settlement, was recorded in an interview conducted by one of our student partners at the University of Nairobi. Daniel's words speak to the complex social and political forces that make slum upgrading such a sensitive issue.

"I am Daniel. I have lived in Mathare for more than 40 years. I used to stay in this place when the river was very clean and narrow. By the way, this entire river you see is just wide because of sewage disposal.

I have been moving from place to place due to various reasons like eviction, fire and violence. The worst moments I have experienced are the 1992 multi-party violence era, the 1999 Mungiki era and the past election violence of 2007.

I do not have a plot that I can call my own in Kosovo because I did not appear in the list of beneficiaries who were supposed to benefit from the settlement. You see, some things are very tribal and political here. I had been in Village 2 for about 30 years but I had nothing to do but watch people who had come to the slum just the other day, getting land.

If you look at the population composition of this settlement, you will notice it mostly has a youthful population. This is not by default. It is because this is Kosovo, the place of war. When the settlement was cleared for settlement, some gangs began to settle on the land before even the surveying was done. This evoked social debate among the people, and led to violence since the beneficiaries felt that their rightful land was being taken away. I think this was a plan to grab land by some politicians and other people.

Then there arose the problem of Baghdad boys, who were a militant gang from Village 4B. One day, they attacked a young man from the village and killed him. No one knew the rural place of the young man. He had few friends, so they could not raise enough money to bury him. His death was followed by several others in similar circumstances. The problem of lack of land for burying people became a reality.

A prominent politician became aware of this problem and came to help the young men. He told them to form a group which would cater for burial arrangements in case one of the members died. The group grew, but with high poverty levels and immoral drive by some people, it began administering oaths, and took a military direction. The group later took the name Mungiki.

Mungiki was a highly organized group which could tap water and electricity illegal and distribute them to the local community. The community was supposed to pay for these services. Households had to pay 50 shillings as security fee while business premises had to pay 100 shillings for the same.

The village then became controlled by Mungiki in terms of service provision, and a committee in terms of land ownership. The committee had been selected by the provincial administration. It was not until 2004 when the village was able to break from the chains of Mungiki when the government undertook a serious operation where the police killed more than thirty people and recovered 30 guns. The guns used to be hidden under the bridge down there and along the river; where you can see some farms and open spaces. One space was actually their "court" - where they held cases for people who had refused to pay security fees or even electricity fees.

Mungiki helped this village in a way. Plots stopped being issued to people haphazardly. They took some land along the river and used it for farming. I tell you, all that land would now be having houses as we speak. The issue of the river is funny. I know people will lose land here because of that, but I do not care too much. Do you see that house? The owner has another plot near the river, and so do many more. He may really fight so that people are not evicted from the river, but if worst comes to worst, he knows he will only lose rent money. This is Kosovo.

I am very worried when I hear you say that this place will be planned. Do you know what you are telling me, young man? It is like telling me to pack my bags. You see, I am a tenant. If the landlord tells me to go away because he wants to improve his house, what can I do?

There is no way we can benefit as tenants in any upgrading process. I am telling you there is no way we can benefit. Don't cheat yourself that the landlords will agree to give up their land. The only way may be for the department to declare this land "no man's land" and build houses, then rent out to us equally. The landlords would not allow this either..."

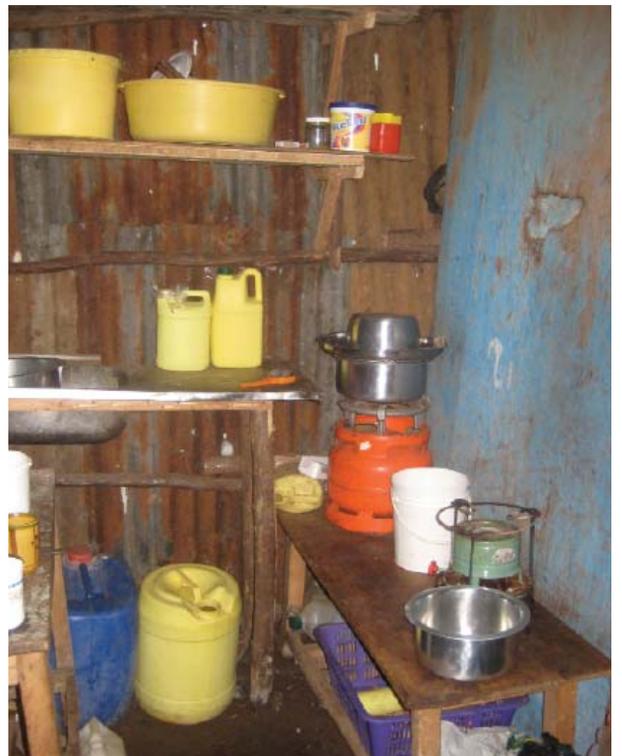


livestock production

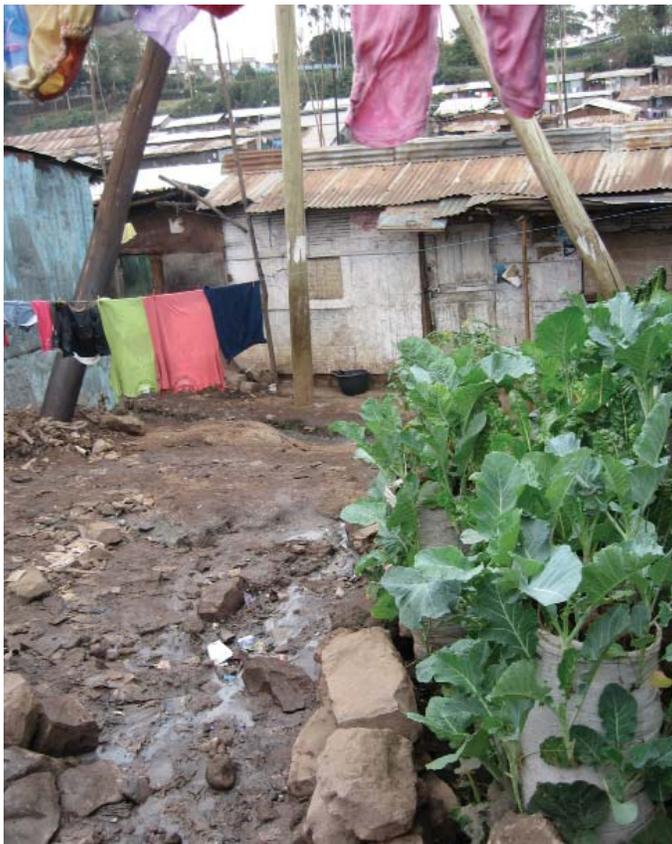
For many residents, life in Mathare Valley is characterized by resilience in the face of harsh conditions. Although most are living in extreme poverty, in general residents are able to marshal what scarce resources exist to earn their livelihoods and to build residences and local businesses, as these images demonstrate. This inherent creativity is perhaps the community's most valuable asset, one that we will need to leverage in order to successfully upgrade the settlements.



locally-owned businesses



household energy & water use



urban agriculture



diverse housing types and materials



commercial areas



Introduction

Life in Nairobi's slums

Mathare Valley

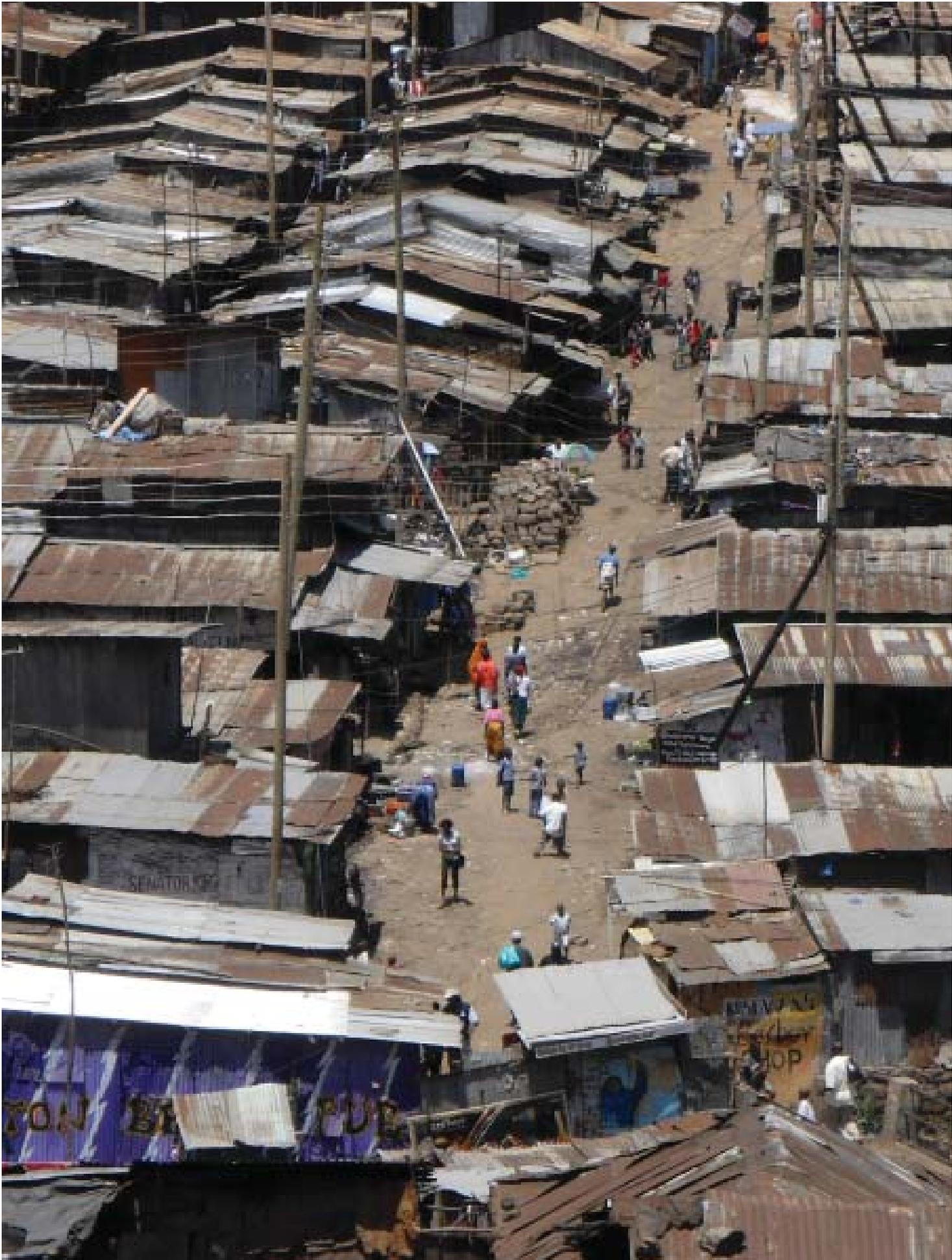
Participatory Planning

Integrated Slum Upgrading

Conclusion



images of mathare valley



Mathare Valley

Introduction

Life in Nairobi's slums

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Conclusion

The Mathare Valley is located approximately three kilometers from Nairobi's Central Business District, and is bordered by two main highways, Juja Road and Thika Road. The entire Mathare Valley consists of approximately 73 hectares and houses a number of different informal settlements in both Starehe and Kasarani Divisions of Nairobi. Much of the Valley was formerly a quarry and some settlements are built on steep slopes of carved-out rock. The Mathare and Gitathuru Rivers traverse the valley, act as a central feature for economic life in Mathare and are part of the larger Nairobi River watershed.

