& Livelihoods and Gender in Sanitation Hygiene Water Services among Urban poor

PRACTICAL ACTION

Maili Saba Research Report
March 2005

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FOREWORD

Kenya's towns and cities have been growing rapidly as a result of both migration from rural areas and the natural expansion of the existing population. By the year 2000 a third of the population (33.4%) was living in the country's towns and cities. Nairobi is home to 2.2 million (in 2000), a figure which is likely to grow to 3.5 million by 2010. This has put a strain on service provision by local governments within the cities. It has also led to the expansion of unplanned/informal settlements, commonly known as slums. The majority of Nairobi's residents (about 60%) live in these informal settlements with very poor infrastructure, especially for water and sanitation. Most of these people live in poverty and atrocious/unsanitary conditions, finding their own means of coping by drinking polluted water and disposing of waste in open spaces within and around the neighbourhood. The health effects are obvious, with high levels of exposure to a range of diseases.

Kenyan slums, and particularly those in Nairobi, are arguably among the worst in Africa. They are among the densest, and most unsanitary and insecure in the world. The average dwelling is a single rented room accommodating between four and six people. Densities in the slums average 250 units per hectare. Urban services, if they are provided at all, are extremely basic, consisting of earth roads and paths, earth drains, communal water points and pit latrines, each shared by 60 people or more. The situation is perpetuated by the illegal status of the settlements. Because the government does not legally recognize them, the City Council has no mandate to supply piped water or sanitation services.

In this environment, women carry a heavy burden in taking care of their families. They usually have the responsibility of providing water for drinking, cooking, and washing, and looking after children and the sick. At times of water shortages, prices can increase by as much as fourfold, and they can spend up to 2 hours queuing to buy water. The only sanitation facilities are landlord-owned pit latrines which are often shared between many families, and which fill up within a short time. Residents often resort to the famous 'flying toilets' (defecating into a plastic bag which is thrown into the street). Women are more affected by these poor conditions than men because of their need for greater privacy, menstrual cycles, and greater time spent within the settlement rather than going out for work. However, gender is rarely considered in policy or planning initiatives for water and sanitation. Gender issues in terms of access to and control over the design and operation of water and sanitation facilities are therefore critical to the ability of these systems to meet the needs of poor residents.

In recent years, the government has been attempting to implement water sector reforms contained in the Water Act 2002. The Water Act was set up to ensure consumer protection, rights protection and greater efficiency of service delivery. A positive step is that the policy framework has included gender concerns in it, along with an enhanced role for communities in planning and operating facilities. The challenge, however, is to translate these into real practices on the ground. The first step must be a solid understanding of the gender and broader livelihood issues affecting access to appropriate sanitation and water services. This is what this study seeks to address.

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• R8034: Secure Water: building sustainable livelihoods for the poor into demand responsive approaches led by the Overseas Development Institute, London, UK. www.securewater.org

To you all, we would like to express our sincere gratitude

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LIST OF ACRONYMS

AGC	Attorney General's Chambers
AMREF	Africa Medical Research Foundation
CBOs	Community Based Organizations
CBS	Central Bureau of Standards
DFID	Department For International Development
ESHWG	Environmental Sanitation and Hygiene Working Group
FAO	Food and Agricultural Organization
GTZ	German Technical Cooperation
ITDG	Intermediate Technology Development Group
JICA	Japan International Cooperation Agency
KUG	Kiambiu Usafi group
MDGs	Millenium Development Goal
MOH	Ministry of Health
MWRMD	Ministry of Water Resources Management
NARC	National Rainbow Coalition
NCC	Nairobi City Council
NISCC	Nairobi Informal Settlement Committee
NGOs	Non Governmental Organizations
NUPP	Nairobi Urban Poverty Partnerships
PHAST	Participatory Hygiene and Sanitation Transformation
PRSP	Poverty Reduction Strategy Paper
SHP	Sanitation and Hygiene Policy
SIDA	Swedish International development agency
SWPs	Small Water Providers
UNDP	United Nations Development Programme
UNICEF	United Nation International Children Fund
WATSAN	Water and Sanitation
WEDC	Water Engineering Development Centre
WFP	Water For People
WHO	World Health Organizations
WRUAs & WSPs	Water Resources Users Associations and Providers
WSD	Water and Sanitation department
WSBs	Water Services Board
WSP – EA	Water and Sanitation Programme (World Bank)
WSRB	Water Services Regulatory Board
WSRC	Water Sector Reform Committee
WSRS	Water Sector Reform Secretariat
WSS	Water Sanitation and Services
WSTF	Water Services Trust Fund

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EXECUTIVE SUMMARY

Context and key questions

Over the past two years, the water sector in Kenya has undergone a myriad of changes linked to the implementation of the Water Act 2002. One of the major changes was the creation of new regulatory bodies which allow for consumer protection, rights protection, greater efficiency of service delivery, financial sustainability and pro-poor policies to protect low income consumers. The role of the government is changing towards being a facilitator more than an implementer, with more responsibility given to communities, local authorities and other service providers.

While the water sector has received a lot of attention especially from the government, coverage of sanitation has lagged behind. For example, the first official Sanitation and Health Policy was created in the year 2000 when the Environmental Sanitation and Hygiene Group was formed encompassing most of the ministries related to sanitation. New policies are still under debate. Sanitation is one of the greatest problems especially in the informal settlements where 60% of the people in the urban centres reside. In fact, 50% of all preventable illnesses in Kenya are water, sanitation and hygiene related.

At a broader level, Kenya's Poverty Reduction Strategy Paper (PRSP) recognizes the links between poverty and a lack of access to water and adequate sanitation. It also highlights the particular role of women in the provision, management and safeguarding of water and sanitation services. This has also fed into policy debates in the water and sanitation sectors.

Overall, therefore, space has opened up in the policy environment for greater community control and a greater recognition of women's particular responsibilities and needs. However, if this is to make a real difference to the lives of poor women and men in informal settlements, we need a better understanding of some basic issues. These include:

• What 'appropriate sanitation' means for poor women and men?
• How sanitation and water provision are linked to livelihoods (the set of 'capabilities, assets and activities required for a means of living')
• How access to sanitation and water varies by gender and across wealth groups within informal settlements, and how different choices in the provision of services might affect their access.

This case study contributes to two broader studies funded by the UK Department for International Development (DFID) under its Knowledge and Research (KaR) programme. These studies address similar questions across rural and urban areas in India, Bangladesh and Sri Lanka for water and/or sanitation.

Research Methodology

A case study using a range of quantitative and qualitative tools was conducted in the Maili Saba informal settlement of Nairobi. This area is home to a combination of owners and tenants (although the land is publicly owned), all with very poor access to water and sanitation services. Studies were also conducted of two community sanitation blocks in two other slums (Kibera and Kianda) to assess the extent to which they could be a solution to meeting the needs of the poor.

Major Findings

• 'Appropriate sanitation' means more than just latrines or toilets. It includes them, but also extends to washing (having a safe, private place and sufficient clean water); cleaning of clothes and keeping homes, latrines and bathrooms clean; and better drainage to avoid dirty water remaining in the streets.
• Water is an integral part of people's understanding of 'appropriate sanitation' because of its importance for washing and cleanliness, and because of the problems of poor drainage.
• Women were particularly concerned about the safety and cleanliness of facilities for themselves and their children. Both women and men prioritized convenience in terms of the distance to the latrine, and time spent queuing to use it.
• Residents in informal settlements are not uniformly poor. We identified three groups: the 'very poor', 'medium poor' and 'better-off poor'. The varying levels and regularity of incomes of these groups affects their access to sanitation and water.
• The 'very poor' are less likely to have access to their own latrine, and may have to take responsibility for cleaning a shared one in return for being allowed to use it. They get more water from the cheapest, poorest quality sources, and the quantity of water they can afford reduces dramatically during times of shortage.
• All residents suffer health problems as a result of the poor drainage and overflowing pit latrines common to Maili

Saba. Water quality can be bad even for those who buy most of their water from piped sources (water kiosks).
• Links between water and livelihoods are clearer because water is an important input to some enterprises (in particular water vendors, construction, brewing, food-selling etc.). Sanitation and livelihoods tend to be linked through the impacts of poor facilities on health and time.
• Community sanitation blocks have proved highly popular and successful. They make a noticeable difference to the local environment, and provide an income for the community groups that run them. They have multiple uses.
• Despite the participatory design process, there are still some ways in which they do not fully meet the needs of users. Women and children use them less than men. This is partly because of some design features, and because women still need pit latrines and bathrooms close to home to use for example after dark.

Recommendations

• In a context where the provision of sanitation and water services has been piecemeal and unsystematic, there is a need for greater co-ordination. Lessons, best practices and resources need to be pooled so that solutions can be taken beyond the scale of demonstrations.
• Any intervention must try to increase, rather than decrease, the options available to people for accessing sanitation and water, which is especially important for women and the very-poor.
• Plans for sanitation and water services need to take into livelihood and gender issues into account. They need to recognize that 'appropriate sanitation' which meets the needs of residents goes beyond toilet facilities. Participatory design will be critical to achieving this broader vision, but is also an iterative process where communities need to learn from each other to continuously improve the available options.
• Land tenure has been a significant stumbling block. Regularizing land ownership, or at least allowing certain types of water and sanitation systems in informal settlements could make improvements possible for hundreds of thousands of people.
• Water vendors are the main suppliers of water to informal settlements. Policies need to work with them, recognizing their role and enabling them to provide a better supply to customers.

NB - * Names in this report have been changed to safeguard the respondents privacy

1.0 INTRODUCTION – AN OVERVIEW

The research on sanitation and hygiene effects on gender and livelihoods in poor urban settlements was an initiative of University of Southampton. It was funded by the DFID KaR programme and coordinated by ODI. The local partner was ITDG –EA which has for many years' spearheaded Environmental Water and Sanitation initiatives in the region with practical community interventions with great success. The aim of this research was to achieve strategic improvements in sanitation amongst the urban poor through promotion of more effective gender-sensitive institutional policies and project practices.

About 35% (11.5 million) of the total population currently live in urban centres highly constraining basic services delivery in Kenya. This has been compounded by the high growth rate of the informal settlements within the urban centres – generally referred to as slums. Nairobi city has had her share of unprecedented urbanization and is currently home to 3 million people. The situation is made more complex by the rapid population growth in the city. Nairobi city alone takes in up to 69.3% of all in migrants' population in Kenya. This implies the city receives an average of 100,000 people per annum. Statistics from the Kenya's Central Bureau of Statistics (CBS) department of ministry of planning and national development show that, net in migration trends in Nairobi between 1979 – 1999 are as follows: 1979 (500,000 people), 1989 (780,000 people) and 1999 (1,265,000 people). Now about half of the city's population is estimated to live in the more than 123 unofficial slums near the city. In Kibera for example, as many as 1,200 people may live on 2.5 acres. The land area of the city covered by informal settlements is just over 5% of the total area used for residential purposes meaning that almost three quarters of the city's population (65%) is living on just 5% of the residential land.

These informal settlements vary in terms of levels of population density, environmental degradation and distance from the city centre. The densest of these are located within the central district and include Kibera, Mukuru and Mathare while others signify remote (peri – urban) facets of development like Maili Saba. Kibera is the largest slum in Kenya and in Africa with about 750,000 population. It's vital to note that in Kenya, these informal settlements are illegal housing structures and dwelling places. The people living there have no title deeds for the land and hence are purely tenants living in government owned land. For this reason, housing structures are poor and not permanent. The people fear of feasible mass evictions by the state. However, the current government has come up with slum upgrading plan to enhance living condition of the slum dwellers.

The larger proportion of Nairobi city population remain very poor, 60% of them living in informal settlements. Congestion in the slums has produced all forms of inhuman conditions in the realms of environment, poverty and health. These problems if not checked can result in grave implications to the residents and the wider community. Local Authorities provide absolutely no services and are hardly seen in the slums - hence the slum residents have little access, if any, to basic services like piped clean water, sewerage systems, solid waste disposal units and sanitation facilities. Majorities have no access to proper. Lack of these amenities in these settlements has led to serious environmental and health hazards including higher incidences of diseases such as typhoid, cholera and tuberculosis, while child mortality rate is highest in urban informal settlements. Majority of people living in Nairobi informal settlements are tenants. Maili Saba slum, which was the focus of this study, falls under these grave conditions in Nairobi. In the absence of regular and reliable sources of income, theft, prostitution, smuggling, illegal brewing and consumption of alcohol and drugs are resultant examples of social decadence in the informal settlements. This has also contributed to the spread of HIV/AIDS infections in the slums in general.

Nairobi city demand for water and sanitation services have been greatly constrained due to equally high growth of satellite informal settlements, which form the Nairobi metropolitan. The current water supply is estimated at 74% of the country's planned urban, through provision of around 330 gazette water sources while 47% of the urban population use pit latrines. In these slums, there has been no provision of water and sanitary facilities because of their illegal nature. There has been some isolated mini – skirt interventions by development agencies and NGOs help easy water and sanitation issues in the slums. However, the technologies that have been developed - e.g. by ITDG – EA has not been taken up by other players to scale up the interventions. Perhaps the volatile land tenure system within the slums challenges the scaling up of the intervention due to potential evictions of the people by the government and/or landlords.

Other than the UN definition of poverty being used in Kenya, the country has come up with three levels of defining poverty for the Kenyan context. The ministry of planning and national development has done this through Welfare Monitoring Systems and participatory Poverty Assessments. The different poverty measures categorized in the Republic of Kenya are:

(i). Food poverty line: the monetary line below which people do not meet their minimum food requirement. This has been set at 2250 calories per day per adult in Kenya – a figure based on FAO/WHO recommendations for food consumption for specific age groups, calculated as the equivalent of Kshs 927 per adult per month in rural areas and Kshs 1,254 in urban areas in 1997. It follows that, those who spend less than these amounts on food are considered to be food poor.

(ii). Absolute Poverty Line: derived by summing the food expenditure level that brought about the required food energy intake (2250 calories) and the non-food expenditure allowance. In 1997, it was estimated at Kshs 1,239 per month per adult person in rural areas and Kshs 2,648 in urban areas.

(iii). Hard core Poverty Line: the line is set at a level where by total expenditure is equivalent to food poverty line. The implication here is that, even if people living at this level of expenditure were to devote their spending

to food, they will still not have enough to eat. In 1997, CBS established this poverty line at Kshs 927 per month per adult person in rural areas and Kshs 1,254 in urban areas. Details of poverty definitions are covered in section 4.2 ahead in this report.

The research was conducted in Nairobi's informal settlements of Mukuru kwa Reuben and Maili Saba in Dandora. Main reason for selecting these two areas was the need to link ongoing projects and other interventions that ITDG has been carrying out in the two slums. However to give the research a wider view and inclusion, ITDG conducted the research on a wider scope, covering several other slum areas in Nairobi. This includes Kianda in Kibera. Kibera is one of the largest slums in Africa. It has been earmarked for settlement upgrading by UNDP and Habitat, and has had a very successful case of sanitation and hygiene intervention by one of the leading NGOs, AMREF. The famed "Flying Toilets Campaign" strongly mitigated sanitation challenges through construction of toilets and sanitation blocks and improvement of drainage systems.

Other settlements included in the research were Kuwinda in Karen C estate, Kamae in Githurai, Soweto in Kayole, Kangemi, Gatina in Kawangware, Mukuru kwa Njenga and Kayaba, Sinai in Doonholm, Redeemed Village in Huruma, and Matopeni Squatter settlement in Njiru. All these slums are representative of life and issues, as you would find in any typical poor settlement in Kenya. In fact they represent the worst situation one would expect among the poor.

The whole research was to fundamentally investigate the gender impact of water sanitation and hygiene services, arising from the fact that provision of these services has been the domain of women. The inclusion of gender was geared towards creating better understanding of gender considerations in these service interventions. Critical questions that needed to be address were:

- Meaning of "appropriate sanitation" for poor women and men in poor urban areas.
- Gender factors determining the access to water sanitation and hygiene services.
- How well does the current delivery of sanitation meet the needs of poor women and men especially those in poor urban areas.
- The linkages between sanitation and livelihoods.

1.1 Outputs expected

Outputs from this research includes:

- Analysis of gender components of current sector policies.
- Desk study to identify key elements of success or failure of projects nominally implemented under gender-sensitive policies.
- Field study of ongoing projects to assess direct and indirect impacts of policies and practices on sanitation and hygiene.
- Action research to test validity and transferability of best practices identified.
- Dissemination of the same using appropriate mechanisms and forums.

All these questions and envisaged outputs influenced the basis and methodology for this research. The necessary reports and findings have been produced and documented. This report is a summary of all the findings. Therefore the research process involved:

- Selection of community assistants and consensus building on the process and interviews checklists.
- Community meetings with representative groups in each settlement.
- Analysis of community level groups who deal with water satiation and hygiene issues e.g. landlords, water vendors, etc.
- Water and sanitation mapping to identify various service providers, sources of water and types of sanitation available.
- Discussions with focus groups nominated by the slum community representatives.
- A questionnaire administered to over 50 households to bring out key issues of interrelationships and livelihood linkages.
- Case studies with individual households.

All these reports and case studies have been produced. This report only highlights on key findings from each of the reports.

2.0 POLICY ON SANITATION AND HYGIENE SERVICES DELIVERY IN KENYA.

The Literature Review Report done by ITDG generally covered all critical areas that relate to sanitation and hygiene provision in the country and Nairobi. But for comprehensive inclusion and to bring to light the current debate in this area, various other sources are important. Key is the Ministry of Health draft policy on National Environmental Sanitation and Hygiene (October 2004). The other is Infrastructure Regulation manual by GTZ among other sources.

2.1 Water Sector Reforms

Water, which is closely related to sanitation, has in the last two years undergone major changes as the government implemented the water sector reforms contained in the Water Act 2002. The reforms have seen establishment of various levels of players and definition of specific roles, which include Policy Formulation, Regulation and Water Services provision.

At the National level, Ministry of Water Resources established a water sector reform committee (WSRC) and a water sector reform secretariat (WSRS) that has been steering the whole sector reform.

On institutional development, there is Water Appeal Board and water services trust fund that works closely with water resources management Authority and water services regulatory board. All these are involved in policy formulation and regulation. The regulation functions involve rules setting, Monitoring and enforcement of rules.

At the regional level, water services boards work closely with catchment areas advisory committees to regulate water usage and utilization.

At the local level, there are Water Resources Users Associations and Providers (WRUAs & WSPs), which include companies and community groups formed to supply water to customers and users.

The setting up of the different levels of regulatory institutions was to allow for:

- Consumer protection against abuse of monopoly power and to allow for transparency of market.
- Rights protection against prices charged so that the user can get value for the quality of services provided.
- Efficiency of service delivery, with minimum cost and market competition.
- Financial sustainability, which allows for cost recovery and adequate return on investments and to avoid over investment.
- Pro-poor policy to protect low-income consumers from non-affordable tariffs. And also to ensure access of services in low income and less profitable areas. In fact the purpose of WSTF was to ensure that there is ploughing back to reduce on costs and expansion of services to wider scopes.

This regulatory process wasn't without challenges, which are reflective of the sanitation and hygiene sector too. GTZ water sector reform paper 2004 highlights some of them:

1. Water Services Regulatory Board mandate to protect the low income and poor consumers. In a country like Kenya the challenge is difficult to handle. Most of the decisions touching on the poor are likely to be politicized and eschewed.
2. The consumers voice in the whole of regulation decision-making process. In many other service provisions its not easy to identify consumers rights, how much information they should get and who should represent them.
3. The next challenge was what to do with small-scale independent service providers who have actively and constructively participated in water and sanitation services provision. Key on this is setting the right relationship, Licenses, franchises or service contracts and how to control prices (tariffs). The other is setting up minimum standards like water quality. A

clear observation has been that SSISPs are expensive in their services.

4. Challenge of credibility and autonomy is still hanging on WSRBs. Key concerns is whether politics will interfere with decision making processes; what incentives should be given to WSBs; how to best share key regulatory responsibilities with WSBs; what areas to prioritize between economic and social concerns; and how to improve governance structures and ensure professionalism.
5. The fifth challenge is the usability and application of regulatory tools to prevent conflicting responsibilities and contradictory processes.
6. Finally the challenge of designing and setting effective pricing policy to achieve financial sustainability, incentives and efficiency, meet social concerns and ensure administrative simplicity.

In spite of these challenges, the WSRB is responsible for the regulation of water and sewerage services in their areas of jurisdiction. They are supposed to develop facilities, prepare business plans, give licenses for water and sewerage services, apply regulation and tariffs control, purchase, acquire, and lease water and sewerage infrastructures. Some of the implementation difficulties must be surmounted, like Kiosk price control and regimes, licensing of SSISPs, meter reading, issuance of bills etc.

All these must consider Kenya's economic position and the number of people requiring water and sewerage services who may not be able to pay. The gender issues and children including livelihood concerns must all be considered.

With the close link between water, sanitation and hygiene, if Kenya is going to meet its MDGs objective by the year 2015 and government's strategy on Poverty Alleviation there should be institutional and social linking of these services, which involves getting policies from paper to the people.

World Bank observes that Private Sector participation in water and sanitation services (WSS) has been facing rough times. It's not as easy as it was thought. Too much emphasis has been placed on setting up state-of-the-art "independent regulatory body" as a necessary first step for reforming a country's WSS sector. The economic regulation becomes even more complicated when primary responsibilities are devolved to the municipal level. It is therefore important to make the whole regulation more inclusive, rather than an indivisible function exercised by one entity.[1]

DFID in its funding and activities of best practice summarizes it as:[2]

- Support water projects and programmes which address poverty
- Support a range of innovative financing mechanisms and institutional frameworks that can bring more funding for water provision and sanitation services.
- Support the integration of hygiene promotion into water and sanitation programmes.
- Improve sustainability of all initiatives focusing on institutional and technical aspects.
- Encourage improvements in the efficiency of water use especially for agriculture.
- Support governments to plan prevention and mitigation of disasters from flooding and drought.

All these reforms must be in conformity with other working principles like the Dublin and the Rio Agenda 21 on water.[3]

The water sector reform should aim at achieving the all-important Millennium targets ie

- To have comprehensive policies and strategies for integrated water resources management in process of implementation by 2005;
- To reduce by half the proportion of people who are unable to reach or to afford, safe drinking water by 2015;
- To reduce the proportion of people not having access to hygienic sanitation facilities by half by the 2015."

2.2 Environmental sanitation and Hygiene

Sanitation coverage has long lagged behind that of water. One of the main policy-related problems is that sanitation did not have a clear institutional home. The legal clauses that governed the sector have been scattered in different government ministries. Some of the laws addressing sanitation issues were:

- Public Health Act (Cap 242) dated 1972 and revised in 1996, which provides legal framework governing environmental sanitation in Kenya
- The Water Act which covers waste water
- Food, Drugs and Chemical Substances Act (Cap 254, food hygiene)
- The Mosquito Control Act which deals with mosquito breeding and
- The Local Government Act (Cap 265) (F. O. Donde, 1997).

At national level, there had been no official Sanitation and Hygiene Policy (SHP) until the year 2000 when an Environmental Sanitation And Hygiene Working Group (ESHWG) was set up. The group comprised Ministry of Health (MoH), Ministry of Local Government (MoLG), Ministry of

Dublin Principles

- Fresh water is a finite and vulnerable resource, essential to sustain life, development and the environment.
- Water development and management should be based on a participation approach, involving users, planners and policy makers at all levels.
- Women play a central part in the provision, management and safeguarding of water.
- Water has n economic value in all its competing uses and should be recognized as an economic good

Rio Agenda 21

- Ensure the integrated management and development of water resources.
- Asses water quality, supply and demand.
- Protect water resource quality and aquatic ecosystems
- Improve water supply and sanitation.
- Ensure sustainable water supply and use for cities.
- Manage water resources for sustainable food production and development.
- Assess the impact of climate change on water resources.

1 Chris Shugart world bank 2004
2 Addressing the water crises, DFID **Doc 2001**
3 ECSC-EEC-EAEC, Brussels 1998

Environment and Natural Resources (MoENR), Ministry of Roads, Public Works and Housing (MoPWH), Ministry of Ministry of Finance and National Planning (MoFP), Ministry of Education and Human Resources (MoEHR) and Attorney Generals Chambers (AGC) (MoH 2000).

Many policies have been emphasizing the health impacts of improving access to sanitation and hygiene services. The current policy draft attempts to put the pieces together.

Sanitation is a basic human right, which all Kenyans should enjoy. The government is committed to creating an enabling environment in which will motivate all Kenyans to improve their hygiene behaviour and sanitation facilities and get the necessary support to achieve this.

Statistically, about 80% of the hospital attendance in Kenya is due to preventable diseases. 50% of these illnesses are water, sanitation and hygiene related. A situational analysis indicates that environmental sanitation coverage in Kenya declined in the decease up to 1990 and saw modest gains thereafter. According to the Rapid Assessment carried out by the MOH and MWRMD, the national sanitation coverage was 49% in 1983. UNICEF analysis on children and women in 1998 put it at 45% in 1990 and 46% in 1996.

Although urban areas generally have a higher coverage than rural, the situation in informal settlements is deplorable. There are very limited facilities available for excreta disposal. In cities and towns where water borne sanitation is prevalent, the sewerage systems are often neglected, frequent blockages, sewer bursts and non functional treatment plants that sometimes discharge raw sewage into water courses. Some people actually use illegally untreated effluents for irrigation.

Over crowding in informal settlements, uncontrolled and indiscriminate garbage disposal has compounded the problem, highly clogging drainages during the rainy season and causing heavy flooring. The garbage becomes breeding grounds for rodents, vermin and other disease carrying vectors.

Human and household waste is washed into rivers and streams carrying with them pollutants, pit latrine waste, and other effluents. These polluted streams are a source of drinking water to down stream users posing serious health risks. It is documented that in 1999, diarrhoea and gastroenteritis diseases contributed more than 6% of all mortality rates, 1% less than HIV/AIDS. Most of these diseases are caused by poor hygiene and unsanitary living conditions.

The proposed Sanitation and Hygiene policy is aimed at involving the public sector in the mobilization of financial resources towards financing of sanitation facilities and services and involvement of the private sector in cost sharing framework. It has been noticed that many households are willing to pay for provision of sanitation and hygiene services. The policy will also ensure that there is adequate campaign and education to the public on hygiene promotion and marketing to stimulate change of behaviour, information sharing, facilitation and monitoring of sanitation improvements, involvement of all stakeholders and implementation of various interventions and activities.

Key awareness areas include; Personal hygiene, household cleanliness, food safety, environmental cleanliness an control of disease causing agents. To achieve this, there will be need to use participatory methodologies, training tools and promotional materials, media campaigns and other relevant interventions.

2 .3 Gender Assessment in the policy framework

The policy framework has made effort in seeking to mainstream gender. The most observable gender divide especially in the developing countries is on sanitation and hygiene where women's situation is rarely looked into. In fact sanitation and hygiene has always been linked with women and children. This is because women are not only regarded as the traditional bearers of health, sanitation and hygiene burdens in their families but also have no space to input in gender concept transformations in relation to these issues. This burden coupled with lack of adequate sanitation facilities and societal pressures emanating from issues like privacy have always subjected women and children to poor health and indignities that they suffer.

In the urban areas of many developing countries many women and girls have been subjected to innumerous security risks and other dangers when attempting to go and defecate in insecure places far from home. But as much as one may regard sanitation and hygiene as women's issues, they impact on both genders and this gives women an automatic involvement in the improvement programmes intended to address the two issues.

It can be said at this point that if women are to be effectively involved in poverty eradication, alleviation of the chores that take up their productive time should have been addressed in the PRSP water and sanitation objectives and strategies. The PRSP pointed to links between poverty and lack of access to water and adequate sanitation,

"Women's needs and opinions will be taken into consideration when devising repayment schedules and outreach mechanisms for credit schemes".

Water, sanitation and hygiene promotion programmes that focus on children are on of the most effective ways to address long-term poverty within communities, for two main reasons: Firstly, children suffer disproportionately from poor water supplies and lack of adequate basic sanitation; most off the ill-health, impaired development and death that is preventable through water and sanitation, is of children. Secondly, children can be important agents for change. UNICEF and Save the Children Fund UK for example, have found that children's views in decision-making can positively benefit project development.

which lead to high disease prevalence resulting in high medical bills, a drain on household finances. But in accordance with the national policies, the sector specific policies have tended to address gender equity with reference to women's roles and representation rather than participation of women along men. While the PRSP highlighted the role of women in provision, management and safeguarding of water, sanitation and hygiene, it points out that special efforts were necessary to facilitate their effective participation in decision-making forum concerned with water resources thus identifying the importance of gender equity in this regard (PRSP, 2001-2004). There should be a means of anchoring them in the process of hygiene promotion, and what is lacking at this stage is the emphasis on participation alongside men. Thus hygiene promotion is portrayed as the responsibility of women entirely (PRSP, 2001-2004).