The Mathare Valley settlements are a dynamic set of informal communities with different histories, strong community networks and changing populations. For example, Mathare 4b was settled in the mid-1960s after residents were evicted from land claimed for the Eastleigh Section 3 Air Force Base. Today, there are about 100 water points, 14 toilets and about 6 pit latrines for over 30,000 residents. There is no electricity connection to Mathare 4b and many homes near the rivers are regularly flooded with garbage and human waste during heavy rains. Baraka Medical Centre is the most accessible health facility charging Kshs 40 and 20 for



Kenya

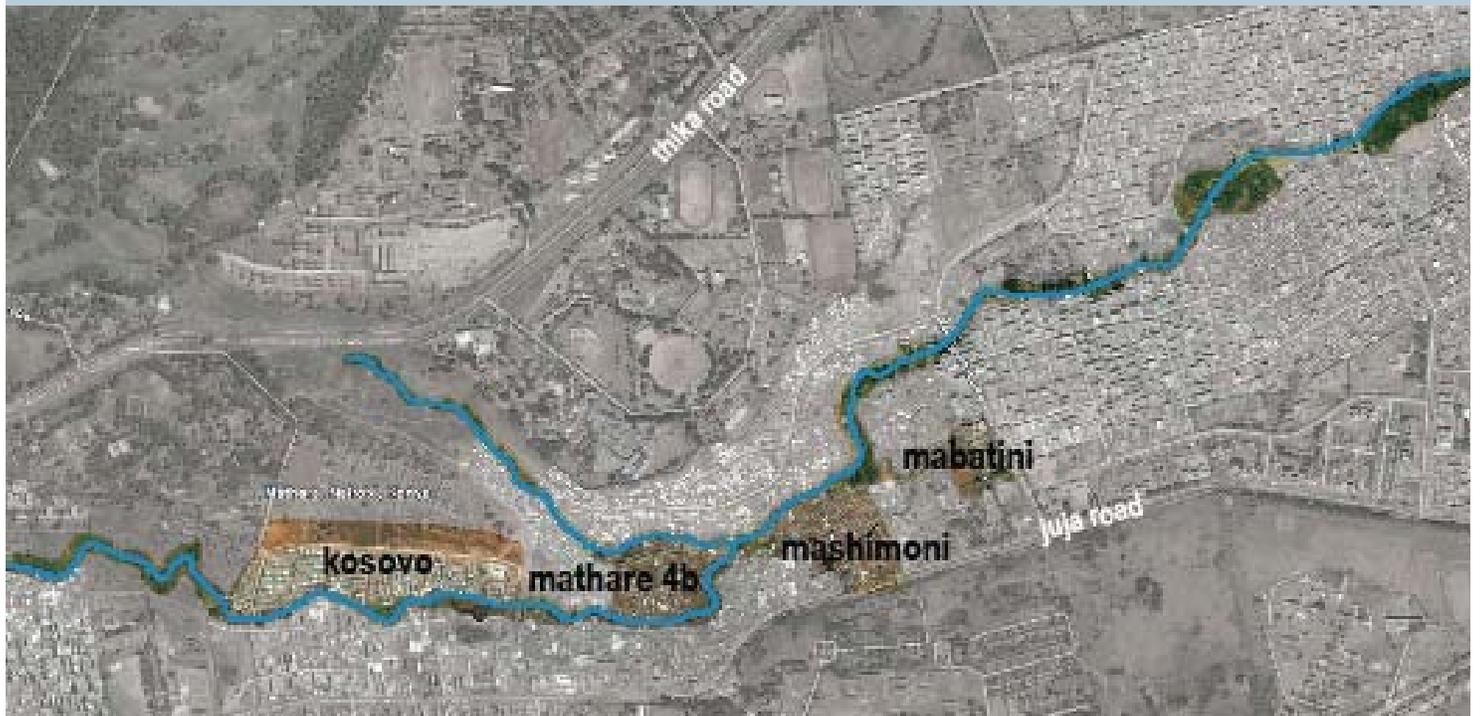


Nairobi

mathare valley in nairobi



settlements in relation to nairobi river



adults and children respectively for common treatment.

Mathare 1a, 3a, 3c, Mabatini, and Thayu are popularly referred to as Bondeni. This group of settlements are on the Starehe side of the valley. Kosovo, Gitathuru, and Mathare 4b are situated on government land between the two rivers of Gitathuru and Mathare Rivers.

Livelihoods within Mathare Valley include a range of economic activities from agriculture to laborers to self-employed business stall owners. Informal schools exist for primary age children, while private secondary schools in the area charge Ksh 600 per month.

The Mathare slums were home to some of the worst urban violence in Kenya after the disputed national elections in 2007. This was not the first time Mathare had witnessed violence, as recently as 2006 the slum erupted into a gang war. As described by the New York Times on 11 November 2006:

The bloodshed began with a bootlegging dispute, but it has been fueled by ethnic rivalry. The epicenter is Mathare, a cluster of slums with approximately 500,000 people, crammed between downtown Nairobi and an affluent neighborhood where many ambassadors live. Mathare is a landscape of rust — thousands of shacks squeezed together with rusted metal roofs and rusted metal sides, and the occasional rusted metal bridge between...The area is notorious as a pocket of anarchy in a relatively orderly city, a place where street gangs levy taxes and teenage boys with machetes and dreadlocks shake down people at checkpoints. Most days, the police are nowhere to be found...Violence erupted between the gangs fighting for control of this impoverished turf. One gang is the Mungiki, a secretive, quasi-religious sect...the other is a band of vigilantes who call themselves the Taliban, even though they are Christian and have nothing to do with the original Taliban group that imposed a harsh brand of Islam in Afghanistan.

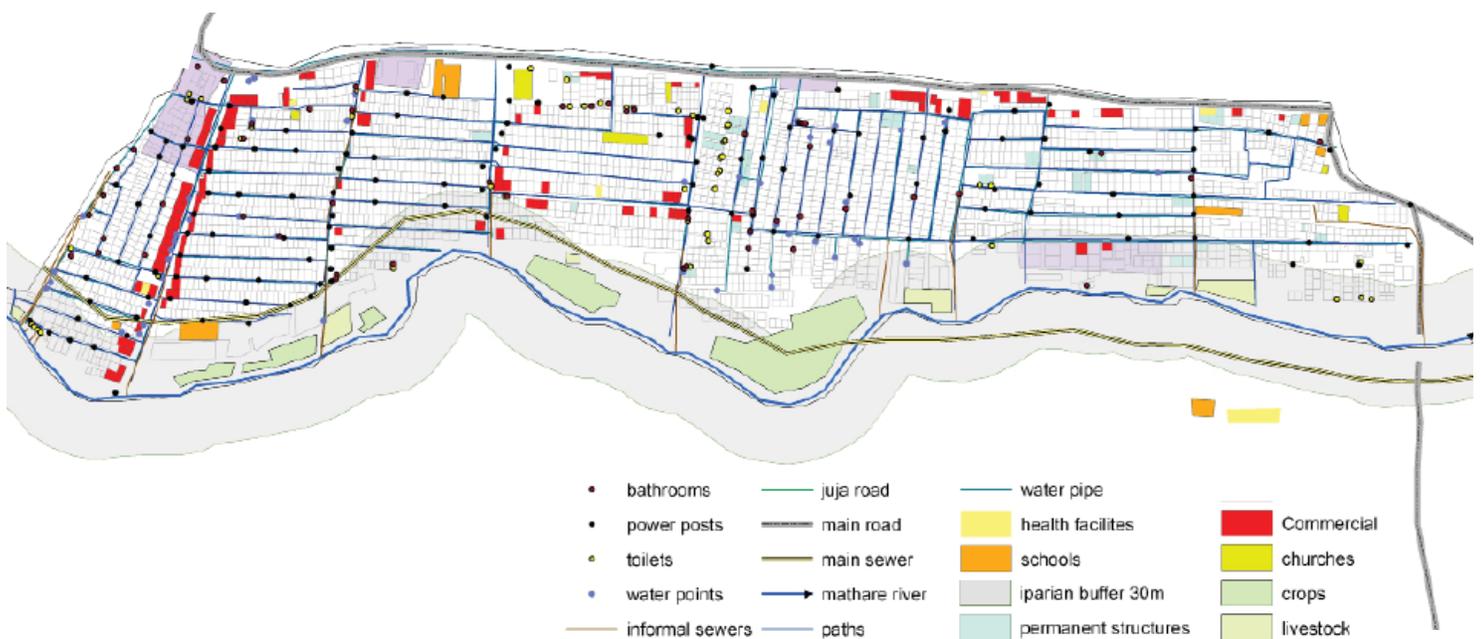


Kosovo Neighborhood Statistics (source: Pamoja Trust 2008 enumeration data)

Population Characteristics	<ul style="list-style-type: none"> About 57% male, 42% female 25% unemployed, but many have their own businesses Health conditions: Waterborne diseases are the most common: Malaria, cholera, and dysentery.
Household Structure	<ul style="list-style-type: none"> Ownership status: 15% owner-occupied, 85% tenants Size: 1 person (40%), 2 people (20%), 3 people (15%), 4+ people (24%)
Building & Infrastructure Conditions	<ul style="list-style-type: none"> Structure materials: 35% are iron sheet and wood with a cement floor, an additional 50% are iron sheets without the cement floor, 6% are brick/block houses, and 7% are mud houses. Water: 86% do not have a toilet in their homes, and 81% pay for water. The majority of residents pay for communal toilets or uses "flying toilets". Waste disposal: 69% say they dispose of waste in the river. Electricity: 68% of households do not have electricity. A majority use charcoal or paraffin as fuel (53% and 43%, respectively) but a small percentage of households also use electricity, gas, wood, or other fuels.

Kosovo

As you can see from the land use map of the Kosovo settlement below, the provision of basic services in Mathare's slums is uneven. The western edge of the settlement has the most intense areas of economic activity while commercial activities, schools and health care facilities line the road running along at the top of the settlement. The western section of the settlement also has the greatest number of power poles and water points, but only a few toilets. Toilets and bathrooms are concentrated in the center of the settlement. The eastern third of the settlement has very few water points, toilets or bathrooms. A trunk sewer line runs along the bottom of the settlement, crossing the river at one point, but none of the toilets or bathrooms in the settlement are attached to this sewer. A mixture of agricultural activities occur along the river bank, but these also fall within the 30 meter riparian reserve and are slated for demolition through the river clean-up project.



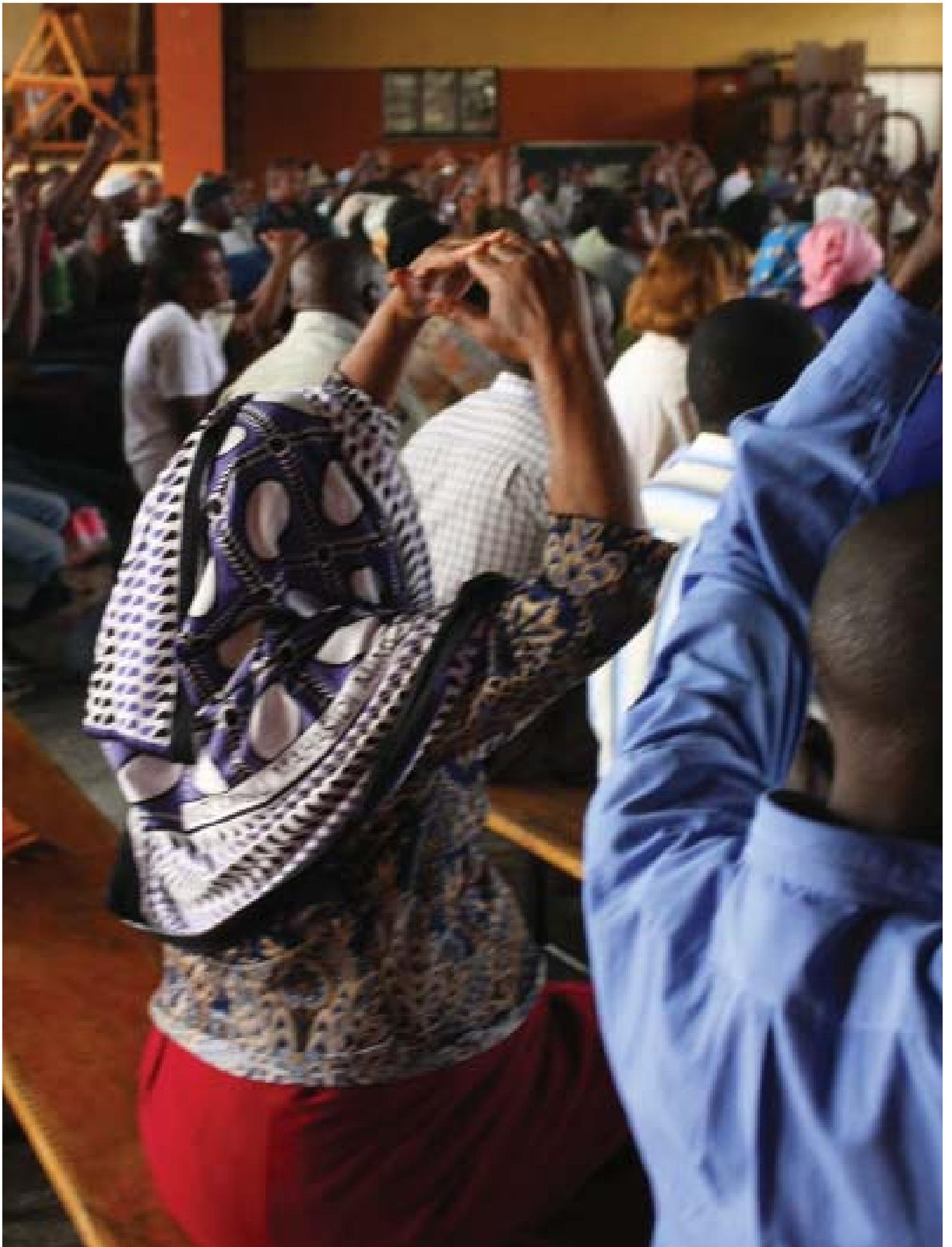
existing land uses in kosovo settlement

Chang'aa is an illegal liquor, or moonshine, that is brewed in the Mathare Valley and acts as significant source of income and conflict for local residents. Approximately fifty large steel drums with fires underneath line the Mathare river bank as the brewing operates 24 hours a day. The brewing process employs tens of slum residents; some are brewers, others fetch and split fire wood, others deliver molasses or carry-out jericans, while still others provide security. Chang'aa brewing involves the boiling of fermented sugar, molasses and sorghum or millet flour. The steam is cooled using river water and condenses into alcohol. The alcohol is highly concentrated and locals have claimed that some have been blinded by drinking the lethal concoction.