The National Sanitation Guidelines spell out the policy, institutional framework, strategies, implementation steps and technical options. But it doe not touch on the gender livelihood issues particularly from both the economic and social fronts. It only makes a mention of the social dimension and provision of services to the marginalized communities.

Introduction of affordable and modern technology is also envisaged in the proposed policy. Cost sharing, provision of exhaust services, waste collection, and establishment of private sanitation services outlets throughout the country will be encouraged in order to support household driven improvements of sanitation facilities.

The policy also suggests several institutions and their roles. They include institutions that will play a regulatory role, establishments of partnerships among agencies, and engagement of stakeholders in addressing needs of the marginalized communities. MOH will play the lead role, NGOs, Private sector and Community.

But in recent years, poverty reduction has become a central objective in most development initiatives. This has been accompanied with an associated conceptual shift towards achieving sustainable sanitation and hygiene services based on the principle of sanitation as an economic good. But while the economic factors are almost comprehensively integrated in the existing policies, the social factors underlying the sustainability of WATSAN services need to be addressed more. There is a complex role of gender in sanitation and hygiene services within livelihood strategies that have not been explored. Therefore, for sanitation and hygiene to be termed adequate, it must not only satisfy the environmental, economic and socio-cultural requirements of all users but must also have a gender framework to satisfy these objectives.

One critical observation is that children are not adequately included in the framework.[4]

- It is observed, that due to poor sanitation and lack of safe drinking water, many children living in Nairobi are exposed and made vulnerable. Most get sick and others die before their first birthday or fifth year. Mortality rate is very high in informal settlements. The rate of death from diarrhoea is also worrying. It constitutes more than 4% of all outpatients' children and 60% of admissions in children. Other diseases like TB, typhoid, Intestinal parasites, Meningitis, and other tapeworms are all associated to lack of safe drinking water. Malaria is also

This Woman, like most residents of Maili Saba has to carry water for long distances

prevalent.[5]

- Many children who are in Nairobi schools are categorized dangerous. They do not have adequate toilets. There are 414 children for every toilet compared to recommended level of 25 and 35 for girls and boys respectfully.[6]

- The air pollution and presence of other pollutants contribute over 60% of all cases of respiratory diseases among children in Nairobi.

- There is slow growth in water reform sector and lack of adequate resources to drive the necessary changes. There are too many disjointed forms of legislation and regulations that need correlation and harmonization. Gains from previous initiatives have not been consolidated.

Therefore the need to enhance the Policy is necessary.

2.4 Civil Societies Assessment in the Policy Framework

The table below summarizes different civil societies activities in Kenya in the water and sanitation policy influencing and interventions on the ground.

Civil Society	Key agenda	Programs	Out put
SIDA	1.0 Supported the Water Sector Reforms at policy level.	1.0 The Water Services Trust Fund that Support the financing of the Water to the underserved areas of the country.	1.0 There is an existing mechanism where the poor can access financial support to fund their water and sanitation project.
WSP –EA	1.0 At policy level support the development of the water sector reforms.	1.0 At service delivery level, support the development of the database in collaboration with the central bureau of statistics.	1.0 There is an existing mechanism where the poor can access financial support to fund their water and sanitation project
UNDP-WORLD BANK	2.0 At policy level support the development of the water sector reforms.	2.0 At service delivery level, support the development of the database in collaboration with the central bureau of statistics.	1.0 The new Water Act 2002 is now adopted and is in use, stakeholders have been informed.
GTZ	1.0 Support the water sector reforms, at the policy level. Support the Water Services providers at the service delivery level	1.0 Operationalising of the Water Services Boards and the improvements of Urban Water Utilities 2.0 UWASAM programs that strive to ensure that Utility Companies to accommodate the needs of the poor especially the women in their service delivery plan	1.0 Supported the establishment of Water Utility Companies in the Urban
JICA	1.0 At policy level they have been supporting the government in the development of the National water master plan and recently the water sector reform process.	1.0 Supports financially the grassroots water supply and sanitation project.	1.0 Watsan services available at the community level and the residents' livelihood are improved. 2.0 The women and children are empowered on hygiene matters.

4 Children and their water environment, Save the Children Fund, UK
5 water and environmental sanitation in schools Unicef November 2003
6 Ministry of water resources survey 2003

ACTION AID	1.0 At policy level, they are the active member in current policy debate on WATSAN reforms and access to watsan services by the poor.	1.0 WATSAN activities to the communities thro' CBO's 2.0 Support the research and dissemination of the information to the poor	1.0 Watsan services available at the community level and the residents' livelihood are improved. 2.0 The women and children are empowered on hygiene matters
Maji na ufanisi	Unable to get the information in time	1.0 WATSAN and hygiene activities at the slums of Nairobi	1.0 Watsan services available at the community level and the residents' livelihood are improved. 2.0 The women and children are empowered on hygiene matters
Undugu society	Un able to get the information in time	1.0 WATSAN and hygiene activities at the slums of Nairobi	1.0 Available Watsan and rescue services to the street children
KWAHO	Un able to get the information in time	WATSAN programs in the slums and directly work with the communities.	1.0 The women and children are empowered on hygiene matters
UNICEF	1.0 Supported the WATSAN policy development and in particular the Health policy development.	1.0 Support the grassroots watsan activities thro' the CBOs and more so on children's health.	1.0 Watsan services available at the community level and the residents' livelihoods are improved 2.0 The women and children are empowered on hygiene matters
AMREF	1.0 Involve in initial debates on the need to pro –poor water, sanitation and hygiene policies in Kenya.	1.0 Operate at the community level through members of the CBOs implementing the WATSAN projects and also the leading research organization in WATSAN PROGRAMS in the Region.	1.0 Watsan services available at the community level and the residents' livelihoods are improved 2.0 The women and children are empowered on hygiene matters.

3.0 FIELD RESEARCH METHODOLOGY

3.1 Survey area (slum) Selection Criteria

The process of selecting the research focus areas was preceded by a comprehensive assessment, which adopted a weighted congregate scoring. Factors considered that were considered were;

- Population density
- Legality of the settlement property
- Utilities providing water and sanitation services
- Supply volumes
- Inspections of services
- Accessibility to the services
- Availability of small water providers
- And ownership of the infrastructure

The above criteria indicators identified Quarry, Githurai, Soweto and Maili Saba slums as priority areas. However the decision for Maili Saba was made based on the fact that ITDG had on-going work and had conducted a research on water and the effect of Small Water Providers in the area. The site was also a pilot ground for a learning programme on partnerships under the Nairobi Informal Settlements Committee (NISCC) supported by the Nairobi Urban Poverty Partnerships (NUPP) in 2000 – 2003 implemented by ITDG. The aspect on sanitation would be a natural continuation and a build up of the previous research. The selection notes and findings of the scoring are attached as an appendix 1.

3.2 Sample Size selection:

The sampling method employed was Cluster (area) Random Sampling in Maili Saba. This informal settlement has three villages, Maili Saba, Mwengenye and Shilanga. Each village has well planned space left free for road network for development, which also contributed toward our sampling methodology. The clustering was first done according to the villages then the zones resulting from the road network reserves. Two household surveys with a total of 97 respondents, of both genders were conducted in February 2004. The second survey focused mostly on Mwengenye and Maili Saba villages. The respondents were individual households heads drawn randomly from the zones. The residents helped in selecting the respondents during one of the community meetings. They were given criteria that the households so selected must be representative of the different classes / status of people living in the area. Men were rarely at home during the day, even at weekends. As a result, although a good distribution of households was achieved in terms of socio-economic status, many more women than men were interviewed (84% of respondents were women).

Distribution of respondents between the three villages of Maili Saba

	Mwengenye	Maili Saba	Shilanga	Total
Survey 1	32	10	15	57
Survey 2	19	19	2	40
	51 (53%)	29 (30%)	17 (17%)	97

The selection of this informal settlement for this research was to create linkages with the already continuing project that focuses on safe water provision and support of water vendors as a project of ITDG – EA. Since sanitation and water are not easily divorced, it was ideal to analyse and consider the interrelationships. Interviews were conducted on who they are and where they come from, and how long they lived in the area. They also gave their sources of income and how they meet their hygiene and sanitation needs.

3.3 Questionnaire.

Both questionnaires were designed to bring out various components and information on age, types of households, how people make a living, etc, having been informed by the existing gaps identified in the literature review. The first survey focused more on access to water, and second, on access to sanitation. The questionnaire used in the second survey is attached to this report as an annex 2.

3.4 Household Case Studies across Social – Economic Wealth groups.

These were individual households selected across the three villages in Maili Saba slum during the survey. The focus was on the household heads and the respondents were picked within the three different social – economic wealth groups found in the slums. These were the poorest of the poor, the medium poor and the better off poor. Interviews were conducted the basis of who they are and where they come from, and how long they lived in the area. They also gave their sources of incomes, expenditure patterns, water sources and usage, availability and access of sanitary facilities, coping mechanisms and perceptions of appropriate environmental sanitation and hygiene within the slum. Overall, fifteen case studies were done and a summary of a few across the social – economic wealth ranks are reported in this report in sections 4.7 on case studies.

3.5 Focus Groups:

The participants were randomly selected and interviewed to get their perception and their main concerns on matters of sanitation and hygiene. They were selected both from questionnaire and non-questionnaire responds and both genders

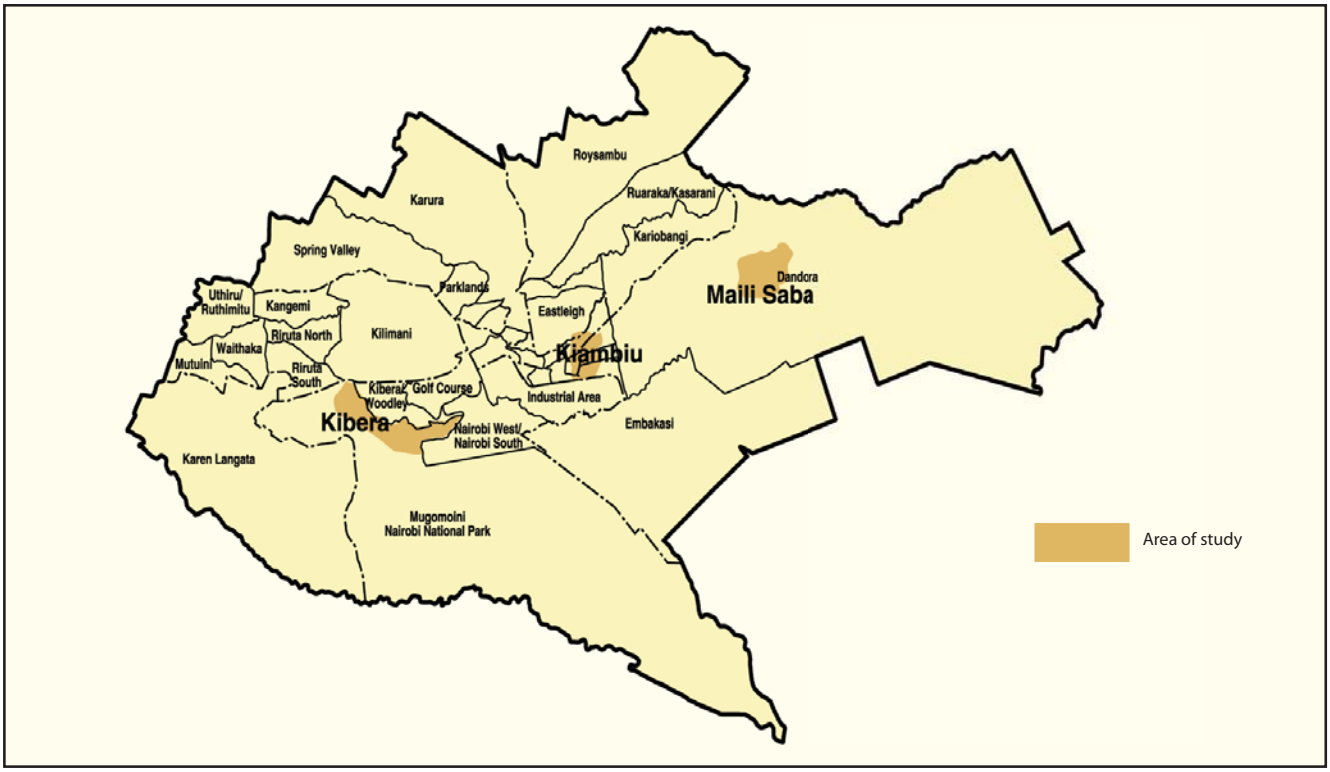
were interviewed. The sampling was considered important for the purpose of establishing the community needs as per their perceptions and their existing wealth groups. Noteworthy was the wider scope achieved by getting groups from the three village locations and comparing their views.

3.6 Sanitation Block Case Studies:

These were selected from three slum locations, Kiambiu, Kibera Kianda and Kibera Laini Saba. The case studies were selected from different civil societies' implementation approaches, mainly ITDG in Kianda, Maji na Ufanisi in Kiambu and AMREF in Laini Saba. The information was collected for a duration of seven days, starting 6 am to 9 pm and tabulations of usage of the ablution blocks for water, showers and toilets analysed along gender and children. A summary of comparative findings is contained in the case studies- sanitation blocks in section 5.16.

4.0 MAILI SABA INFORMAL SETTLEMENT

Map of Nairobi showing the location of the informal settlements



4.1 An Overview of the three Informal Settlements: Maili Saba, Kiambiu and .

The national efforts having failed to address employment crisis in most of Kenyan urban areas accompanied with a corresponding inadequate provision of basic infrastructure, hence most of the urban poor tend to settle in the informal settlements. Within the slums, the urban poor struggle with the odds of life. It is much more difficult for them to secure basic needs such as safe drinking water, sanitation facilities and reliable livelihood opportunities. Population are heterogeneous with people from various ethnic and religious groups across Kenya with many single female-headed families. Most residents are casual workers and generally with unreliable livelihood means of survival.

This report focuses on three of these settlements – Maili Saba, Kiambiu and Kibera. The latter two were covered in order to get community run water and sanitation blocks case studies. The selection of Maili Saba on the other hand, was to create linkages with the already continuing project that focuses on safe water provision and support of water vendors as a project of ITDG – EA. Since sanitation and water are not easily divorced, it was ideal to analyse and consider the interrelationships. Most of this chapter concentrates on the analysis of socio-economic information from Maili Saba.

Kiambiu informal settlement is a small but growing slum situated in the Eastland of Nairobi city between the affluent Buruburu neighbourhood and middle low class Eastleigh estates respectively. It has a population of about 20,000 people. The settlement is fairly concentrated but is accessible with fairly wide earth roads. Like most of the slums of Nairobi, the majority of the residents are tenants who rely on sanitation facilities provided by their landlords. But one unique fact with these latrines is that all of them have specific location a way from the plots due to lack of space for their construction within the plots. This has posed serious security risks to the community members, as they have to travel the distances involved from their houses to the latrines.

Kibera slums on the other hand are among the largest informal settlements in Africa and indeed one of the poorest and most densely populated in Nairobi. Kibera slum is sub divided into nine village neighbourhoods. One village neighbourhood can hold approximately 100,000 people. The conditions of environmental sanitation and hygiene in the area are a clear manifestation of the level of poverty and inhuman situation the people undergo. Underlying these situations has been the fact that the ordinary pit latrines, as scarce as they are, have been poorly maintained giving rise to enormous environmental crisis.

4.2 Official Poverty Definitions in Kenya.

The UN universally defines a poor person as that man or a woman who earns one US dollar a day or less. This is the international poverty line below which all people are considered poor. However, in Kenya, the communities perceive poverty differently. The second report on poverty in Kenya (Dec. 2000) adopted the material well-being approach, which defines poverty as *"those members of the society who are unable to afford minimum basic human needs comprised of food and non-food items"* This definition considers poverty as an inability of an individuals or household to afford basic necessities such as food, clothing, health and education for children. This definition was presented in all districts of Kenya as the primary meaning of poverty. Through Welfare Monitoring Systems and participatory Poverty Assessments, the Kenya Government has supported various poverty measures and indicators to define poverty at the national level. The three official poverty categories in Kenya are outlined below.

4.2.1 Food Poverty Line.

Food poverty line is the line, below which people do not meet their minimum food requirements. This has been set at 2250 calories per day per adult in Kenya – a figure based on FAO/WHO recommendations for food consumption for specific age groups. In Kenyan monetary terms, this has been calculated as the equivalent of Kshs 927 per adult per month in rural areas and Kshs 1,254 in urban areas in 1997. It follows that, those who spend less than these amounts on food are considered to be food poor. However, those spending less than the above figures may not necessarily be termed absolutely poor. This is because they may choose to spend that cash amount on other priorities than food. Statistics show that greater rural population proportion as opposed to urban one is food poor between 1994 and 1997. However, it also shows that urban poverty has risen much faster than rural poverty.

Region	***Population % 1994***	***Population % 1997***
Rural areas	47.2%	50.7%
Urban areas	29.2%	38.3%

Residents wait at a a water vending point

4.2.2 Overall /Absolute Poverty Line.

Absolute poverty line is derived by summing the food expenditure level that brought about the required food energy intake (2250 calories) and the non-food expenditure allowance. In 1997, the CBS has estimated overall poverty line in Kenya at Kshs 1,239 per month per adult person in rural areas and Kshs 2,648 in urban areas.

4.2.3 Hardcore Poverty Line.

Hardcore poverty line is set at a level whereby total expenditure is equivalent to food poverty line. The implication here is that, even if people living at this level of expenditure were to devote their spending to food, they will still not have enough to eat. In 1997, CBS established this poverty line at Kshs 927 per month per adult person in rural areas and Kshs 1,254 in urban areas.

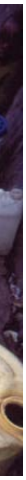
4.2.4 Overview of Key Poverty Indicators in Kenya.

The table below summarises levels of urban, rural and national poverty found using these three poverty lines. While lower proportions of urban than rural residents find themselves unable to buy food (hardcore and food poverty lines), similar proportions of urban and rural residents (around half) find themselves in absolute poverty. They are struggling to access the most basic items essential for survival.

Poverty Lines	**Urban, Rural or National level**	**Poverty line value Kshs**	**Adults Equivalents below poverty line %**
Absolute poverty	Rural Kenya	1,239	52.9
Expense on basic allowance of food and other items	Urban	2,648	49.0
	National		52.3
	Urban, Rural or National level	**Poverty line value in Kshs**	**Adults Equivalents below poverty line %**
Food poverty			
Expense on food.	Rural Kenya	927	50.7
	Urban	1,254	38.3
	National		48.7
	Urban, Rural or National level	**Poverty line value in Kshs**	**Adults Equivalents below poverty line %**
Hardcore poverty			
Total expenditure	Rural Kenya	927	34.8
	Urban	1,254	7.6
	National		33.7

Source: Second popular report version on poverty in Kenya, Dec. 2000 Appendix 1. By Central Bureau of Statistics (CBS) department, Ministry of planning and national development.

This woman gets ready to pay her dues at a water vending point



4.2.5 Qualitative Approach Characteristics of poverty Groups in Kenya

In 1997, a national participatory poverty assessment was carried out. This complements the poverty line data above, providing a more qualitative view of what it means to be poor or very poor. The table below combines perspectives from both rural and urban areas. Beyond income (as reflected in employment and material possessions), important factors were access to services, behaviour and dignity or respect from others, family size, and the ability to send children to school.

The Rich	The poor (Average, majority)	The very poor
Steady jobs or income generating opportunities such as businesses	Casual jobs and small scale businesses	No job security, illicit business such as commercial sex or illicit brewing.
Many material possessions such as big land tracts, livestock, houses, prime commercial plots	Some material possessions: household items such as radio, furniture, cooking utensils, some may have animals, may or may not have land	Usually landless with few household items, no livestock
Easy access to services such as health, schools for children, credit etc	Limited access to services – medical bills paid with difficult, usually through credit. Children go to school (primary level), but with fees problems	Very poor access if any to health educational and related services. No access to credit
Behaviour which reflects arrogance and ostentation	Behaviour is mainly in line with established norms and values	Stressed behaviour associated with begging, stealing, violence, loneliness some laziness, talking to self while walking, others are humble, hard working and religious.
Neatly dressed, healthy	Fairly neat in dress	Very untidy in terms of dress and habitation
Viewed positively as *Mdosi* (rich) in terms of status	Seen as average, normal	Viewed negatively
Have prospects for improving their condition to become richer	Aspire to join the rich by associating with them	Inability to plan their lives – no hope of improving their condition
Have few children (relative to wealth) who continue to higher education	Children drop out of school to seek employment	Large family size leads to many children who become *chokoras* (street children) in urban areas

Source: Second CBS Participatory Poverty Assessment Study – Kenya, March 1997

4.2.6. Social – Economic Wealth Groups in Maili Saba Informal Settlement.

As noted earlier, various people perceive poverty differently. The communities both in urban and rural areas have different indicators that they use to categorize poverty levels amongst themselves. During case study interviews and focus group discussions in Maili Saba, several indicators were highlighted and their respective attributes. Three categories of the poor were identified: the poorest of the poor, the medium poor and the relatively better off poor. Some of the indicators for these categories were; access to water, sanitation, housing type, income generating activities, clothing, and education of children. The table below defines these indicators across the three categories of the poor in Maili Saba slum

Wealth indicators	**Different Social – Economic Wealth Groups**		
	Poorest of the poor	**Medium poor**	**Better off poor**
Water	Unable to get adequate water, quality not assured, can't afford enough	Unable to get enough water, can afford, quality still an issue.	Able to afford all their water needs, quality still questionable.
Sanitation	Few baths to control costs, shares toilets with friends, use shack bathrooms.	Can meet basic needs, some own their sanitation & some share with others.	Able to afford, most have some toilets and bathrooms, some share.
House type	1 – 2 rooms, tiny and dirty, mud walls, iron sheet roof, earthen floor, Mostly rented	Like the poorest but with some plastered walls, some cement floor, some owner-occupiers.	Mainly owner occupiers some block walled, cement floor, clean and iron sheet roofing.
Income Generating Activities	Mainly ballast making, some sell illicit brews and significant casual working	Mainly hawking in items as 2nd hand clothes, shoes, riverside farming,	Small retail shops, sells vegetables, water vendors, landlords.
Incomes	Earns between Kshs 80 – 100 daily, income very much irregular,	Earns less than Kshs 150 a day on average but its also very irregular.	Earns irregularly about Kshs 200. Daily retail business give less than Kshs 2000 (gross)
Clothing	Dirty and smelly, torn clothing, mainly 2nd hand clothes, less often washed	Relatively clean 2nd hand clothes, mostly not torn as those of poorest ones.	Runs small retail shops, vegetable grocers, and labourers in industries.
Family size and Education	Large family size 8- 12 children, most don't go to higher school level and end up being *chokoras*	Relatively less children than the poorest, some have access to school, several drop from school	Have relatively fewer children (1 – 5) who have access to education
Household assets	Some have no bed, own some old chairs & stools, and poor quality cooking utensils, hammers	Some chairs, stools, ballast making tools, tables of better quality than the poorest assets.	Most own plots, houses, radio, sofa sets, animals, relatively good beds, tables, and chairs.

Source: ITDG field survey, 2004

Survey respondents were roughly divided into these three categories: with 23% classified as the poorest of the poor, 56% medium poor, and 21% better off poor. Income, type of employment and expenditure on food were taken as primary indicators. The results were cross-checked and adjusted by looking at house type and family size. These categories will be used in analyzing data on access to sanitation and water. Although the division into the three categories is not exact, together with the individual case studies, it provides a useful means of unpacking the different issues in terms of sanitation and water needs among a widely differentiated community.

4.3 Location of Maili Saba Slum.

Maili Saba informal settlement is situated in Embakasi division of Nairobi, about 10 kilometres east of the city centre off Kangundo road. Maili Saba history dates back from the 1930's when a white settler as a sisal plantation used the land. The early occupants therefore were workers from the sisal farm and from the nearby quarries to the east of the settlement. From the early 1980's up to the early 1990s there was a steady, but slow growth of the population as people moved here from other settlements and the rural areas. The biggest influx came during the second half of the 1990s when 53% of respondents moved to the area. Since 2000, steady growth has continued. By 2004, the settlement had a population of 9,872 persons in 3,368 households and covers an area of about 3.9 square Km. This gives a population density of 2,531 persons per square kilometre (ITDG, 2004).

Maili Saba informal settlement has three villages, Maili Saba, Mwengenye and Shilanga. The majority of people living in these areas are drawn from Kamba and Kikuyu communities as indicated by 45% and 33% respectively. Luhya community is represented by 10% of respondents while the rest are a selective individuals from other communities such as Luo, Kisii and Embu.

4.4 Water supply and other living conditions.

All informal settlements are characterized by lack of adequate physical planning, low socio-economic status, poverty-stricken population, overcrowding, inadequacy of water supply, lack of privacy (shared bathrooms, toilets etc), poor access by vehicles and pedestrians, and poor sanitary and environmental health conditions. The above aspects characterize Maili Saba informal settlement. There is very little supply of water from Nairobi City council. Residents buy from kiosk owners and other mobile water vendors who sell in Jeri cans on bicycles and hand carts.

Two highly polluted rivers Mwengenye and Maili Saba - many a time used as a sewer, traverse Maili Saba informal settlement. The people manually exhaust raw human waste from their shallow pit latrines and dump into the two rivers so as to reuse the toilets. There is generally very poor quality of infrastructure services characterized with no sewerage and drainage services, inadequate water supply, roads or good pathways. Water is supplied through water kiosks with few pit latrines and most houses are corrugated iron sheet roofed, mud walled with earth floors.

4.5 Age group and education levels

Among the household-heads interviewed,[7] 60% were aged between 31-50 years. Those between 18 – 30 years are 32% while beyond 50 years are 8%. Among all the respondents, 60% was educated to primary school level, 27% to secondary level, and 7% had attended post-secondary education. Women were less educated than men – with 70% having no or only primary level education, compared to just 44% of men. The poorest of the poor were also the least educated (14% had received no education, compared to just 4% of the other wealth groups).

4.6 Sources of income

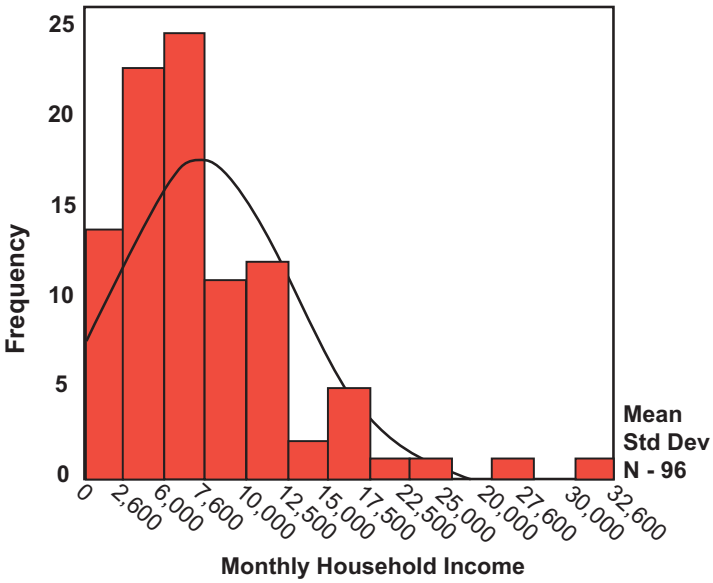
Over three-quarters of the respondents are engaged in small businesses or informal employment as main source of income. Such small businesses include selling vegetables and other foodstuff, basic household goods, carpentry, tailoring, mechanics, bicycle and shoe repair, hawking, ballast making etc. Informal employment involves working as security guards and casual labourers. Approximately 10% are employed in formal sector but in low paying positions. In the slums commerce means a few women selling vegetables and a man selling second-hand clothes. And due to joblessness, sale of illicit brews is rampant, as well as commercial sex work. The table under 4.2.6 showed how these occupations were distributed among the wealth-groups.

Monthly incomes ranged from as little as Ksh 1000, to as much as 32,000 Ksh. However, all incomes were said to be very irregular. The average (mean) monthly household income for all respondents was Ksh 7,137, with 50% earning Ksh 6,000. Residents in Maili Saba village were on average better off than those in the other villages of Mwengenye or Shilanga. After dividing the survey respondents into the three wealth groups (partly on the basis of income, but taking other factors into consideration), we found that average incomes for the poorest of the poor were around Ksh 3,000; for the medium poor around Ksh 6,000, and for the better off poor, around Ksh 12,250.