Approximately 600 barrels producing 20 liters of Chang'aa at a time can be brewed in one day, generating millions of Kenyan shillings a year for the local and national economy. These large sums of money also mean that gangs and the police demand bribes for ensuring the entire operation continues. In 2006, chang'aa brewers asked the Taliban gang, a Luo tribe group, for protection from the Mungiki gang, a Kikuyu group, after the later tried to extort more money from the brewers in return for protection. The result was widespread violence, at least ten deaths, hundreds of burned homes and the arrival of the military to Mathare in order to restore order.

"changaa" brewing in mathare valley





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Our aim was to contribute to the on-going participatory planning in Mathare that Pamoja Trust and Muungano wa Wanvijiji had already began. Meaningful and lasting slum upgrading can only be achieved through direct participation of organized community residents in the physical planning of their villages and designing and advocating for new national and urban land policy. Participation often involves difficult on-going negotiations between tenants and structure owners as well as between community organizations, service providers and government ministries. We acknowledge that slum residents have a wealth of often ignored expertise about the physical, social, economic and political needs of their community and this local knowledge is crucial for meaningful and successful slum upgrading.

Participatory slum planning begins with the creation of a local savings group that is networked to a regional and national savings federation. The savings groups act to organize residents and provide a governance structure to undertake other essential planning tasks such as enumerations, land use mapping, house modeling and developing plans for land regularization. The savings groups and resident planning activities build slum dwellers' political power to negotiate with government agencies and service providers who are ultimately responsible for and capable of granting land tenure and building infrastructure.

Savings scheme and local planning activities also help build trust and working relationships among residents. This is especially important in Nairobi's slums where structure owners are often 'absentee landlords,' may own numerous structures in one settlement and may be viewed with suspicion by tenants subject to their rent rules. Structure owners often want to acquire full legal tenure of the land on which their structures are built while tenants are often more concerned with legal recognition of their right to live in the community and gaining improvements to basic services and living conditions. Importantly, Muungano's savings schemes are open to all residents and provide a range of both immediate and long-term services for each village, helping to ensure that tenants and structure owners frequently work together on a number of issues.

Preparatory project work

The UC Berkeley team reviewed the history of the settlement and the complex political and tribal affiliations across different villages that can often influence planning initiatives. From March through July 2009, the Berkeley team analyzed household enumeration data and Geographic Information System (GIS) land use data jointly developed by University of Nairobi students and Pamoja Trust staff. The Berkeley team developed detailed analyses and maps for Kosovo and Mathare 4b and preliminary maps for Mabatini and Mashimoni. All draft work products were shared with Pamoja and the University partners through emails, phone calls and a secure google web-site where any partner could edit and share data. **From June-August 2009, the UC Berkeley team participated in an intensive 8 week studio focused on improving the draft plans in preparation for collaborative work in Nairobi during August.**

Collaborative planning in Nairobi



The early days of the field work in Nairobi were spent in the Mathare slum meeting residents and observing living conditions. The teams also visited Kambi Moto in Huruma where Pamoja had completed upgrading in the last few years. The draft plans for Kosovo were finalized by University of Nairobi and Berkeley students in early August and presented to community residents during a series of three workshops in Mathare.

Community meetings

The first community meeting was held in Kosovo and the entire collaborative (Berkeley, Pamoja Trust and University of Nairobi) jointly presented preliminary drafts for upgrading housing. **Over one-hundred residents attended this meeting and almost immediately the tension between structure owners and residents surfaced.** For example, after the team presented ideas for multi-story housing, existing structure owners wanted to know if they were going to own the entire structure while tenants were concerned whether and how they would get tenure to land in such multi-story housing. Conversation included how to ensure residents living in the riparian reserve and facing likely eviction from the river clean-up plan might be housed in other areas of the settlement and if there were scientifically valid alternatives to the 30m riparian reserve proposed by the National Environment Management Agency (NEMA). The meeting generated much interest throughout Kosovo and neighboring villages and within a day after the meeting different resident

the participatory planning model of pamoja trust & muungano va wanjivivi



Our work has been guided by the inspiring examples set by partner NGOs Pamoja Trust and Muungano va Wanjivivi. They have created a resident-driven model for collaborative slum upgrading. The elements of this process are meant to be seen as cyclical and iterative, rather than linear, as upgrading projects are more likely to be successful when they are incremental and adapt to changing needs.



enumerations

Before even attempting to create neighborhood plans, Pamoja Trust and Muungano begin by organizing residents to collect valuable data about current social, economic, physical, and health conditions.



saving federations

Concurrent with the enumeration process, Pamoja & Muungano help establish neighborhood savings federations, allowing residents to accumulate capital for housing and community infrastructure projects. According to Pamoja Trust's Executive Director, Jane Weru, "...these processes help build an internal community governance structure that has to be in place before a dialogue with the city government can be effective."



collaborative organizing & planning

Over time, the partners build relationships, capital, and trust within the settlements. Eventually, they begin dialogues between residents, landlords, and government, with the goal of reaching consensus around how to plan and upgrade the settlements in a mutually supportive way.



upgrading

The ultimate goal of these processes are to enable community members to create successful, healthy neighborhoods. When internal governance, partnerships, social & financial capital are in place, a community can invest in the housing and infrastructure it needs to improve residents' livelihoods. Huruma, a settlement in the neighboring Kamibi Moto district, is a neighborhood where Pamoja and Muungano have helped mobilize people and resources to gradually upgrade the settlement, an ongoing process. (pictured, right)

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groups were requesting meetings with our planning team.

A second community meeting was held only a few days after the first and attracted over 200 residents. The community center was over-flowing with people from Kosovo and surrounding villages. It was clear to our planning team that the housing design options presented at the first meeting had increased community interest in the planning process. During the second meeting, our plans focused on a range of infrastructure needs and possible improvement schemes. For example, we presented ideas for new roadways and improving existing pathways to address safe circulation throughout the settlement and provide opportunities for improving surface drainage into the river. During this meeting we also presented options for upgrading water and sewer infrastructure, from in-home taps and toilets to new ablution blocks connected to the municipal sewer. **Discussions at this meeting emphasized the connections between infrastructure improvements and economic livelihoods,** and noted areas for enhancing street markets and developing a central marketplace in an existing open space between Kosovo and Mathare 4B. Residents were generally supportive of new access roads, even if this meant moving some residents, since a road could provide access for emergency and garbage collection vehicles, act as a safe-route through the settlement and, according to many elders, was part of the original plan for Kosovo.

After the second meeting our planning team again had requests from residents to meet and discuss the emerging plans. We met with community organizers that were in regular contact with residents to learn more about local reactions to the proposed plans after our meeting. We spent about five days revising our plans based on community reactions and planned for our third meeting where we presented to slum dwellers and government officials.



The third community meeting was held at St. Theresa's church in Mathare to ensure we could accommodate everyone. **We estimated that close to 500 residents attended** as well as representatives from the Nairobi City Council, National Ministries, multilateral organizations and the Rockefeller Foundation. Just before our meeting was slated to begin, Mathare lost electric power, as the state had been imposing rolling black-outs for power rationing. After setting-up a generator to power the meeting, the planning team along with about six Kosovo residents presented the revised housing and infrastructure plans. Intense debate ensued again between structure owners and tenants over the specific plans and who would benefit. Yet, the collective efforts of the planning team and residents helped to secure community support for most of the layout and design proposals. Importantly, a representative from the **Nairobi City Council addressed the meeting and announced that the government was prepared to adopt the plans and begin the process of granting land tenure to residents once there was agreement on the final plans.**

The University of Nairobi students played a crucial role in the participatory planning process. Many of the students had spent the better part of a year or more in Mathare documenting and mapping existing conditions, interviewing residents to learn about future planning challenges and working with Mungaano and Pamoja to organize community meetings. The Nairobi students also facilitated our discussions directly with residents while in Mathare and translated conversations during community meetings. Bringing both technical and cultural expertise to the planning process, the Nairobi students ensured that the planning process was transparent and accountable to the participatory planning work that had occurred prior to the community meetings in August 2009.



Integrated Slum Upgrading

Environment, Livelihoods, Infrastructure & Housing

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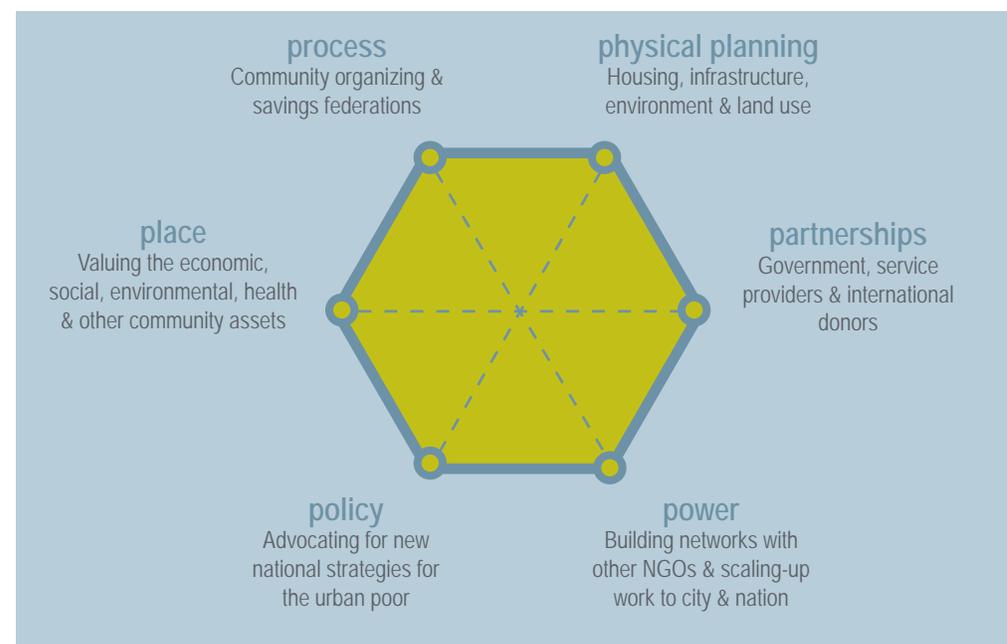
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Integrated slum upgrading aims to bring together processes for ensuring land rights, physical infrastructure and housing improvements, addressing imminent environmental and health threats while also reducing poverty through an attention to livelihoods and education. All of this is done with residents leading the process and setting priorities but with partnerships with NGOs, academics, government and multi-lateral lending agencies that can all provide critical resources and legal protections. In other words, integrated slum upgrading does not segment the process by focusing only on, for example, economic development, land tenure, housing or infrastructure. Integrated slum planning also emphasizes that the relationships between all of these crucial aspects of upgrading are as important as each element themselves, and the long-term success of upgrading depends on focusing on these relationships not the individual parts.