7 These figures are for the second survey (40 respondents) which only interviewed household heads.

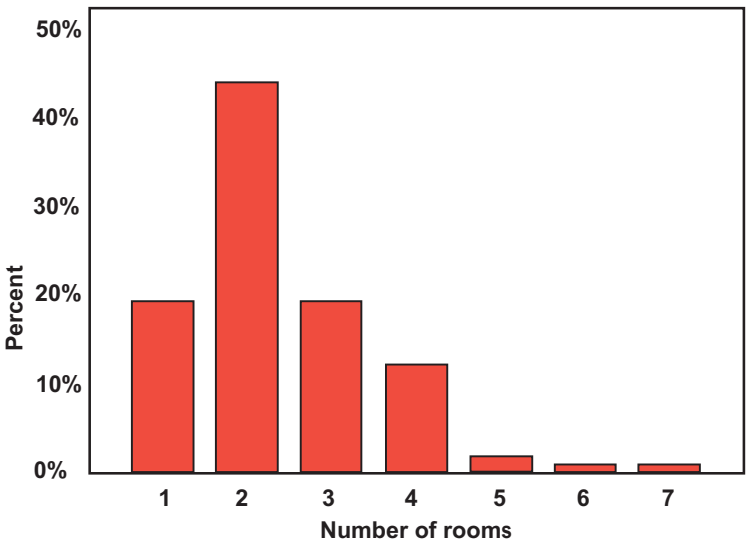
Total monthly household income

4.7 Housing characteristics



Majority (74%) of respondents owns the houses they live in while 26% have rented. All houses are made of iron sheet roofs. However, 64% of respondents made of earth and 35% cemented floor. Nearly half the households (44%) live in two rooms, and 84% live in 1-3 rooms, with the largest houses having as many as 8 rooms. Across the social – economic wealth groups, the poorest of the poor and the medium poor mostly live in houses with either one or two rooms which are normally very tiny and dirty. The houses are generally made of sticks and mud walls (medium poor seldom have plastered mud walls) and earth floors. Some of the medium poor (32%) have cemented floors. The two wealth groups' houses are made of wooden poles (can't afford timber). On the other hand, the better off poor sometimes have block walled houses, mostly (76%) with cement floors and can afford timber and good iron sheet roofing without much difficulty.

Number of rooms in household shelter



The average size of household in this slum is 4.6 people per house, with numbers ranging from 1 to 9 household members. Nearly three quarters (74%) of households consist of between 3 – 6 members. Better off households tend to be smaller (3.9 members on average) compared with medium-poor and poorest-of-the-poor households (4.8 on average).

4.8 Land Ownership

Much of the land on which the slums have been constructed is publicly owned. This means that landlords are not legally obliged to provide any services - which results in no latrines, water, electricity, and solid waste collection. Infrastructure is poor or lacking, poor housing conditions open sewers and unhealthy living conditions. Maili Saba is located on a government owned land. However, the slum has been surveyed and basic infrastructure provision are present though not well developed especially the access roads.

Residents practice urban agriculture. The community members block sewers to obtain water for irrigation. Some keep livestock like pigs.

4.9 Case Studies on Social –Economic Wealth Groups in Maili Saba

Case studies were done in the three villages in Maili Saba informal settlement namely Mwengenye, Maili Saba and Shilanga. The cases were done across the three social – economic wealth groups identified within the villages – the poorest of poor, medium poor and better off poor households respectively. The detailed analysis of each social – economic wealth group is illustrated in sections 4.2.6 in this report. The respondents were the household heads in each case. Random sampling technique for household respondents was used targeting both men and women headed households across the three categories. In this section, only general poverty overview in the settlement is outlined across the social economic wealth groups. The household case study issues on sanitation and water are covered in respective chapters within the report.

4.9.1 Poorest of the poor Households case studies

Most of the poorest of the poor live in very poor housing conditions because they can't afford better ones – mud walls, earth floors, old iron sheet and wood roofing (no timber), dirty and dusty. Their livelihood hinges on unreliable and low incomes. Income sources include casual labour tasks, construction ballast making, and illicit brew sales. Their families can be large, and they find it difficult to pay for their school fees since most schools in the informal settlement are private informal schools. Majority of the poorest don't have their own toilets and bathrooms and usually share with their friendly neighbours after a mutual agreement. Getting water is a challenge and they seldom get it from water vendors on credit and often don't have enough to meet all their basic household needs. For this reason most look dirty and smelly with clothes not often washed. Below are some of the case studies falling under the poorest of the poor social – economic wealth group in Maili Saba slum.

Monicah Njoki* – Mwengenye Village.

Monicah came to resettle in Mwengenye village of Maili Saba informal settlement after being displaced by land clashes in rift valley province that rocked Kenya in the 1990's. She is a widow with five grown up children but unemployed. She is about 70 years old and a guardian of 5 orphans, three of whom are not attending school. She pays school fees for one of them in primary while the youngest is in nursery and education expenses are sponsored by Baptist Children Centre (BCC) within the settlement.

She lives in 2-roomed tiny house, roofed with iron sheets, mud walls and an earthen floor. This is her own house but it doesnt have toilet and bathroom facilities - they share with a neighbour.

Her only source of income is making ballast using a hammer. She makes an average of 6 buckets of ballast a day. A bucket of ballast sells at Kshs. 15 and she seldom sells 20 buckets weekly making Kshs 300 (average Kshs 42 daily). Monicah mainly spends her meagre cash for food, kerosene, water and school fees. She ranked these four expenditure lines starting with priority as water, food, kerosene and then fees.

Anthony Mutisya* – Maili Saba Village.

Mutisya is married with 12 children. Eight of them are adults with families while the other four are in primary school classes 3, 2, 1 and nursery. The four are in an informal school (Imani Baptist Rehabilitation Centre) because there is no school in the village. Mutisya's household has lived at Maili Saba for the last ten years.

His household lives in a dirty two-roomed house with mud walls, an earthen floor and rusting iron sheet roofing. He does not own this house but he is luckily he doesnt pay rent since a close relative allowed him to live there free so that he can take care of it.

There are only two income sources to Mutisya's household – he is a part time shoemaker and makes ballast manually. He gets less than Kshs 100 daily from part time shoe repair. He however manages to sell an average of 20 buckets a day selling at Kshs 10 (Kshs 200 daily though this cash is not always assured). Food, school fees, hospital bills and clothes in that order are the four

key expenditure lines for Mutisya's household. Food is a top priority for strength of ballast making and for young children. Fees rank second to keep the children in school while hospital bills rank third due to lots of water born diseases in his household – typhoid, diarrhoea, and stomach aches.

Patricia Wacera*: Shilanga village.

Patricia is a single mother who arrived in Mali Saba in 1995 from Muranga. She has 6 children and is separated from her husband. She and her children live in a three-room house. Her rent is 1200/= per month. The house also serves as her food kiosk. She has no connection to the rural area where she can get help and because she left her husband, she never gets any help even when she is desperate.

Patricia sells githeri, a dish made of beans and maize. She sells approximately 100 cups per day at Kshs.10 per cup; Kshs.1000 per day. Patricia estimates that she spends Kshs. 7000 per month on rent, food, clothing, water and paraffin. Her children attend the free primary school in Dandora though it is a long walk.

4.9.2 Medium poor Households case studies.

The medium poor earn their livelihoods through mainly hawking household and cloth materials, vegetable businesses and ballast making which also give them irregular meager incomes less than Kshs 100 on average. They can slightly afford basic household needs compared to the poorest group. Some of them have toilet and bathroom facilities and those who don't have share with the better off group. Their family size is less than the poorest and their children can make to school but with some difficulty paying school fees. Some in-depth examples are given below.

Samuel Muchiri* – Shilanga Village.

Samuel is married to Nancy Wanjiru* and they have 5 children. One is in primary school class 8, one in secondary School, two are doing carpentry and computer training respectively while the youngest is not in school.

The family lives in a three-roomed house with an iron sheet roof, mud walls and it's an owner-occupier house on a family plot in shilanga village.

Their income comes from the vegetable business run by wife in the village and the masonry work done by Samuel when available. The family's daily income averages between Kshs 150 – 200 though its not always assured and this come mainly from the vegetable business (note that this is a gross income, hence net profit could be far too less). The wife ranked the family expenditure lines in priority order as food, kerosene (for cooking, fuel and lighting), water and hospital bills. Food is a priority due to the children. Hospital bill ranks least due to wife's effort to boil family drinking water.

Lucy Kanyiva* – Mwengenye village

Lucy Kanyiva is a 22 year old mother of three. She is married and a resident of Mwengenye. The eldest son of the family is in class 4 followed by a girl who is in nursery. The last-born is a baby boy less than a year old.

The family lives in a two roomed house of iron sheet roofs, mud walls and an earthen floor. The family owns the house. The main economic activities Lucy and her husband are engaged in are ballast making and construction work. Lucy sells an average of one lorry load of ballast at KShs.3, 500 while the husband earns KShs. 200 per day from construction work.

The main expenditures within the household are on food, water, school fees and others. Ranking: the family prioritises expenditure on food, water, fees, clothing and other household expenditures. Lucy says the kind of work she and her husband does demands that food is available at all time to replenish the used energies. She adds that food and water are the most basic needs.

Chales Njogu* – Shilanga village

Njogu is married to one wife and they have seven children in all. Two children are in secondary school and the rest are in primary school or home depending on the age.

The house he lives in is made of old iron sheets and wooden boxes. The roof is not fully covered and leaks during the rains and it is a gift from the relative who also assists in educating their children.

The family has neither sanitary facilities nor a water source within their village. They draw water from the river or go to the water vendor kiosk whenever they have some money.

Njogu's household practices subsistence farming along the Maili Saba river, where crops grown are maize and cabbages for sale in the village. His earnings can hardly support the family. His family is hence dependent on relatives for support on most of the things.

Jeniffer Wafula* – Shilanga village

Mama Jeniffer Wafula lives with her husband and her four children; three girls and one boy, in a very small, two roomed mud house. The house is rented from a police officer who does not live in Mali Saba and the plot also contains four similar houses and a nursery school. They pay rent of Kshs 400 a month, which is collected by an agent.

The family moved to Mali Saba from Kitale in 2002. Her husband had previously worked in Nairobi as a security guard, but was shot in the leg while on duty in 1996. His leg had to be amputated. The move to Mali Saba was prompted by her husbands need to travel frequently to Nairobi for the hearings in the court. However, the case remains unresolved to date. They have no connection to or support from Kitale. Neither her nor her husband owns personal land. They have not returned to visit due to the cost of transport.

Jeniffer is currently at home nursing her youngest child who is 3 months old. Before giving birth, Jeniffer washed clothes for households in Komarock earning Kshs.100 a day. Although the husband is handicapped, like many others in Mali Saba, he earns income from crushing ballast, or stone manually.

She says that her income varies, some days she earns 100/=, and others nothing. She estimates that the family spends roughly Ksh. 200 a day. This money though is not available every day. There are days that they have only one meal, or no meal at all. The household also has to pay school fees due to the lack of a public primary school in Mali Saba. The family pays 200/= per child per month. The children only attend school when Jeniffer manages to pay tuition fees.

Her husband's injury had robbed the family of their main income. His leg has not healed well and the wound still produces pus. The household cannot afford the transport costs needed to travel to Kenyatta Hospital. Other health problems and costs have impacted the family very negatively.

In May 2004, a neighbor raped her 5-year-old daughter. The child was taken for treatment to the Nairobi's Women's Hospital. The daughter's physical injuries have healed, but she was to be taken again for HIV/AIDS test. All the children suffer from chronic health problems including diarrhea, typhoid, and malnutrition due to lack of clean safe drinking water.

4.9.3 Better off poor Households case studies.

The better off poor earn money from relatively steady income-generating activities. These include income sources such as small retail shops; water vending kiosks business, vegetable businesses and landlord mainly of informal housing units. Average incomes are higher than the other two groups – about Kshs 200 daily though also irregular and businesses especially small retail shops can bring in more gross income. They have access to toilet and bathrooms and usually share them with more vulnerable poorest and /or medium poor. Their houses are good, spacious, and occasionally block walled. Examples are given below.

James Githae* – Maili Saba Village

Githae is married with a family of two boys and five girls. The eldest daughter is in secondary school while the rest are in primary schools. Githae lives in a three roomed rental house where he pays 1500/= per month rent. The family's only source of income is the retail shop from which they make 2000/= daily sales. The plot in which the family live is of iron sheets roof, mud walls and earth floor.

Mr. Githae's household expenditure is centered on food, water, fuel, rent, school fees, clothes and others. Food is a priority in terms of expenses followed by water and rent in the order. Githae says children cannot understand why there could be no food in the house while the landlord will also not listen to other stories other than getting his monthly dues hence his prioritization of the two.

The village experiences occasional water shortages when the prices go up and they have to travel some good distances to get the water. During such time they get water from neighboring Dandora.

Kamau* –Shilanga village

Mr. Kamau is married and has three children aged 11, 8 and 6 and are in classes 5, 3, and 1 respectively. He is an owner-occupier of a building that has two rooms and a shop at the front. The building is made up of a stonewall, iron sheet roof and plastered floor.

He runs a retail shop within the building and gets an average of 2000/= per day from sales. Kamau estimates a daily expenditure of 300/= per day. Prioritization of the household's expenditure is

food, water, fuel, fees and others. He explains that no one can live without eating. People eat to get energy for other activities. Food is accompanied with water then the rest can follow.

The animals kept by the family are a donkey, goats, chicken and a cow. He says the water he gets is of good quality and that he has never experienced any water borne diseases.

NCC provides water for the households and individuals to do connections including those who sell. But he says not all the residents are able to afford the connections. Kamau observes that the whole of Shilanga village need to have access to more facilities of water and sanitation. Therefore priority should be given to more water points to ease the prices and the distances covered.

Maurine Njenga* – Mwengenye village.

Maurine is a single mother of four. She moved to Maili Saba slums (Mwengenye village) in early 1994 from Dondori in Nakuru district (Rift valley province of Kenya). She owns a 0.125-acre land where her two roomed mud walled house is build. The house also serves as a kiosk to sell water to the villagers and charcoal.

Her average daily sales income is Kshs 120 (from water) and Kshs 50 from charcoal – approximately around Kshs 5,100 per month though not regular. Two of her children are in secondary school, the other two dropped in primary and are engaged in hawking business.