The model of participatory slum upgrading (below) highlights the integrated approach we aimed to take during the planning process. We acknowledge that the integrated approach is difficult to achieve in practice and contextual and political realities may require the process to focus on some aspects more than others at certain times. However, this relational model acts as our ideal around which we oriented all our planning activities.

relational model
for participatory
slum upgrading

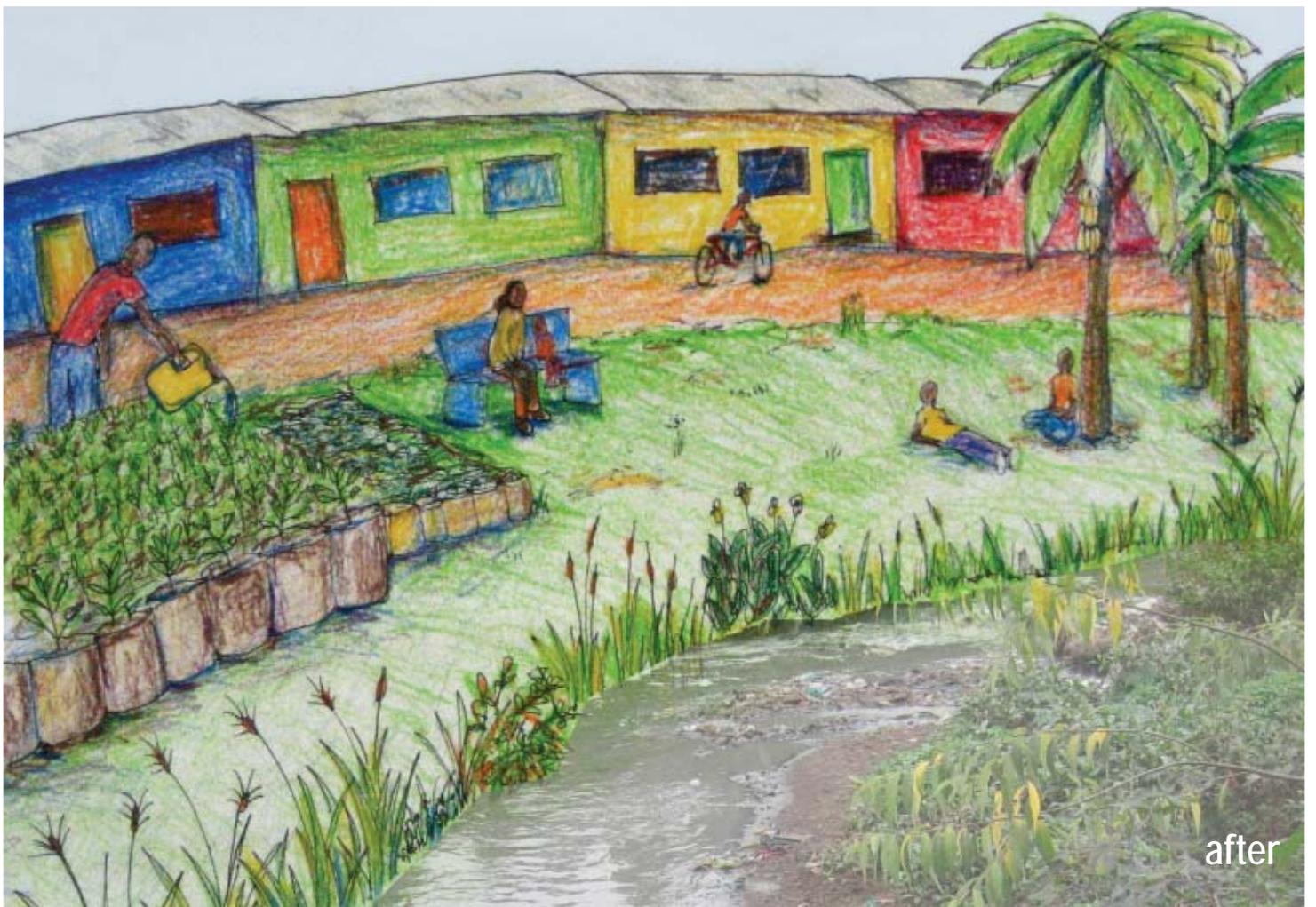




environment

before

improving the riparian zone along the river



after

Improving the river environment

Nairobi comes from the Maasai word for “place of cool water” and the Nairobi River ecosystem remains a vital aspect of the city. Yet, river ecosystems rarely conform to or function optimally when treated as static environments or managed with uniform standards in all places. The 1999 Environmental Management and Coordination Act granted the National Environment Management Authority (NEMA) the authority to set an ecologically sustainable riparian buffer along Kenya’s rivers. In NEMA’s policy document entitled, Nairobi River Restoration Program, the agency offers the following rationale for a universal river buffer: “For the purpose of this exercise this buffer will be 30m on either side of the river from the centerline of the river. It should be noted that various acts have given different widths for the riparian. The steering committee, through the advice of the Attorney General, agreed on the 30m width.” Our project calls on NEMA to reexamine this policy in light of the variegated ecologic and human context in the Mathare Valley and consider a variable buffer that integrates environmental and human livelihood protections.

Toward a performance-based buffer

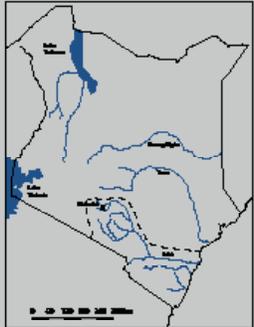
Riparian zones, are ecosystems located along the banks of rivers, streams, creeks, or any other water network and are usually narrow strips of land. Buffers help improve water quality by filtering sediments and nutrients, stabilizing stream banks, providing habitat and food for stream organisms, and, by shading streams, moderate temperature. Riparian buffers also create a transition area between water and land that allows for habitat corridors as well as the natural meandering curves in a river or stream, slowing the speed of water. The establishment of riparian buffer zones is an important component of integrated environmental management. Buffers can be very effective in reducing pollution and restoring ecological processes to river systems. However, the Nairobi River is within a highly urbanized watershed and riparian buffers in urban watersheds tend to be small and account for surrounding development and previously altered land use.

possible land uses of the riparian buffer



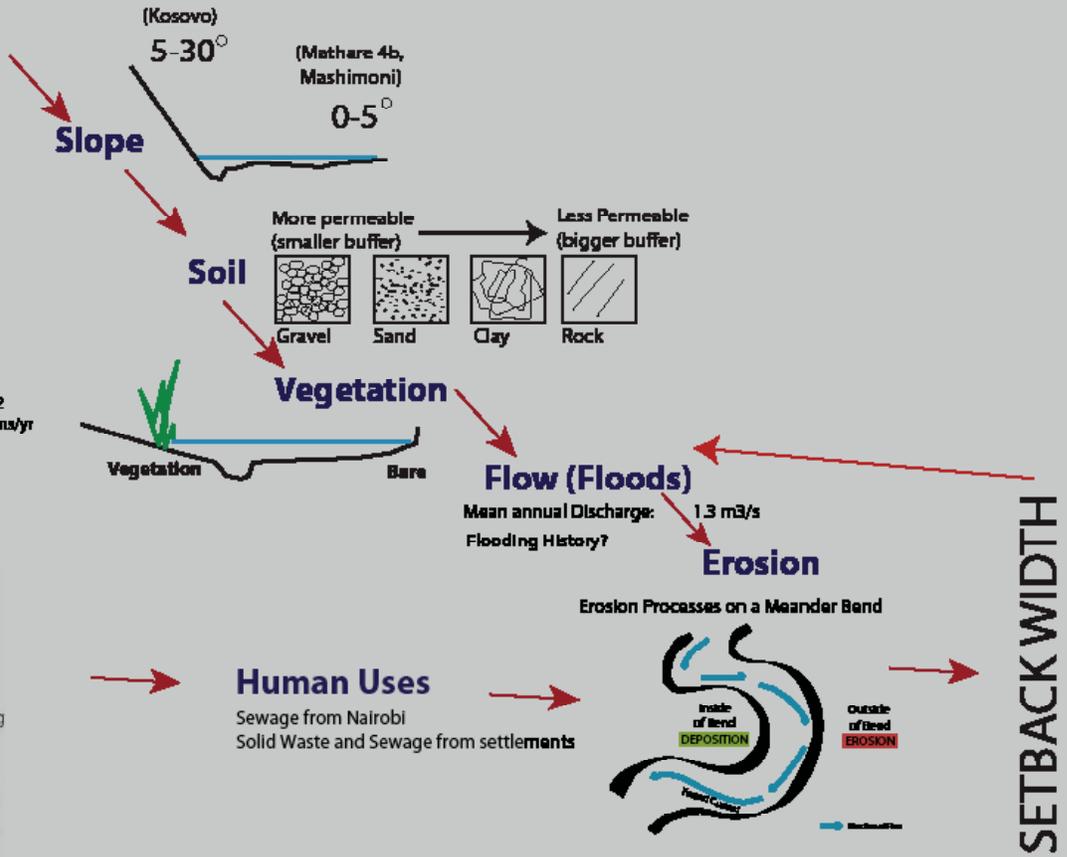
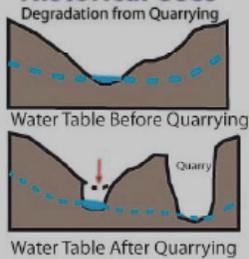
data inputs for a performance-based riparian buffer

Watershed Area



Nairobi River Catchment area: 75 km²
 Annual sediment load: 2,231 tons/yr
 Mean concentration: 57 ppm
 Source Ministry of Water Dev. (1992)

Historical Uses



The following considerations are necessary for determining a riparian buffer and are reflected in the figure on the top of this page.

The geographic size of a watershed and a river can greatly impact the appropriate size of a riparian buffer. The Mathare Valley is positioned towards the upper end of the Nairobi and Athi River watersheds and drains 42 square miles compared to the Nairobi River as a whole, which drains 320 square miles. A small river system such as that in the Mathare Valley would require a proportionally smaller buffer than other rivers in the system.

Slope is a second consideration for assessing the width of a river buffer. For example, steeper sloping banks tend to convey more water and may need wider buffers. This applies to areas of Kosovo but not to Mathare 4b where there is virtually no slope at all. Slope variability in an urban watershed should give a strong signal that a uniform riparian buffer may not be appropriate.

Soil type and geology also play an important role in determining appropriate riparian buffer widths. Certain soil types are more permeable and allow for a smaller buffer. Rocky soil is less easily eroded and allows for



existing urban agriculture along nairobi river

a smaller riparian buffer. Vegetation can slow water and increase infiltration into the ground, reducing flooding and preventing urban runoff from entering the river. An increase in vegetation can reduce the size needed for an effective buffer. Flooding history and flood levels should also be considered when determining riparian buffers.

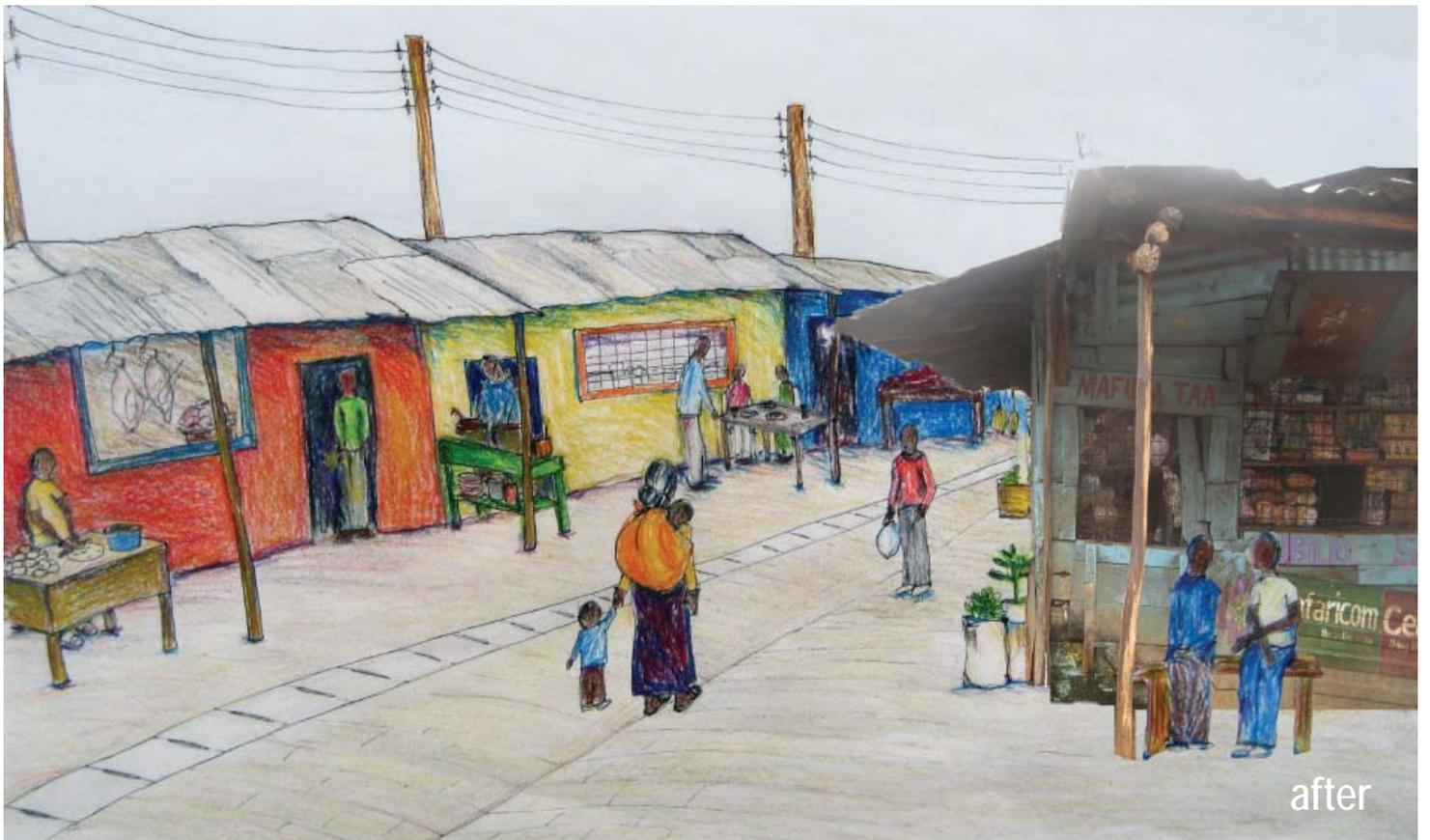
Finally, historic and existing land uses should be considered when determining a riparian buffer. For example, the quarrying in the Mathare Valley has had irreparable effects on river quality, channel width and runoff patterns. The presence or lack of sewers, industrial outflows and impermeable surface in the area must also be considered when generating a riparian buffer that serves ecologic and human needs.

We propose a variable buffer, such as the one pictured on the preceding page, that includes a range of uses that can promote ecologic and human health as well as the economic vitality of the Mathare Valley.



environmental interventions can have human benefits:

Without adequate resources, residents are forced to use highly polluting fuels, such as wood and charcoal (top left). Innovative solutions can lessen pollution while providing livelihoods, such as this machine which compresses plastic bottles for collection (top right).



The long term success of integrated slum upgrading process must ensure that residents have a pathway out of poverty and opportunities to improve their livelihoods. Muungano provides one stepping-stone toward economic stability but the physical layout of the settlement can provide other opportunities for improving livelihoods, such as the creation of a new market, urban agriculture and garbage sorting/recycling spaces and improved housing that provides rooms to let.

Since there is already a vibrant informal economy in the slum, we aimed for upgrading that enhances not replaces these opportunities and aims to expand them to more of the population. For example, food service could be enhanced by ensuring sanitary water and disposal options, consistent and affordable fuel, locating in a central market and growing some products locally. **Our designs also aim to enhance flexible community spaces where residents can adapt spaces over time to accommodate cottage and niche businesses, but not over-program the use of space.** Market spaces and courtyards provide one example of flexible spaces. These flexible spaces might allow for new religious, recreation, community and educational activities hopefully coupling economic and social development. Financing plans for proposed activities will also need to be developed in collaboration with Muungano, Pamoja Trust and residents.

new banking solutions for slum dwellers

Mobile banking through the M-PESA program in Kenya offers slum dwellers an opportunity to use their cell phones to purchase goods and receive payment for work. "Pesa" is the Swahili word for cash; the "M" is for mobile and this program was launched in 2007 by Safaricom. A cell phone user does not need to have a bank account, but just registers with Safaricom for an M-PESA account. In order to add money to their account, users give cash to an M-PESA bank or convenience stall. To receive cash from someone else with an account, a user receives a text message and brings this to an M-PESA bank. Anyone with a mobile phone number in Kenya can receive e-money via M-PESA, and withdraw it from an agent. With millions of Kenyans and hundreds of businesses accepting M-PESA, users can exchange goods and services without cash by transferring funds to each other's accounts using their cell phone.

Slum dwellers have benefitted from M-PESA because it allows the 'unbanked' to cheaply, quickly, safely and more securely transfer money to others without having to leave the settlement to find a bank, post-office or carry cash and risk a mugging. The program has also facilitated urban-to-rural remittances, keeping newly arrived slum dwellers more closely linked to their home villages. Safaricom allows customers to keep as much as \$625 in M-Pesa accounts with no fees or interest charges, and some use the accounts as mobile safe deposits, storing money before they leave home and withdrawing it from M-PESA outlets when they arrive. Like Muungano's savings schemes, mobile money may provide another stepping stone toward formal financial services for millions of slum dwellers who lack access to savings accounts, credit and insurance.



Corporations and policymakers are recognizing the potential for using mobile technology to address disparities in banking access, as the above magazine demonstrates.



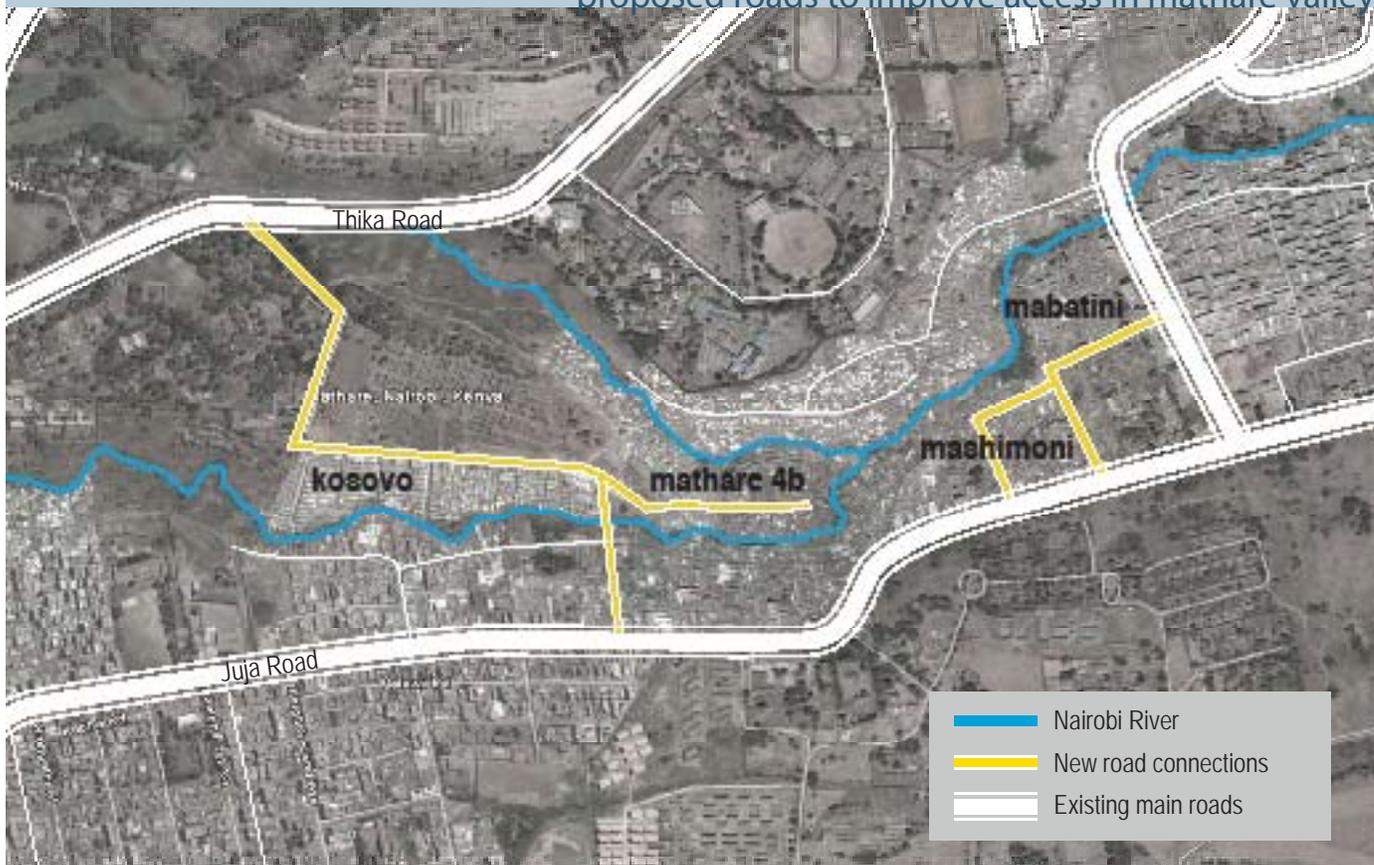
infrastructure

Infrastructure planning

Focusing on infrastructure allowed our team to highlight the collective benefits of upgrading to the community. The focus on infrastructure also enabled our team to emphasize the integrated planning concept and shift some attention away from the controversy between structure owners and tenants over land tenure issues and housing types. Our team emphasized that infrastructure upgrading can simultaneously reduce a slum's environmental impact and improve residents' health and livelihoods. Further, infrastructure systems are often prerequisite to slum regularization and are a main focus of many donor agencies.

The needs for infrastructure in slums is great and includes at a minimum water, sewerage, roads, community, educational and health care facilities, lighting & electricity, drainage, solid waste management and recreation/open space. However, we chose to begin with plans for the first three of these elements - water, sewerage, and road networks - as complimentary components that require a comprehensive re-configuration of the entire settlement. In addition, Pamoja Trust was engaged in on-going negotiations with the Nairobi Water and Sewer Company and the utility had agreed to construct new water lines and install water chambers in Kosovo. Thus, we aimed to accommodate existing water access points where possible and plan for a long-term goal of a water tap and toilet in every home. However, we also drafted our plans to allow for flexibility, especially since the location and type of housing has yet to be determined. The following layouts provide general ideas for conceptualizing the location of core infrastructure within Kosovo, Mathare 4b, Mashimoni and Mabatini. We discuss the plans for Kosovo in greater detail, since that is where we have already presented plans and received feedback from residents.

proposed roads to improve access in mathare valley



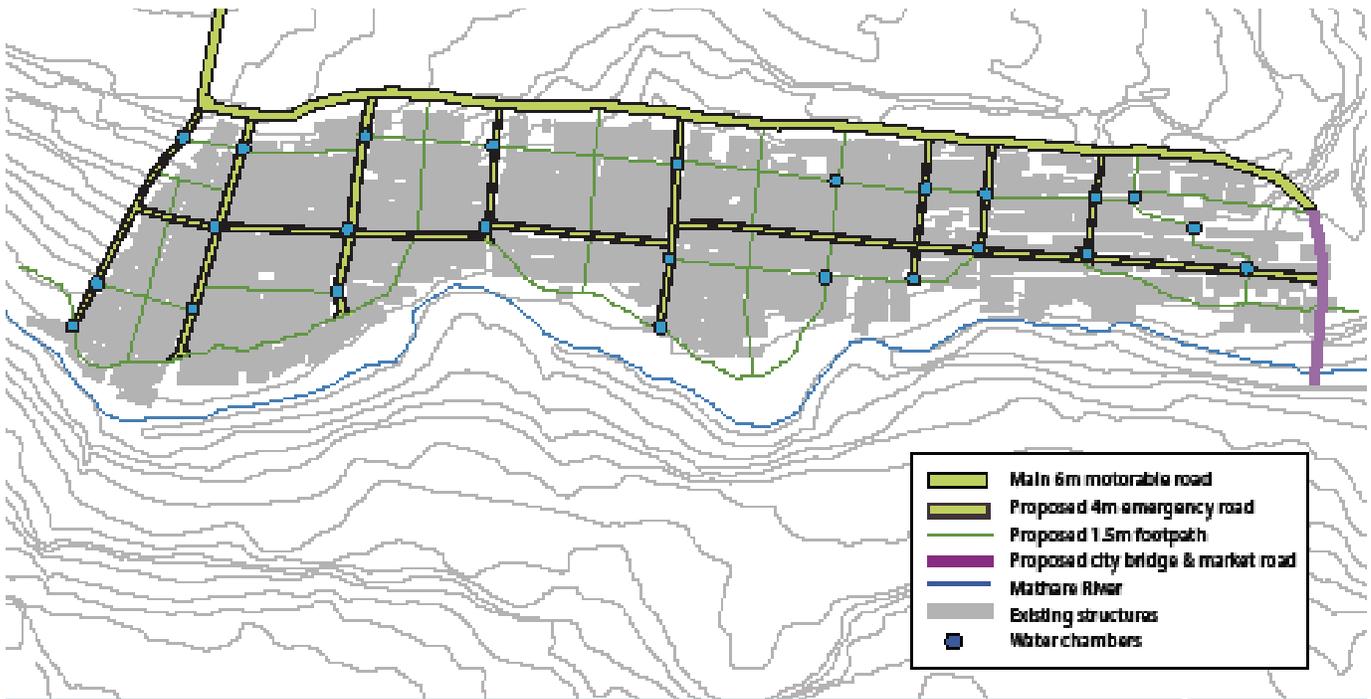


infrastructure: roadways

Almost all infrastructure can benefit from a serviceable road network to facilitate interior access, maintenance, and future expansion. Our plans for the four settlements depicts possible configurations of main arterial roads, a 4m emergency-access only road, and improved foot paths. In Kosovo, the existing main road, 6m wide, runs along the northern edge of the settlement and is currently the only vehicular-accessible road. We imagine this road extending over the Mathare River to connect Kosovo, 4b, and Gitathuru with the southern side of the valley, ultimately creating a new passageway between Thika and Juja Roads.