The only available sanitary facility in the compound is one pit latrine (mud walled) and one rusty corrugated iron sheet built bathroom. The toilet gets full quite often and need dislodging regularly. However, the sad thing is that those pits are drugged on impermeable rock to a depth of hardly ten feet deep! Most of the time especially during the rain season, it's common to see raw human waste on the open drains. The water from the bathrooms is discharged into the open and flows in the street.

Maurine is one of the few who does not pay house rent and water bills because she owns the house and is the proprietor of the piped water vending business. However, she has problems of frequently getting inflated water bills from the water utility company, which supplies her with the water.

Martin Ndong'a* – Maili Saba village

Martin Ndong'a lives with his family of two wives and twelve children. He moved to Maili Saba village in 1987 from Nandi (Rift valley province) because by then he used to work with a security firm in Nairobi and he felt that it was vital to have his family with him.

His house is built on a .125 acre of land that was allocated to him by the Government. The house is has five rooms made of a combination of mud walls and roofed with rusted iron sheets. After retirement from the security service, he started ballast-making business in a quarry within the village using hand tools to earn his livelihood. He earns Kshs 200 on average and supplements the family income with the irregular meager earnings from the two wife's food vending trade.

Ndong'a's family of fifteen members share two pit latrines and two bathrooms with other nearby six poor neighbors who don't have the sanitary facility. The sanitation situation in their neighborhood is pathetic. Consequently his family and the neighbors suffer from a variety of sanitary related ailments. During wet seasons, disease prevalence increases to an extent that almost 60% of the family members get sick at one time.

Part of Mwengenye village

5.0 SANITATION AND POVERTY

5.1 Community Perceptions of appropriate Environmental Sanitation and Hygiene.

During the survey, the community respondents were asked to explain in their own words what they understood by the term appropriate environmental sanitation and hygiene in their informal settlements. Generally, most of the feedback to that question outlined sanitary facilities beyond mere toilets and bathrooms. Some of their verbatim quotations are outlined here.

> " *Having pit latrines, bathrooms, places to dump our household waste and drainage systems instead of taking most of the waste to Mwengenye river. Our raw human waste from the few latrines in this village is emptied in that river. That is how I think*." – says Monicah Njoki– Mwengenye village in the settlement.
>
> Anthony Mutisya of Maili Saba village perceives appropriate sanitation and hygiene as comprising of "*access to deep pit latrines, clean water availability, electricity, proper roads for easy mobility and working sewerage and drainage systems. Most houses don't have toilets and bathrooms provided by the landlords. My family shares a toilet with a friendly neighbour for free and baths in the house or in the open*". Since there is no drainage systems in the village, Anthony adds on coping mechanisms, "*Majority of Maili Saba villagers direct most of the raw human waste to Maili Saba river once the few latrines are full - being emptied manually with buckets and drums, flying toilet menace is common scene, urinating and defecating in dark allays is also rampant leading to awful odour which is bad for health of villagers. It smells bad. This trend needs to be reversed to make this place a better place to live*."
>
> Nancy wanjiru of Shilanga village perception is almost similar to the others. She says, "*enough toilet facilities public and private, sewerage systems for liquid waste, quality water supply for all villagers, designated dump sites for solid waste and hospitals is what I think*."

5.2 Sanitation Supply Situation – A Synthesis of Key Issues.

Access to sanitation facilities at the national level is poor in Kenya. Pit latrines remain the predominant sanitary facilities in the country (77.2% are bucket or pit latrines). In urban centres including Nairobi, decent sanitary facilities have not matched the increase in poor urban population. At the same time, government policies do not support the provision of sanitary facilities to the urban poor living in the informal settlements. This is because the settlements are not legally recognized and hence the Nairobi City Council (NCC) has no mandate to provide public sanitary services in Maili Saba slum. The dwellers in Maili Saba have no title deeds for the land they stay on. This land tenure situation effectively challenges any intervention by concerned organizations to improve sanitary facilities due to potential evictions out of the settlement. The government has also realised that it is not feasible or advisable for it to deliver sanitation systems directly, and is moving more towards playing a facilitation role between a range of stakeholders.

In urban informal settlements across the country, the results of this situation are that:

- Existing sewerage systems are overloaded even other waste disposal systems too.
- Environmental pollution is a common site in urban poor communities.
- In Nairobi, only 44% of population has access to formal sewerage systems

The situation in Maili Saba follows the same pattern. The settlement does not have sewerage, drainage, or household waste collection services. There are no public toilets. People dispose of household waste anyhow polluting the settlement environment. There are a few private toilets, which are often shallow (only 5–6 feet deep) since impermeable bedrock is near the surface in this settlement. As a result they fill up quickly.

5.3 Rating of basics services in Maili Saba Informal Settlement.

Respondents were asked to rate the importance of a number of problems facing them, and then rank them in the order in which they felt they should be addressed. Water was rated as very important by all respondents, with the next most important being food and sanitation. In addressing problems to enhance access to these services, water was ranked 1st by 80% of respondents followed by food (63%), sanitary services (55%), health (53%), employment (50%) and education (35%) in that order.

This thick foam appeared in an open wsate water drain in maili Saba depicting the level of pollution in the waste water

This is raw sewer flowing at maili Saba. Most of the white bags are filled with human waste and are what is famously known as 'flying toilets'

Table 1. Level of importance and rating of access to services

	Rankings (%)					Importance (%)	
	1	2	3	4	5	Very important	Important
Water	**80.0**	15.0	2.5	2.5	0	100.	
Food	5.0	**62.5**	17.5	15.0		90	10
Sanitation	2.5	15.0	**55.0**	20.0	7.5	90	10
Health	2.5	20.0	12.5	**52.5**	12.5	47.5	52.5
Employment	15.0	7.5	17.5	10.0	**50**.0	50	50
Education	5.0	2.5	30.0	27.5	**35**.0	65	35

One of the landlord owned latrines

Reasons for ranking water and sanitation in those positions

In explaining their ranking, people felt that water was essential as you could not live without it ('water is life'). A similar explanation was given for ranking food second. But people linked water and sanitation together, saying that 'the two are related, in that one is the cause of the other'. Another person said 'they are at the core of human health'. A reason for ranking sanitation after food, though, was suggested by one person who said 'people cannot stay without food, but sanitation can be shared with neighbours'.

5.4 Ownership and use of various sanitation systems

There are no sewerage lines within Maili Saba, so pit latrines and bathrooms are the main form of sanitary systems available in the area (used by 95% and 100% of respondents respectively). Buckets/pan latrines and public toilets and bathrooms are not available in the area. The problem of defecating in the bush is not widespread like in some slums. Flush toilets are common amongst 5% of respondents who also happen to own septic tanks for sewage. The result reveals that most of the available sanitary are shared amongst users and costs free of charge.

Although in the survey no-one said the 'bush' was used for sanitation, in the focus group discussions it became clear that children commonly go to the toilet in the streets. This is partly because the latrines are dangerous for children to use. The edges of the holes are slippery and they are afraid of falling in. Alcoholic men were said to urinate anywhere they chose, including in front of the primary school. In the mixed focus group, the men said that women also deposit their waste 'anywhere', but tended to be more reserved about it. There is a common practice of defecating into plastic bags in the house, and throwing these out into the streets or onto the heaps of refuse in the settlement (known as 'flying toilets'). Some are thrown into pit latrines. This practice may be more common among women who said they find it embarrassing to be seen to be using the latrines too regularly – and are even less likely to use them if they have to pay. Men also recognised that 'women fear sharing toilets with men' and often only use latrines 'when they have sole access'.

Across the socio-economic categories, it's mainly the poorest of the poor and some medium poor who don't have these facilities and share them with the better off poor who mainly have the facilities. 78% of pit latrines are shared, with an average of 15 persons per toilet. Those who share latrines walk 29 metres on average to the nearest neighbour's toilet. This reflects the costs of constructing a latrine that can be prohibitive. It costs between Kshs 1000 – 1500 per foot to dig down into the bedrock level and only Kshs 200 at the surface soil level. Hardly do you find any VIP latrine. The approximate cost of putting up a pit latrine is Kshs 10,000 while a VIP costs Kshs 50,000. The majority of the poorest and medium poor households cannot raise this cost and hence do not own toilets and bathrooms. In some instances, the poorest and the medium poor team up from several households and build one facility that is accessible to all parties. This is usually for pits latrines.

At the other end of the spectrum, two respondents (5%) have flush toilets connected to septic tanks. These are among the better-off poor. In both these cases, the respondents owned their houses. Sometimes, these kinds of sanitation facilities are built by the well-off people who in turn rent the houses to the better off poor.

In the newer village of Mwengenye, where there is more space, there are more pit latrines per head (each latrine is only shared with 9 people on average). Almost all the respondents from Mwengenye felt that the situation had improved in the last 5 years while only 68% from Maili Saba reported improvements. This is probably because newer residents have gradually managed to construct latrines for themselves, while there is less scope for this in Maili Saba where there is greater pressure on space.

Water for washing hands is not available to majority (73%) of individuals interviewed after using toilets. This means that such a big

proportion of people do not clean their hands after visiting the usually dirty toilet. However a few people get some water access by walking to the nearest water vendor taps, borehole or kiosk to clean their hands. Mostly the poorest and the medium poor don't care about washing hands after visiting the toilets. They have problems in affording household water leave alone washing hands every time they go to the toilets.

For the bathrooms, 15% said they did not use one (in other words they wash in their homes). These respondents were more likely to be among the poorest of the poor. Women in the focus group reported that they often bath after dark in their homes where they felt safer, due to the lack of privacy and fear of rape when using the shared bathrooms. 60% of respondents share a bathroom (with an average of 15 per bathroom), and 25% have their own. For those who share, the distance is 24 metres on average.

5.5 Management of Sanitation Systems

Digging, repairing, and exhausting the pit latrines are primarily the responsibility of men. The pit latrine depth is determined by the water table. Some pit latrines in Shilanga are very shallow while others are sunk up to 30 feet. When the pit latrines are full, members of the community are hired by the owners of the pit latrines to exhaust them. These private exhausters collect and draw the dirt using buckets. The wastes are then disposed of in the settlement - usually by dumping it in the nearby rivers.

Nairobi City Council (NCC) is rarely involved in sanitation in the area. Similarly, formal private sector involvement in sanitation is rare, not easily accessible and too expensive. Currently, the NCC and some larger private contractors occasionally offer latrine exhaustion services. There is suspicion of the contractors as only being interested in making large profits due to the absence of Council services.

Cleaning the latrines is primarily the responsibility of women who are "traditionally associated with water and cleaning." Where toilets and bathrooms are shared, it is not always clear whose responsibility it is to clean the facilities. However, 57% of respondents claim users, mainly tenants or members are supposed to help in keeping cleanliness of toilets and bathrooms. Some landlords have employed caretakers who are responsible for cleaning toilets and bathrooms, but the number is quite insignificant - 5%. Close to 60% of respondents clean their toilets and bathrooms on daily basis.

Residents rarely pay to use toilets or bathrooms, even if they share facilities belonging to neighbours (although some focus group respondents reported paying). However, those who share (usually the poorest and some medium-poor households) are usually expected to compensate the owners in kind by providing free toilet and bathroom cleaning services using a duty rooster. They also help freely by engaging in minor repair work when necessary. They accept that providing these free services is the expected price for guaranteed daily access to facilities they cannot afford to own themselves.

5.6 Problems with sanitation facilities

5.6.1 Latrines

Survey respondents were asked to rate the cleanliness, convenience, and ease of use of latrines and bathrooms by children and disabled people. The ratings were better generally for the bathrooms than the latrines. Cleanliness and convenience were rated as 'average' by the majority of respondents, with the latrines' cleanliness being rated slightly above their convenience. There are clearly problems with the use of the latrines by both children and the disabled, with the majority rating them as 'poor' or 'very poor' for these groups. Children often 'misuse' the toilets, making them unpleasant for the next users and for the person who has to clean them. This misuse is partly because children struggle to use them. This is due to the large size of the hole and its slippery edges. When respondents were asked an open-ended question about any dangers in using the toilets, nearly half (45%) mentioned problems for children. There is a danger that they will slide into the pit, breaking their legs. This is because most toilets have only horizontal wooden planks instead of earth or cement floor.

Women were much more concerned about the cleanliness of the toilets than men, while they were equally concerned about their convenience, and use by children and the disabled. Over half the men interviewed (57%) said that the toilet cleanliness was either 'good' or 'very good' compared to just a third of the women (30%). There were similar responses by gender to the questions about the bathrooms.

Rating of usage of latrines

LATRINES	Cleanliness		Convenience		Use By children		Use by disabled	
	No.	%	No.	%	No.	%	No.	%
Very Good	3	7.5						
Good	11	27.5	8	20	9	22.5	4	10
Average	22	55	27	67.5	7	17.5	1	2.5
Poor	4	10	5	12.5	22	55	24	60
Very poor						5.0	11	27.5
Total	40	100	40	100	40	100	40	100

When asked an open-ended question about problems with the sanitation facilities and their use, the most commonly mentioned (38% of respondents), was the terrible smell. Some related this to problems with maintenance and cleaning. Many tenants neglect this task, so the burden falls on the few who are the most concerned about hygiene. Another cause of bad smells is that latrines fill up quickly and need to be exhausted. This is exacerbated by the shallow bedrock, so pits tend not to be very deep. Apart from that, there is little space to build new latrines. The existing ones overflow when it rains heavily, and diseases such as diarrhea and typhoid are prevalent during the rainy season. It is not easy to find someone to empty the pit, and this is expensive for the owners. They are breeding grounds for flies and mosquitoes.

Three women mentioned in particular that it was risky to use the toilet during the night time, especially if the toilet is some distance away. Women and girls fear being raped. It is also more difficult when it is raining because there is much more mud, and the ground is slippery. A small number (8%) also mentioned the long queues in the mornings to use the latrines.

Approximately 68% of respondents said they were exposed to a variety of dangers while using toilets and bathrooms. As mentioned above, the mostly commonly mentioned danger was to children. Three other concerns were mentioned by between 10% and 15% of respondents. These were:

- Unhygienic toilets, especially if they have been 'misused' which brings the danger of diseases.
- Toilets are more likely to collapse and sink because they are normally shallow (4 – 5 feet deep). This so during rainy season when they overflow owing to raised water table since the area's bedrock is impermeable and near the earth surface.
- Insecurity at night since toilets are far. Accessibility is worse during the rainy season.