A second class of roads are 4m-wide interior streets, intended for pedestrian use but wide enough for emergency vehicle access. In Kosovo, residents liked the proposal to restore the widened main street that once ran East-West through the center of the settlement, and to dedicate this route to commercial and community uses. (See image, below). In Mathare 4b and Mashinoni, the network only includes these 4m roads. The final class of streets depicted are 1.5m footpaths to improve the safety of residential circulation and provide addition street-vendor spaces. All the layouts are purposely simplified to acknowledge that additional design work is needed.





kosovo

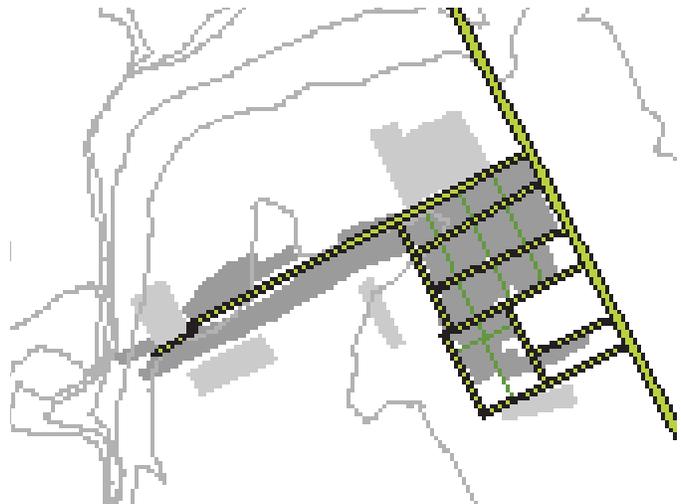


mathare 4b



mashimoni

drafts of proposed road networks for mathare valley



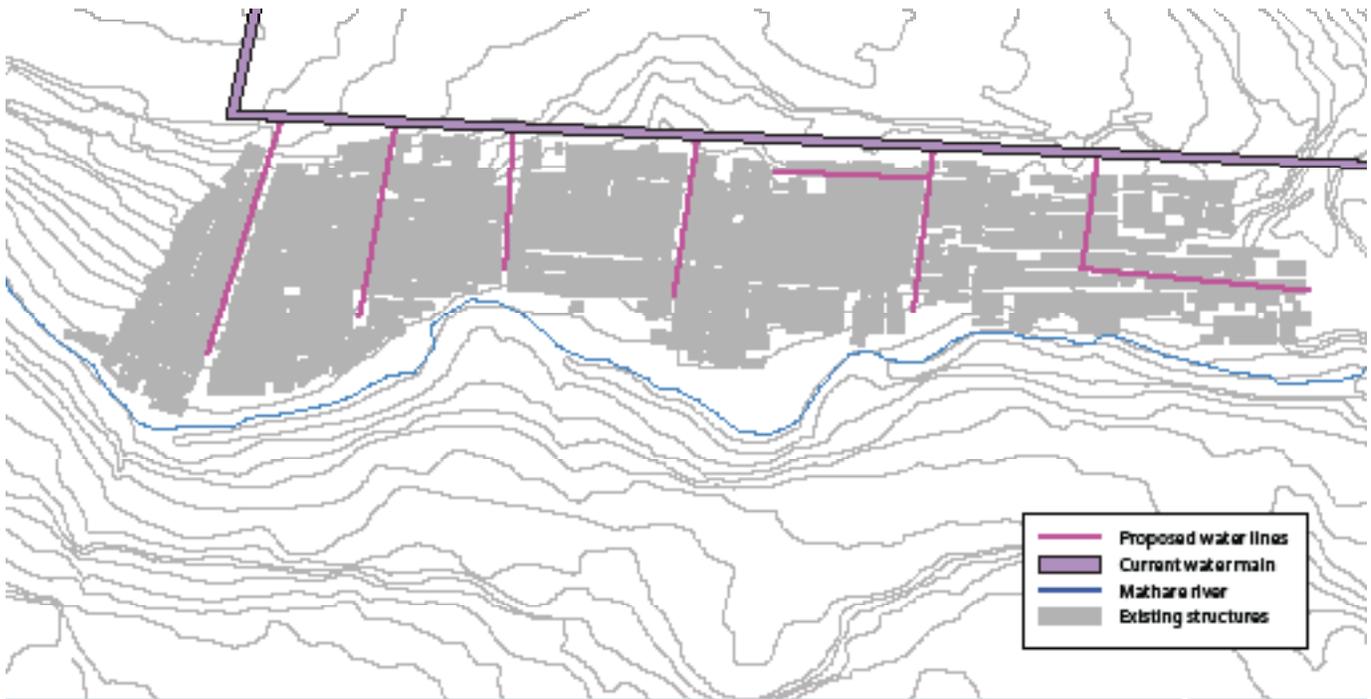
mabatini



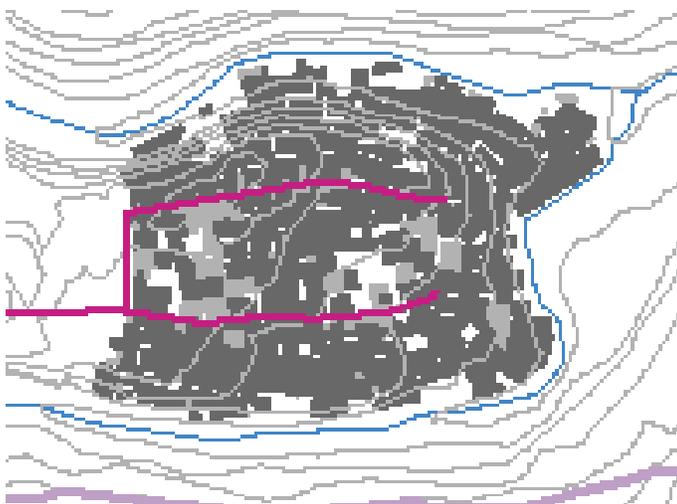
infrastructure: water

Establishing a network of main roads provides space for underground water pipes. Water is currently accessible through both official and illegal water points. However, safety and quality are highly variable, and there is a high incidence of preventable water-borne diseases among residents.

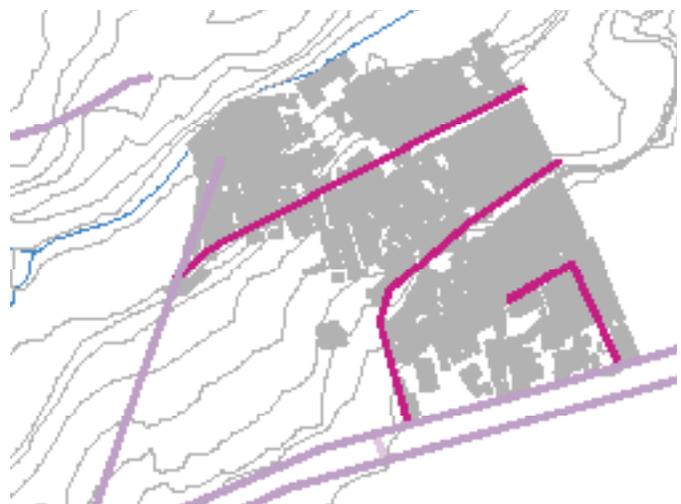
Currently, a water main enters Kosovo from the North and runs the top of the settlement. We have proposed a secondary level of water pipes which follow the main interior roads to facilitate better access for residents. This configuration allows flexibility during the incremental housing upgrade process. Once new clusters of homes are established, they can plug into this water system. A similar scheme is proposed for 4b, Mabatini and Mashimoni, where one trunk line serves a series of feeder pipes into the re-designed settlement.



KOSOVO

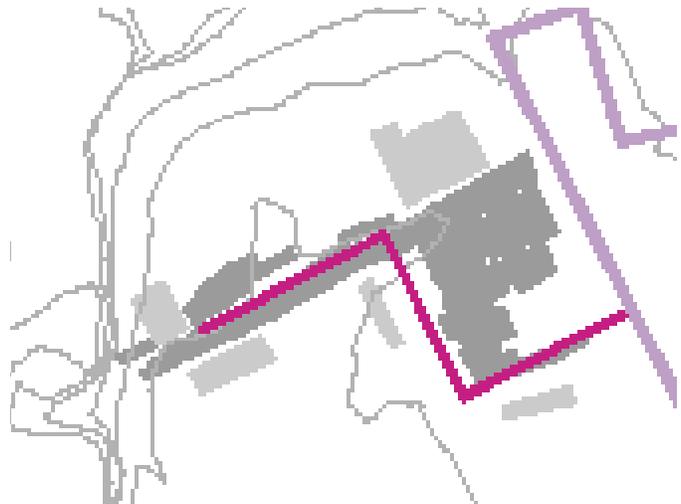


mathare 4b



mashimoni

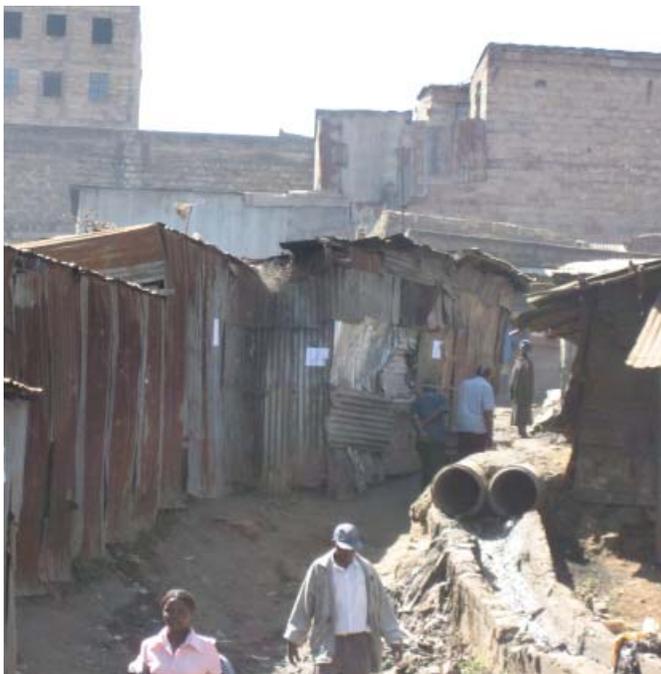
drafts of proposed
water lines for
mathare valley



mabatini

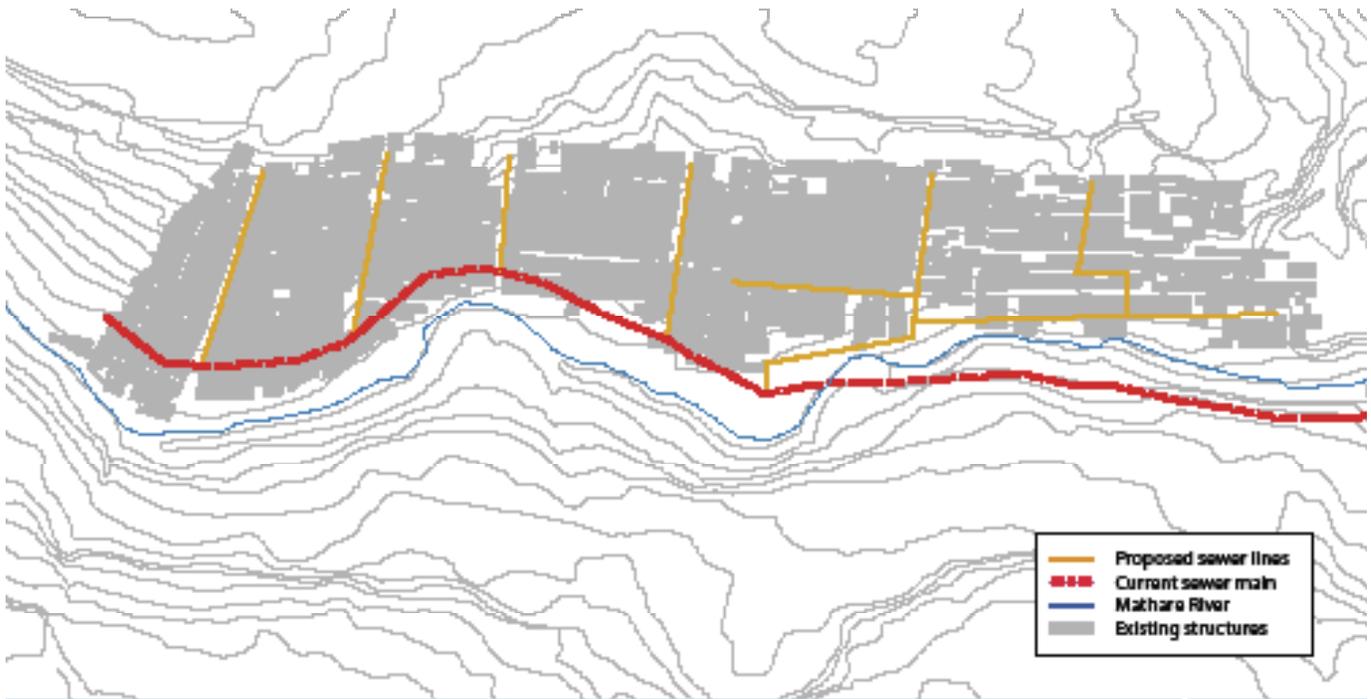


infrastructure: sewers



Planning for new sewerage was one of the more easily agreed-upon goals of this process. New sanitary infrastructure will greatly improve residents' lives, and can help meet the environmental quality objectives of the Nairobi River Cleanup Programme. Yet, improving sanitary infrastructure, where waste is treated off-site, is best done at a scale larger than one settlement or slum, and may require city-wide improvements.

Municipal sewer pipes currently exist in the Mathare Valley but there are no 'legal' connections for slum dwellers. Field observations and conversations with residents confirm that the municipal system is not functioning and is in need of widespread repair. We propose that the NWSC re-construct the existing trunk sewer-lines across the Mathare Valley and provide access points for feeder pipes from each village. We have drafted possible layouts for the feeder-pipes into the municipal sewer trunk line. As with the water system, these pipes are concurrent with the road network and are intended to be flexible, in order to accommodate future connections at the block, or perhaps household, level.



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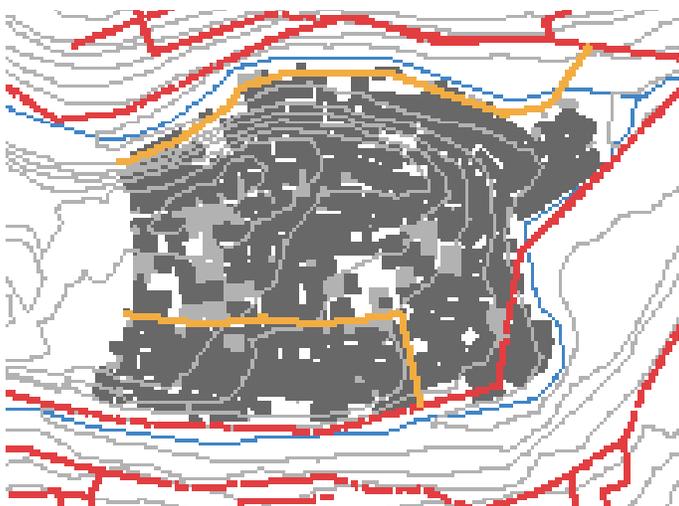
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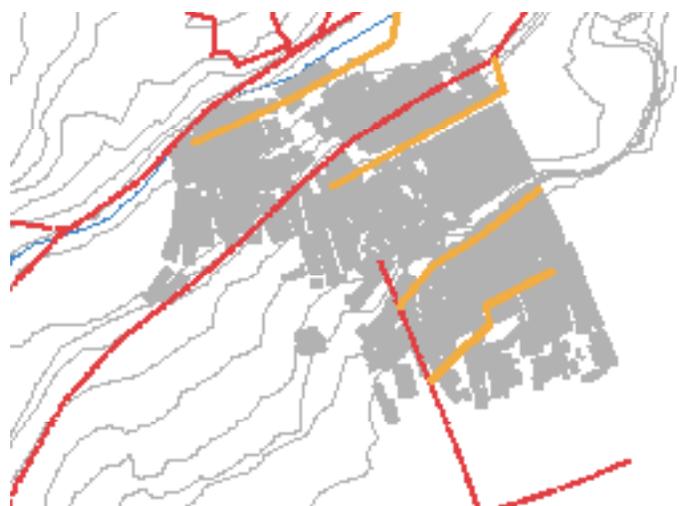
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KOSOVO

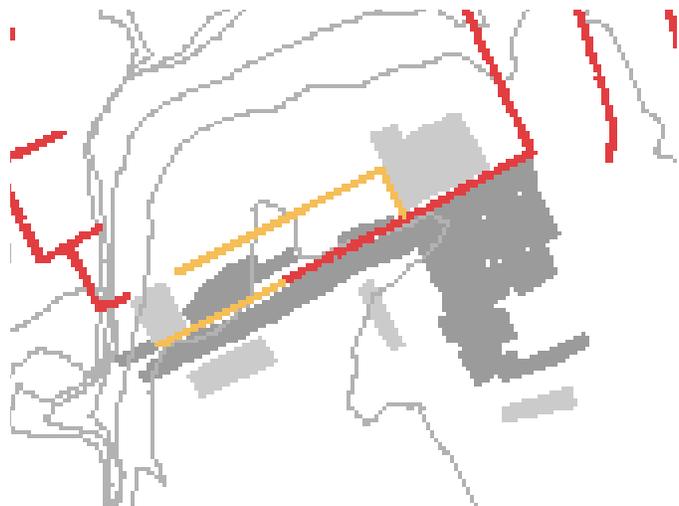


mathare 4b



mashimoni

drafts of proposed sewer lines for mathare valley



mabatini



Housing in Mathare Valley varies greatly: some structures use permanent goods like cement block, while others employ less durable materials such as mud, wood, and metal sheets. Top, an image showing upgraded housing in Huruma, part of a Pamoja Trust organizing effort. Below, an image of housing in Kosovo.



Understandably, some of the first questions slum residents and landlords may ask during the upgrade planning process are: “What will happen to my house after the upgrade?” and “What is in this for me?” In addition to providing shelter, housing represents for many slum residents a source of livelihood and connections to community. We recognize that some residents may be resistant to the immediate changes that upgrading brings, even if they may be better off in the long run.

At the first joint UoN/UCB community meeting in Kosovo we wanted to begin a dialogue around these issues. Since many Kosovo residents live in overcrowded conditions, our principal challenge was to develop plans that provide improved housing while minimizing displacement of residents. **One of our goals was to accommodate 100% of existing residents, and we found that this was only possible if higher-density and multi-story units are introduced.** Our partners at UoN and PT were well-aware that these issues might be especially sensitive in Kosovo, due to its high proportion of renters.

We presented three plans for land use and housing configurations, each with different implications for housing types, density, and tenure. Not surprisingly, these housing plans elicited intense debate around stakeholders’ priorities and the benefits and disadvantages of densification. We understand that these debates may take a considerable amount of time to resolve, and offer plans that allow for multiple configurations of housing types.

moving from “dreams” to reality

planning for residents’ goals and wishes

Introduction

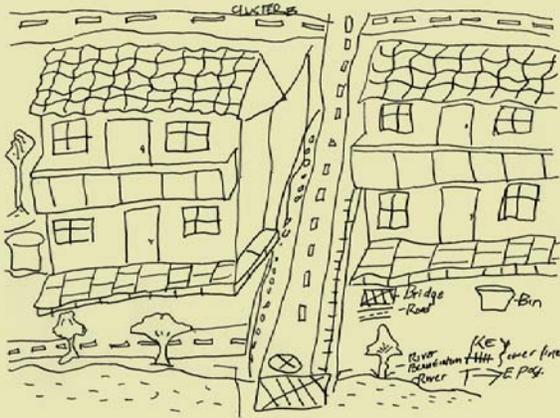
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resident “dream”

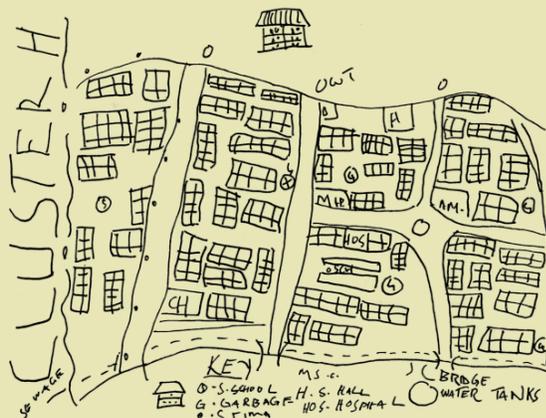


student design

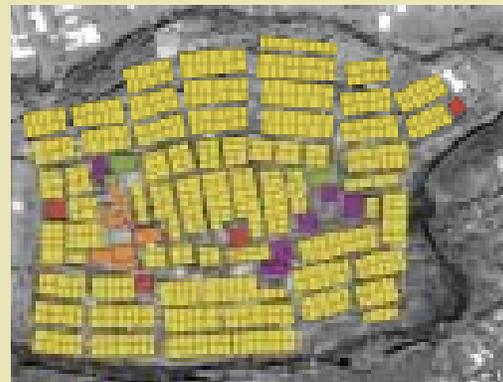
Pamoja Trust, Muungano wa Wanjivivi, and the University of Nairobi are committed to engaging residents throughout the house modeling process. Nairobi team members organized residents and asked them to imagine what they wanted for the future. Interns from the University of Nairobi lead the residents in a visioning exercise, where community members drew pictures of their “dream” neighborhood.

These “dreams” guided and inspired our architectural renderings and provided rich information on residents’ priorities. Not surprisingly, the images show the diversity of residents’ goals. Some images focus on house types, while others zoom out to depict housing integrated with different community spaces, such as soccer fields, churches, and schools. The “dreams” were also valuable in helping us decide how to present our designs. We have tried to create images that residents can easily understand and ‘see themselves’ and their community.

We acknowledge that there are tradeoffs with each housing design - increasing recreational space reduces the amount of land available for housing. Learning about residents’ wishes helped us create a series of plans that present the implications of these tradeoffs, allowing residents to make informed choices about what ought to be included in the upgrade plan.



resident “dream”



student design



housing type

two-story scheme

Two-Story House
(Two Households, 20' x 13')



One housing scenario features two-story structures across the settlement. When the original Kosovo residents were given papers to settle on this site, a government surveyor plotted the site with a road network and a 13-by-20 foot lot for each household. In the subsequent years, these plots have been subdivided into smaller rooms and have been rented out to tenants.

The 2-story housing scheme restores the original layout of plots to Kosovo, but adds second story units so that close to 100% of households can be retained, each with a full 13-by-20 foot unit. Therefore, this arrangement has one household living on top of another. This allows us to accommodate all households currently living in Kosovo, but in upgraded units that are more spacious than the existing homes.

Resident and stakeholder reactions to this plan were mixed, but overall this was the scheme favored by the majority of attendees at the community meeting. People, especially longer-term residents, appreciated that this scheme restores the original layout and character of the community and liked the moderate density. However, the notion of having two stacked levels of units raised a debate over land tenure status and development rights accorded to the different households occupying these units.



housing type

mixed density scheme

Small Starter House
(Single Household, 10' x 13')



Two-Story House
(Two Households, 20' x 13')



High Rise Housing
(Multiple Households, 20' x 13')



Our second layout offers a mixed-density scenario where varied housing types are used. Implementing this scheme would demand a greater departure from the current layout of Kosovo. We introduced the idea of building high-rise structures in order to show residents that introducing higher densities could provide more land for community uses. This plan features high-rise buildings only along the main commercial roads. Two-story houses are used throughout most of the settlement. The houses are arranged in blocks with shared courtyard spaces. This layout provides additional spaces for future community facilities.

While stakeholders responded positively to the available lands freed up for community uses, they had serious doubts about the dramatic increase in density. In particular, they worried that constructing high-rise housing units would present major logistical, financial and land tenure challenges. Others noted that the high-rise housing was similar to the new housing recently constructed in Kibera and would likely act as a model for slum-housing in other areas of Nairobi.



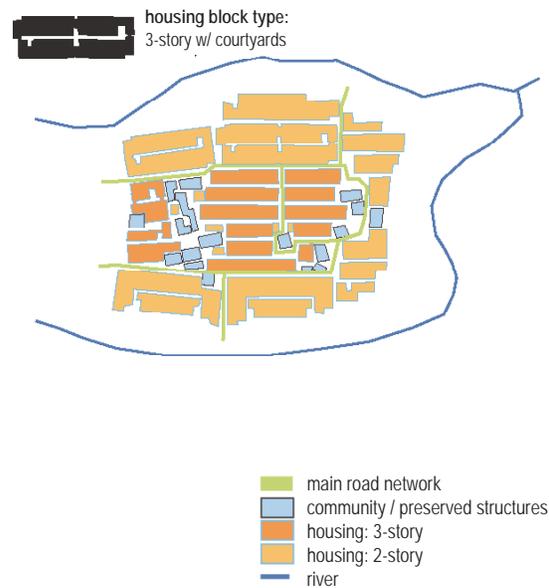
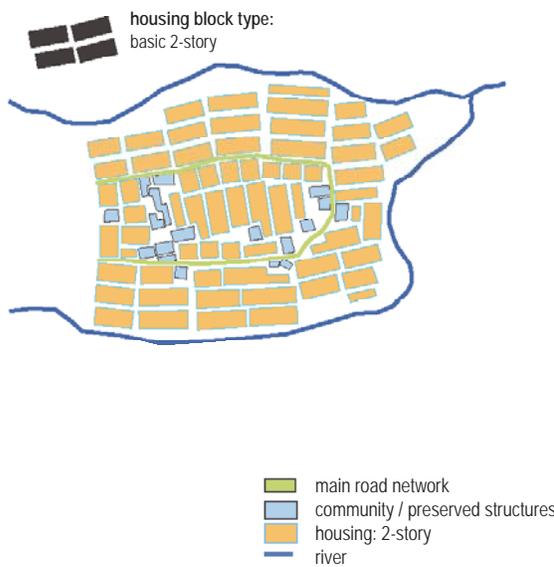
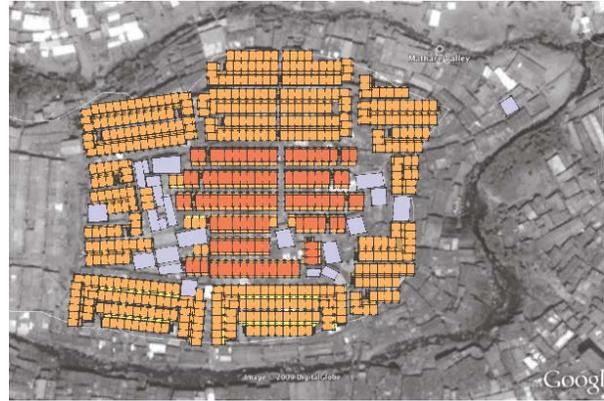
Planning for slum housing is a dynamic and iterative task. We presented a variety of housing options in Kosovo, using plans, drawings, and computer simulations to communicate ideas (such as the 3-d model pictured above). None of these plans are seen as final; rather, they are meant to elicit feedback from residents that will help Pamoja Trust and Muungano va Wanjivivi as they negotiate the upgrade process. On the following pages are a sample of some of the housing plans we developed for three other settlements in Mathare Valley: Mathare 4b, Mashimoni, and Mabatini. Pamoja and Muungano are working in these communities, and expect to initiate slum upgrades in upcoming years.