When women in a focus group were asked what they would prioritise in sanitation facilities, they listed cleanliness first, followed by privacy and safety.

5.6.2 Bathrooms and other facilities

Survey respondents were asked to rate the cleanliness, and convenience, of bathrooms, and their ease of use by children and disabled people. The majority thought the facilities were 'average' in terms of cleanliness and convenience, but as with the latrines they identified problems in their use for children and disabled people. Again this is related to muddy, slippery floors which can be dangerous for children and those less steady on their feet.

Rating of usage of bathrooms

BATHROOMS	Cleanliness		Convenience		Use By children		Use by disabled	
	No.	%	No.	%	No.	%	No.	%
Very Good	2	5.7						
Good	10	28.6	9	25	15	42.9	14	41.2
Average	23	65.7	24	66.7	7	20	4	11.8
Poor			3	8.3	12	34.3	8	23.5
Very poor					1	2.9	8	23.5
Total	35	100	36	100	35	100	34	100

When asked an open-ended question about problems with the sanitation facilities and their use, some mentioned problems relating to bathrooms and other aspects of appropriate sanitation and hygiene. Concerns about security for women, especially when bathing, were mentioned. A number of women therefore bathe in their homes. A lack of water at certain times of the year puts the prices for water up greatly, and people often have to reduce the amount they use. This means there is less available for bathing, washing clothes and cleaning the house, latrines and bathrooms. At the same time, people mentioned problems with poor drainage – so there is no way of disposing of dirty water. This is often sprinkled on floors to compound and prevent dust, and is used for cleaning the house, bathroom or toilet. Any that remains is poured out onto the street or onto the waste-dumping site. Here it pools and creates breeding grounds for mosquitoes and flies.

It is also difficult to dispose of refuse. It is often burned, but this is difficult during the rainy season when it accumulates and creates an even worse health hazard.

5.7 Individual experiences of sanitation facilities across socio-economic wealth groups

The problems described above are illustrated by some of the individual case studies where residents describe their problems with access to appropriate sanitation.

5.7.1 Poorest of the poor Category Households:

Anthony Mutisya – household head - Maili Saba Village:

Mutisya perceives appropriate sanitation and hygiene as constituting, " access to deep pit latrines, clean water availability, electricity, proper roads for easy mobility and working sewerage systems in Maili Saba." – he says. Most houses don't have sanitary facilities provided by the landlords. Mutisya's family shares a toilet with a friendly neighbor and baths in the house or in the open. "Majority of Maili Saba villagers direct most of the raw human waste to Maili Saba river once the few latrines are full and emptied manually with buckets and drums, flying toilet menace is common scene, urinating and defecating in dark allays is also rampant leading to awful odour which is bad for health of villagers. This trend needs to be reversed to make this place a better place to live."- expounds Mutisya about general coping mechanisms amongst the villagers in Maili Saba slum.

Patricia Wacera household head - Shilanga village

Patricia is a single mother who arrived in Mali Saba in 1995 from Muranga. She has 6 children and is separated from her husband. She and her children live in a three-room house. Her rent is 1200/= per month. The house also serves as her food kiosk. She has no connection to the rural area where she could get help, but because she left her husband, she never gets any help even when she is desperate.

There are no toilets or bathroom connected to her household house. The pit latrine that is often used is made of wood and cannot be washed. No one takes responsibility to clean the bathroom or toilets. She often finds herself cleaning up the bathroom to protect her children. She also stated that the dirty water from the bathroom is poured anywhere.

5.7.2 Medium Poor Category Households:

Jeniffer Wafula – household head - Shilanga village

Mama Jeniffer Wafula lives with her husband and her four children; three girls and one boy, in a very small, two room mud house. The house is rented from a police officer who does not live in Mali Saba and the plot also contains four similar houses and a nursery school. They pay a rent of Kshs 400 a month, which is collected by an agent.

On sanitation, the plot the family lives has a pit latrine, but it is filled as a result of the number of people who use it; the four families and all the nursery school children. They all now use a neighbour's toilet and sometimes the children walk a long distance to use the private school's toilets. The family uses a collapsed house as sanitation facilities for bathing. Jeniffer identified the following as major problems related to sanitation; the neighbours' pit latrine can not be accessed at will, the school sanitation facilities are quite a distance and walking there in the evening is not safe, and there is no drainage to poor dirty water.

Joyce*: household head – Maili Saba village.

Joyce lives with her husband and four children in Mali Saba. She and her family moved to Mali Saba from Ruai because of the cheaper cost of housing in Maili Saba. She and her family live in a two-roomed house. They pay a rent of kshs1000 a month. A businessman who lives in the community owns the property. Both her parents and her husband's brothers and sisters visit. Her mother sends farm produce when there is a surplus. Joyce works as a maid and earns Ksh.150 per day. Her husband is a member of the Jua Kali, working as a carpenter. Joyce estimates that the household's daily expenditure is Kshs 400 a day. The family spends Ksh.150 on food per day and Kshs 120 on water. Three of her children attend the private primary school and the total tuition per month is Ksh. 700.

Joyce's children have suffered from a variety of health problems. In May, three of children contracted malaria. Her children also have chronic health problems, which Joyce related to inadequate water and sanitation. These problems included amoebas, typhoid, and skin rashes. Joyce estimated that the cost of each typhoid test was Ksh100 and urine test was Ksh 50. She stated that the family often did not go get treatment because of the lack of money and therefore the illnesses worsened. Joyce and her family share a pit latrine and bathroom with customers from a hotel, which is owned by the owner of the plot. She is responsible for cleaning the latrine because she is the only woman, but rarely uses the facility. She stressed the difficulty in keeping the pit latrine clean and stated that she didn't use the facility because of safety and privacy concerns.

5.7.3 Better Off Poor Category Households:

Monicah Njenga – household head - Mwengenye village.

Monicah is a single mother of four children. She moved to Maili Saba slums (Mwengenye village) in early 1994 from Dondori in Nakuru district (Rift

valley province of Kenya). She owns a 0.125-acre land where her two roomed mud walled house is build. The house also serves as a kiosk to sell water to the villagers and charcoal. The only available sanitary facility in the compound is one pit latrine (mud walled) and one rusty corrugated iron sheet built bathroom. The toilet gets full quite often and need dislodging regularly. However, the sad thing is that those pits are drugged on impermeable rock to a depth of hardly ten feet deep! Most of the time especially during the rain season, it's common to see raw human waste on the open drains. The water from the bathrooms is discharged is discharged into the open and flows in the street.

James Githae – household head - Maili Saba Village.

Githae is married with a family of two boys and five girls. The eldest daughter is in secondary school while the rest are in primary schools. Githae lives in a three-roomed rental house, which he pays 1500/= per month rent and runs retail shop. The plot in which the family live is of iron sheets roof, improved mud walls and earth floor.

Mr. Githae says he envisages clean VIP latrines with clean bathrooms that are accessible by the whole village at all time to be what improved sanitation entails. The landlords and individual households who live in their own plots should provide these facilities. In the plot, there are ten different households who share only one toilet and an open space as bathroom. Given scarcity of sanitary facilities in the village, James says, "the short tem survival tactic is to promote sharing among the residents especially in the case of latrines and bathrooms".

5.7.4 An Overview of Sanitation Issues across socio-economic wealth groups.

Maili Saba Informal Settlement Community

Sanitation Aspects	Poorest of the poor	Medium poor	Better off poor
Toilets/bathroom ownership	Usually don't have the facilities.	A few have the facilities	Majority own both latrines and bathrooms.
Types of toilets available	N/A	Mainly shallow pit latrines 4 – 5 feet deep	Majority have pit latrines, few VIP latrines
Toilet /bathroom sharing issues	Most shares with those who have. Pay in kind by free service of cleaning and repair	Some share with others like the poorest group. Also pay in kind.	Open their facilities to the other two groups on condition of paying in kind or free
Gender issues of access to facilities	Inaccessible to women and children at night due to longer walking distance in the dark – fear attack & rape. Men access all the time. Children don't use the toilets for fear of falling under.	Inaccessible to women and children at night due to longer walking distance in the dark – fear attack & rape. Men access all the time. Children don't use the toilets for fear of falling under.	Access is enhanced to all women & men since most have the facilities nearby within their households.
Women and menstruation periods	Most use old clothes as sanitary towels wrap used ones in a plastic paper and throw them at near by pit latrines, open compound or in the rivers. They can't afford the sanitary towels which cost Kshs 60 per packet or cotton wool selling at Kshs 40	Same as the poorest group. But some can afford cotton wools, which they substitute for sanitary towels. After use, they wrap in plastic paper and dump in pit latrines or river.	Use a combination of both sanitary towels and cotton wool during menstruation times. The used material is dumped in pit latrines
Constraints in accessing sanitary facilities	Walking longer distance to the facilities, not easy to get willing friends to share facility with them. Women fear walking to the facilities at night. Children urinate /defecate anywhere for fear of falling in the pit – floor usually not user friendly.	Same as the poorest group	Here most pit and some VIP latrines are nearby and relatively user friendly and access is not usually constrained.
Coping mechanisms for inadequate sanitary facilities	Flying toilets, sharing toilets and bathrooms, bathing in the houses by women and children, team work to make a common pit latrine, urinating and defecating on open grounds or in alleys at night polluting the environment. Most of the menstruating women take half bath or skip daily.	Same as the poorest but with less intensity. Latrines fill quickly and are manually emptied, with the contents dumped into the rivers.	Sharing toilets with the poorest and medium poor who lack the facilities, letting them pay in kind instead of cash. Most women can bath daily during their menstruation periods for cleanliness

5.8 Sanitation services in the last five years

Respondents were asked to rate the sanitation conditions in the settlement over the past five years. The results broken down by village are shown below. Overall, 57% rated conditions as 'poor' or 'very poor', but almost all of those were in Maili Saba. Respondents from Mwengenye were much more likely to rate conditions as 'average' or 'good'.

Rating of sanitation conditions over the past five years

	Mwengenye		Maili Saba		Total	
Very poor	0	0%	3	16%	3	8%
Poor	3	17%	**15**	**79%**	18	49%
Average	**13**	**72%**	1	5%	14	38%
Good	2	11%	0	0%	2	5%
Total	18		19		37	

The following reasons were given as to why the services are considered average or good:

- At least there are pit latrines though not everyone has access. There are also more bathrooms. These are mainly owned privately especially by the better off poor and some landlords.
- People are now aware of the importance of sanitation. People are putting up sanitation structures as they realize the value sanitation facilities especially toilets and bathrooms.
- People used to go to the bush but now they know the importance of latrines and try to have theirs. Generally the environment is relatively cleaner now.
- Public awareness campaigns have meant people take sanitation issues more seriously - e.g. ITDG – EA trained the people in PHAST.

Those who rated the sanitary conditions as poor cited the overall lack of latrines, and the over-use of those that exist. They also mentioned many of the problems discussed above such as shallow pit latrines that overflow, flying toilets still being in common use, and the lack of designated waste dumping sites, sewerage or drainage systems.

5.9 Sanitation projects and awareness-raising campaigns

In Maili Saba, 42% of respondents said they were aware of and/or had participated in a number of projects undertaken in the area. These campaigns do not seem to have extended to Mwengenye, where only one respondent was aware of any public sanitation projects in the area. Activities have included hygiene promotions by ITDG, clean up campaigns by MYSA, Participatory Hygiene and Sanitation Transformation (PHAST) project supported by Water for People (WFP) Canada and value based water and sanitation project of UN HABITAT water for African Cities. Participation has been through involvement in community water and sanitation training workshops, seminars and clean up campaigns. The lower rating for sanitation conditions in Maili Saba may be due both to the relative lack of facilities there, but also due to residents' raised awareness about the problems this causes as a result of the campaigns.

5.10 Suggestions to improve sanitation and hygiene

In suggesting the way forward, over half the respondents (21 out of 40) were hoping that the NCC alone should be persuaded to step in and solve the problem. They want the NCC to 'provide sanitation services' by connecting each house to a sewer. They are looking to the new NARC government to streamline the sanitation department at the NCC, and believe this should make it possible. Linked to this, 15% of respondents said they would not be willing to invest in public sanitation services because it should be the work of the government or NCC.

Given the abject failure of the government to deliver services, the legal problems with providing services where people have illegal tenure, and its policy move towards facilitation rather than direct delivery, it is clearly an unrealistic dream for every house in Maili Saba to be connected to piped water and the city sewer. However, these responses reveal the common and persistent expectation that the government *should* provide these services. This is how they interpret government pledges to provide the people with basic services. They think the NCC simply ignores the needs of people living in slums. Despite these aspirations, however, people are realistic and fear that even if the government did deliver piped water and sewer connections, these services would be unaffordable to most residents.

On the other hand, nearly two-thirds (63%) of respondents were willing to invest their own resources towards public/community sanitation improvements. They could see benefits for themselves and the community as a result of providing facilities for those who currently do not have their own. For the poorest, they would now have easier access to sanitation facilities, and for the medium-poor and better-off, the pressure on their own facilities would be eased. They also recognise that community involvement will mean the services are properly operated and maintained. This links to a third of respondents who saw the way forward as a combination of community and government efforts. There was disagreement over which partner should take the lead. Some felt the community role should be to lobby the council which would then take the lead. Others thought the council should assist in community-driven initiatives such as contributing to 'public' (community) sanitation projects such as digging trenches and having regular 'clean-ups' of the waste in the streets. Some residents envisaged a role for NGOs and other organizations in these partnerships. This would include financial contributions, and assisting in implementing projects.

A far smaller number (5 respondents: 12.5%) suggested a more community-driven approach. These included 'making the community responsible' and 'raising awareness'. Another participant felt the 'community should be involved of sanitation projects. Organisations should address sanitation problems regardless of the government's contribution'.

Whatever projects were started, it was felt that these should serve as a source of income, improve hygiene in the area, and improve aesthetics. All projects should serve a broad sector of the community, and not just be owned and managed by a few individuals.

Practical suggestions for the way forward included initiatives to improve community awareness and cleanliness, and to try to persuade private companies who are paid to empty latrines to use more hygienic methods, better equipment, and not dump the waste in the rivers. The problem is that better quality services tend to be hard to access and expensive. The men's focus group in Mwengenye suggested that public / community toilet blocks would be the best solution, although there might be difficulty in finding space to locate them (given the density of building). Similarly in Shilanga, public toilet blocks were thought to be the best solution. The group of men and women thought showers would not be necessary, so long as there were segregated places where people could wash.