Low Density 2-story basic blocks



Mixed Density 2-story & 3-story interlocking blocks



Features

- Simple 2-story blocks improve navigability and mimic existing organization.
- Main road network reinforced & open spaces added around community spaces.
- Road network will house central infrastructure lines.

- Housing grouped into enclosed, interlocking blocks that allow small semi-private spaces.
- Main road network reinforced & open spaces added around community spaces.
- Longer blocks improve navigability.
- Road network will house central infrastructure lines.

Public Spaces

- Open spaces added around main commercial areas
- Housing pulled back from the river, freeing space for recreation or access paths

- Semi-private courtyard blocks create communal outdoor spaces for residents.
- Housing pulled back from the riverfront, freeing space for recreation or access paths

Housing Types

- First floor units are 13' x 20'
- Second floor units are 13' x 16' to allow hallways and small private balconies

- First floor units are 13' x 20'
- Second floor units are 13' x 16' to allow hallways and small private balconies

Units

1528 units are preserved, out of approximately 1578 existing units (~97%)

1357 units are preserved, out of approximately 1578 existing units (~87%)

Mashimoni: Low Density

10' x 20' starter homes



housing block type:
basic 2-story



Mashimoni: Mixed Density

starter homes & 6-story



housing block type:
2-story w/courtyard



Features

- Some deviation from grid to reinforce road network & create open space.
- Longer blocks improve navigability.
- Road network will house central infrastructure lines.
- Trades housing density for larger, single-family homes.

- Housing grouped into enclosed, interlocking blocks that allow small semi-private spaces.
- More deviation from grid to reinforce road network, create open space, and introduce semi-private blocks.
- Longer blocks improve navigability.
- Road network will house central infrastructure lines.

Public Spaces

- Main commercial avenue widened and generous open spaces added.
- Housing pulled back from the riverfront, to be used as community spaces.

- Semi-private courtyard blocks create communal outdoor spaces for residents.
- Main commercial avenue widened, and housing pulled back from the riverfront, to be used as community spaces.

Housing Types

- All units are on 10' x 20' "starter plots"
- Owners can add 1-2 stories as they are able.
 - Residents share toilets at either the block or unit level.

- High-rise units (6 story, in 2 areas): 10' by 20'
- Starter homes (single family): 10' by 15'
 - Owners can add 1-2 stories as they are able

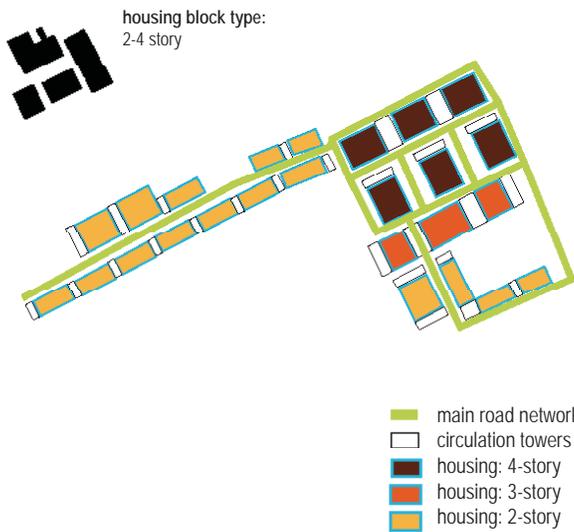
Units

1294 units are preserved, out of approximately 2000 existing units (~65%)

2034 units are preserved (888 high rise units, 1146 starter homes), out of approximately 2000 existing units (~100%)

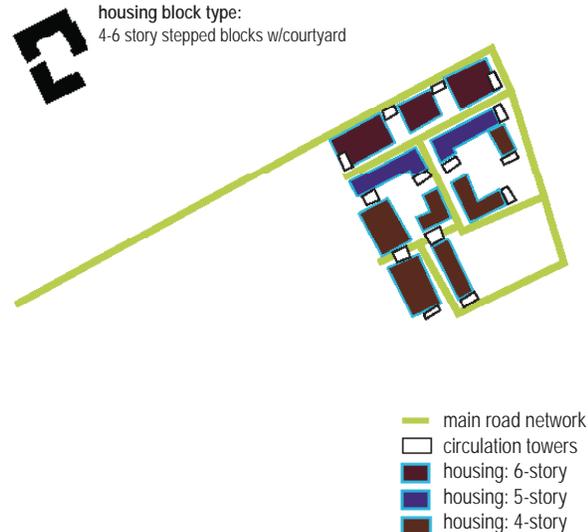
Mabatini: Medium Density

2-story, 3-story, & 4-story



Mabatini: High Density

4-story, 5-story & 6-story



- Medium densification within the core along Mathare North Road; western strip preserved as low 2-story density.
- Housing generally organized along existing grid layout.
- To maximize daylighting, buildings are high rise along north edge, and stepped levels within the center of the settlement.
- Road network will house central infrastructure lines.

- Creates commercial corridors and wider streets within the grid
- Opens up some community space

All units are 10' x 20'

- Two-story units (along main strip)
- Medium-rise units (3 and 4 story, within core)

494 units are preserved (110 2-story, 384 medium-rise), out of approximately 512 existing units (~96%)

- Major densification within the core along Mathare North Road.
- To maximize daylighting, buildings are high rise along north edge, and stepped levels within the center of the settlement.
- No structures are built on the western portion, where land is currently disputed.
- Road network will house central infrastructure lines.

- Generous open spaces added between high-rise buildings.
- Orange blocks indicate circulation cores.
- Ground floor units suitable for commercial uses.

All units are 10' x 20'

- High-rise units (4, 5, & 6 story)

470 units are preserved, out of approximately 512 existing units (~92%)

Introduction

Life in Nairobi's slums

Mathare Valley

Participatory Planning

Integrated Slum Upgrading

Conclusion



conclusion
& next steps

This report has summarized the collaborative slum planning efforts of UC Berkeley, the University of Nairobi and Pamoja Trust. The work reflected here is the result of the first of what we hope to be many years of on-going collaboration to improve the lives and living conditions of slum dwellers in Nairobi. All partners are committed to continue the collaboration and work to ensure that the dreams and designs outlined here are financed and built sooner rather than later. As part of this effort, the team has already begun to write grants together to private foundations, multi-lateral donors and is advocating with and for residents in government. More specifically, we are exploring a project with the Cities Alliance to draft new policies for city-wide slum upgrading in Nairobi, recognizing from our work in Mathare that existing land use, housing and legal policies often ignore the unique circumstances facing slum dwellers.

As the Kenyan Slum Upgrading Plan (KenSUP) and a major World Bank-funded slum upgrading project seem likely to move forward in 2010 and beyond, our work products, collaborations and relationships can offer future projects a firm foundation upon which to build. The harsh reality is that despite our best efforts, there may be political and economic factors beyond our control that shape the lives of Nairobi's slum dwellers. The work described here is one small effort to improve those lives and living conditions.

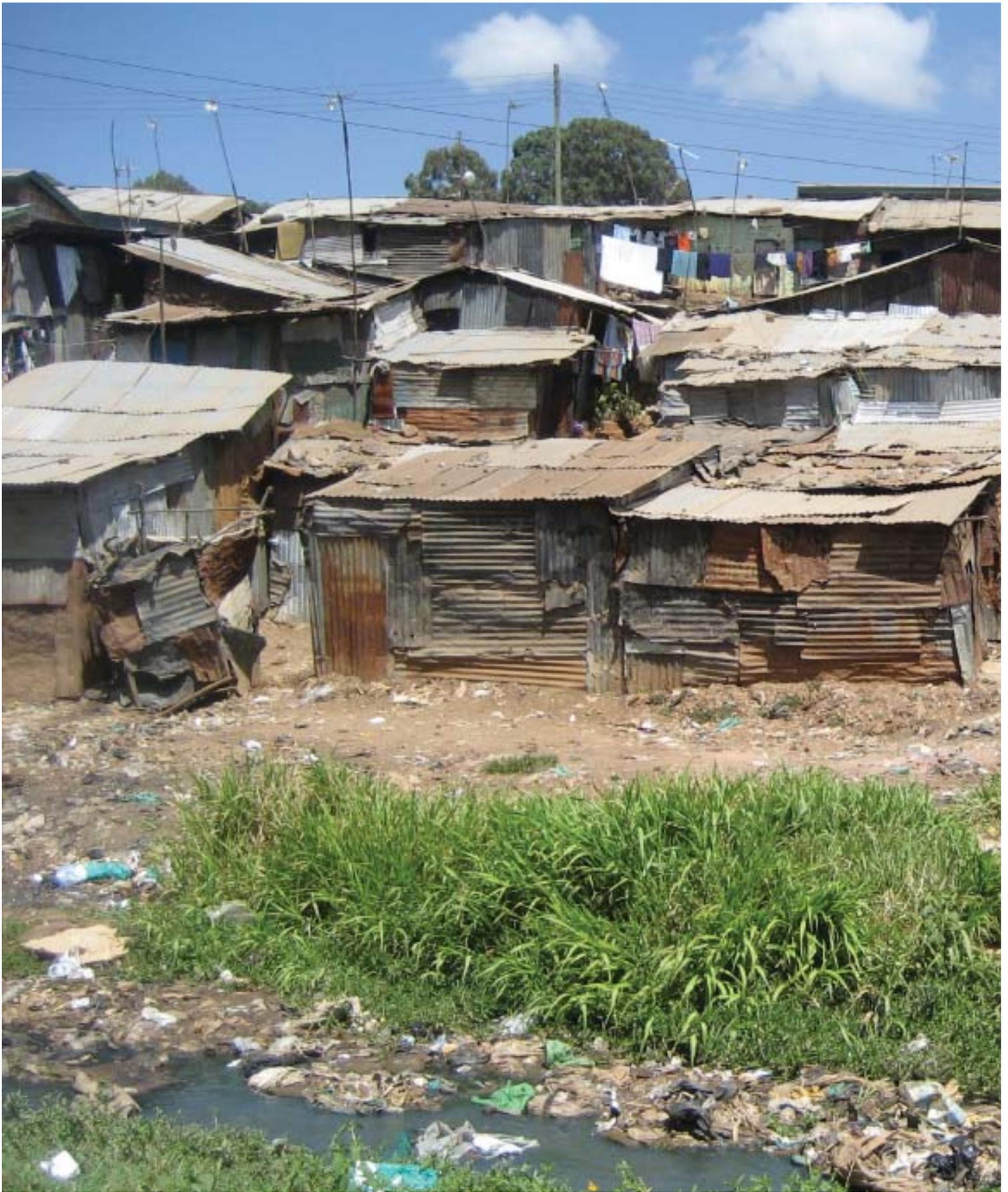
acknowledgments

The Berkeley team would like to extend our warmest gratitude to the dedicated and inspiring people at our partner organizations: Pamoja Trust, Muungano wa Wanjivivi, and the University of Nairobi's Department of Urban & Regional Planning. We also thank the Blum Center for Developing Economies at UC Berkeley for funding this project and Mark Hildebrand, Kara Nelson and Ananya Roy for their input and support. Asante Sana!

pictured below:

two of our student partners from the University of Nairobi, Peter Orimba and Gabriel Agenga, shown with Kosovo residents





UC Berkeley



Department of City & Regional Planning