5.11 Conclusion

Hygiene and sanitation are clearly a huge problem in Maili Saba, with health implications that few residents (even the better-off) are able to escape. Urination in the streets by men, and young children defecating and urinating in the streets, is combined with 'flying toilets'. When pit latrines are exhausted the waste is dumped openly and in the rivers. This makes all residents vulnerable to a heavy health burden. However, there are some differences in impacts for different sections of the community. The lack of, and poor quality of, pit latrines clearly impacts most on the poorest. Women are also particularly disadvantaged. They carry the responsibility of cleaning shared toilets, and are fearful of going to latrines some distance away after dark. Many do not use shared bathrooms at all because of the lack of privacy. There are seasonal variations too, with pollution and disease being much more widespread during the rainy season. Water shortages at certain times also affect sanitation because of difficulties in accessing enough water for cleaning and washing.

Clear links between appropriate sanitation and access to water also emerge. For example, when pit latrines are emptied, the waste is dumped in the rivers which are a source of water for some uses. Problems with poor drainage of rain and waste water are also part of what people understand as poor sanitation. And as explained above, sanitation suffers badly at times of water shortages. In all of these aspects, the poorest suffer most because they may rely more on (free) river water for a greater range of uses, or find it hardest to afford clean water when prices go up during times of shortage.

5.12 Sanitation Block Case Studies

One of the solutions suggested by residents in Maili Saba was the construction of community sanitation blocks. These have been constructed by NGOs and are in use in various parts of Nairobi. The impact and effectiveness of two of these blocks was studied to try to understand the extent to which they meet the sanitation needs of residents, and address some of the problems described above.

The first block is in Kianda, in upper Kibera. It was constructed under the UNEP Nairobi River Basin Project, by ITDG-EA. The second is in Kiambiu, outside Kibera in the Eastland area of Nairobi. This block was constructed by the Kenyan NGO Maji na Ufanisi (Water and Development). The use of each block was recorded over a 7-day period, and users were interviewed as they came to use the facilities. Each block consists of toilets and showers in separate areas for men and women. They also both include a water-vending kiosk. The charging systems differ slightly between the two blocks, which results in some differences in the patterns of use.

5.12.1 Kibera Kianda

Introduction

Like any other part of Kibera, Kianda is congested with a population of about 71,000 in an area of less than 3 sq. kms. This is a serious congestion and the so-called landlords often do not construct toilets and bathrooms. There were about 85 toilets and 50 bathrooms that served the whole area of which only 60% were functional (an approx. ratio of 1 toilet to 400 people). The estimated population of about 23,000 live in deplorable environmental and health conditions, among congested, unplanned building structures linked by very narrow pathways.

The block was designed through a participatory process. A lengthy negotiation was required before the land was released by the landowners who had previously sited their own latrines there. The block itself was built by local contractors. The participatory process has meant that there is a good sense of ownership of the block by the community. So far it has been well looked after and maintained by a community committee.

To assess and analyse the impact of the project on the livelihoods of the community an in-depth evaluation exercise was undertaken in the block B for one whole week from which key findings were made. They include: environmental impacts, socio-economic impacts and the general impacts on the livelihoods of the residents. Four focus groups were also held with 6-8 participants. The groups were divided as follows:

- Subscribers: mixed group of men and women
- Subscribers: women only
- Non-subscribers: women only
- Non-subscribers: men only.

Top: *A Child plays along the pathways at Maili Saba,* **above**; *women washing outside the bio - digester ablution block at Kibera Kianda* **below**; *an interior view of a childrens toilet inside the Kibera Kianda ablution blocks and* **far right**; *the bio digester boiler.*

Charging system

A household of up to 10 members can pay a monthly subscription of Ksh 150. They are issued with a membership card which allows them entry to use the toilets at any time. Institutions are charged a monthly subscription of Ksh 300. Currently there are 80 subscribed households and 4 institutions (these are three local churches and the St. Collins Nursery and Pre-unit).

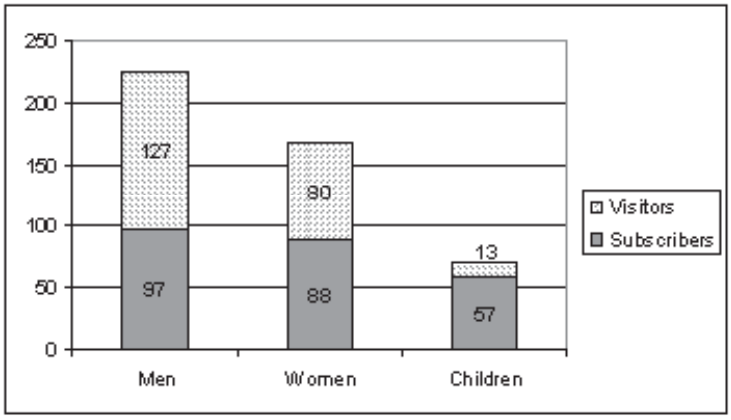
For those who are not subscribers, the charges are Ksh 3 per use of the toilet, and 3 Kshs per use of the shower. Water is sold for Ksh 2 for 20 liters. This is equivalent to the charges from other water kiosks. All users who are not subscribers, including children, are charged for the use of the toilets. The costs of toilet use include provision of tissue paper and hand washing facility. Most of the women who purchase water for cloth washing undertake the washing at the concrete base provided and then carry them home for drying.

Use of the facilities: toilets, showers, and water kiosk

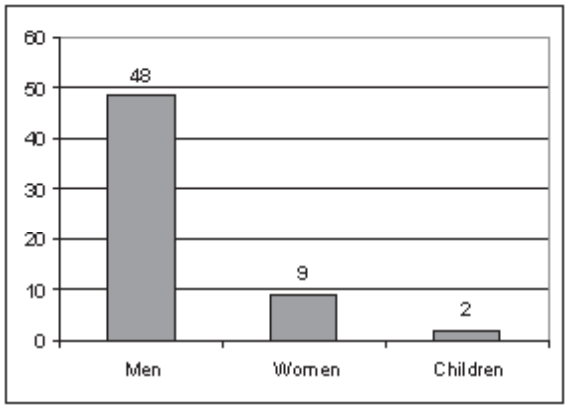
The toilet facilities have a huge daily use – an average of 462 people used the toilets each day. However, there were important differences between men, women and children in their use of the toilet facilities over the week. Among *subscribers* the differences between numbers of men and women using the facility were small. However, among *non-subscribers* (who pay each time), far more men than women used the block (127 men compared to 80 women on average per day). Even among subscribers, few children used the block. Only an average of 13 children pay to use the facility each day. Overall, only 15% of those using the block were children. This suggests that even when a facility is designed to be child-friendly, a lot more may need to be done to encourage children to use it.

This pattern was amplified in the use of the showers, which are only on a pay-and-use basis. Overall, usage was much lower than for the toilets. But of all the people showering, 81% were men. Both men and women in the focus groups very much appreciated the warm water in the showers. One participant said: "you find those who used to not shower regularly due to allergy or "fear" of cold water can shower now because of the warm water". The showers helped older people too, who also did not like using cold water, and who had difficultly bending over washing basins.

Use of the toilets per day (average of 6 days)



Use of the showers per day (average of 5 days)



Note: *on one of the 6 monitoring days, there was no water available for the showers. The average usage is for the days when water was available.*

Social impacts

As described in Maili Saba, privacy and decency were important issues for women, together with the cleanliness of the latrines. Separate toilets and showers now mean that privacy is ensured. The block is cleaned regularly using the funds from the subscriptions and charges. The problem of queuing to use a latrine or to collect water has reduced greatly too. Men find that using the block saves them time on their journey to work in the morning. This means women no longer have to wake up in the early hours to queue for water so their family can bathe.

The focus groups reported that the block had now become a new focal point for the community. It was a good place to meet people and make new friends. It also made them more comfortable welcoming guests and relatives, who now have a clean and hygienic place to relieve themselves.

The focus groups shed some light on the reasons why so few women used the shower facilities, and why fewer used the toilets despite more women being around in the settlements during the day. They explained that the pressures of domestic chores and looking after the children leave little time for a trip to use the shower. Women combine washing the children with cleaning the house, and then washing themselves in the left-over water in their own home. There were mixed views about whether women used the block more or less during their monthly periods. Some said it served them particularly well at this time, but others were not happy to be seen there during their periods.

Environmental impacts

People using the block reported dramatic improvements in the environment of the neighbourhood since the block was opened. They had noticed less evidence of 'flying toilets' or human excreta flowing in open drains due to over full pit latrines. The smell from latrines, urine and stagnant bathing and cleaning water had also been reduced in the narrow pathways of the settlement. They were beginning to notice fewer hygiene related diseases, and fewer flies, rodents and cockroaches in their homes. In one of the focus groups participants reported that it was 'rare' to see people throwing 'flying toilets' any more, and that people were now 'ashamed to litter' the area because it had been cleaned up so well.

People were also happy with the cleanliness of the block itself. There were no flies inside, which was a huge improvement on the pit latrines they had used previously.

It is clear, though, that some usage of pit latrines will continue. Some families cannot afford to pay the monthly subscription. During that month they will only pay-and-use some of the time, and at other times will use a pit latrine. Similarly, the distance to the block and time taken getting to it (even though fairly short) can be a problem for women. It seems that landlords are now no longer building pit latrines. If this is simply in reaction to reduced demand, it is a good sign. But if it means that at some point the poorest have less access to sanitation because they cannot afford to use the block and no longer have access to a pit latrine either, then this will be a serious problem.

Economic impacts

For some users, the block has brought savings because they have been granted rent relief by their landlords who closed their pit latrines to free up the land for the block. This more than pays for their monthly subscription. For others, though, the subscription adds to their monthly expenses. All groups felt that the fee did not greatly affect their monthly budget, but could only be paid after other priorities. The women's groups felt that the fee was fair for the service offered and that 'most' could afford it. Some, however, face problems in a particular month, so continue to use pit latrines, or cut down their usage and pay-and-use for each visit. Others recognised that men control the household budget, so some women simply do not have the funds to pay for a family subscription, or even use the facility much by paying each time.

One of the ablution blocks at Kibera Kianda. This was the first one to be built

Among those who pay-and-use, many are workers in nearby jua kali workshops who do not live near enough for their families to benefit from a subscription. Other (men mostly) choose to pay-and-use because they are away from the settlement at work for most of the day.

The water kiosk was more likely to bring economic savings to users. When water is easily available, prices are equivalent to those charged by other nearby kiosks. However, at times when water is in short supply water vendors tend to increase their prices dramatically. The large storage capacity in the block should ensure that supplies can be maintained even during shortages, keeping prices down.

The economic returns on the block are good. A total of Ksh 9,200 is raised each month from subscriptions, as well as Ksh 22,400 from non-subscribers. Maintenance expenditures on the block includes exhaustion of the septic tank (Ksh 3,000) which is required once a week, plus about Ksh 1,000 per month in other maintenance costs. The committee members who run the block take it in turns to work there, and each take home a small amount for that day. However, the group are still making good savings each month. The group has not yet decided how this will be spent. There are on-going discussions about the system for employing community members, and the level of wages that should be paid.

Case Study: Pre-School

Mary, the head teacher of St. Collins Nursery and Pre-unit, has subscribed to block B since January 2004 and would be very disappointed if the facility was to be closed over poor management. She would rather pay more than have the facility closed. This is a clear indicator that the project has also played a key role in promoting School Sanitation and Hygiene in the area. She continues to say that the pit latrine she and her pupils used has long been closed.

"My pupils used a nearby pit latrine, but not any more. The coming of the ablution block has changed all that. The children are just more than overjoyed to be using the modern facility. I am not frustrated by the city council anymore over the hygiene status of the pit latrine."

Constraints

The block was not designed for the volume of usage that it now enjoys. This means that the septic tank needs emptying far more often than was originally planned. This is costly but also requires more organisation in terms of getting the exhauster to come each week. There is also some debate in the committee running the block about the charging policy. It is not felt to be fair to charge the same rate for households, which+ can vary greatly in size. They would also like to increase the rates. It is not clear to what extent other users of the block can work with the committee to agree on a fair charging policy which provides sufficient funds for maintenance, and a reasonable income for those running the block without allowing charges to be raised simply because the market will take it.

The occasional water shortages also hamper the maximum utilisation of the showers by the users as any little water left in the reservoir during shortages is used in the toilets. On some days, the showers and water kiosk have to be closed. Some members of the community take long in the shower rooms thus taking much time and water. This in event limits usage time and so much water is wasted. It would have been better to provide a fixed amount of water for each shower.

Usage of the block is also limited by the lack of electricity, and the difficulty in getting to it for women after dark.

The toilet drainage network is occasionally blocked by use of foreign materials by the users, and by women's sanitary materials. When planning the block, this issue was not considered, so no alternative system has yet been found for disposing of these items.

5.12.2 KIAMBIU

Background

Kiambiu is a small but growing slum situated in the Eastland of Nairobi city between the affluent Buruburu neighbourhood and Eastleigh. It has a population of about 20,000 people. There are three functioning toilet blocks in Kiambiu fully fitted with toilets, showers and water kiosks. One of these (block Z3) was monitored for seven days. Focus groups were not conducted at this site, but reactions were collected from users during the monitoring. Each of the blocks was able to be connected to the City Sewerage system, so unlike in Kibera, there is no need for a septic tank to be exhausted. This keeps the maintenance costs lower. Each block has two attendants who are employed by the management committee, and paid through the income generated.

Maji na Ufanisi is one of the NGOs that have worked with the poor communities in the poverty stricken areas to plan and implement water and sanitation projects. In collaboration with Kiambiu Usafi Group (KUG), a CBO started in 1998 Maji na Ufanisi have been actively involved in sanitation services provision in this settlement. The CBO has about two hundred members. The objectives of promoting affordable and replicable modern ablution blocks have helped build local capacity for socio-economic and environmental development.

The Kiambiu water and sanitation projects have evolved into full-scale initiative, which have facilitated collaboration between the locals and various development agencies. The project has three components to effectively address the WASH concerns in the area. The three components' designs also meet the local adaptation requirements as well as several other stringent environmental criteria.

Charging system

The project management offers thirty days (renewable) subscription to the residents of the slum starting from the date of subscription. The subscription fee is KShs. 50 per month and is for each household. The subscribed members are then issued with a stamped access card. Each month has a particular card color and every card must bear the CBO's logo. For non-subscribers the charge is KShs. 2 per use of the toilet. All children below 12 years can use the toilets for free whether their family subscribe or not.

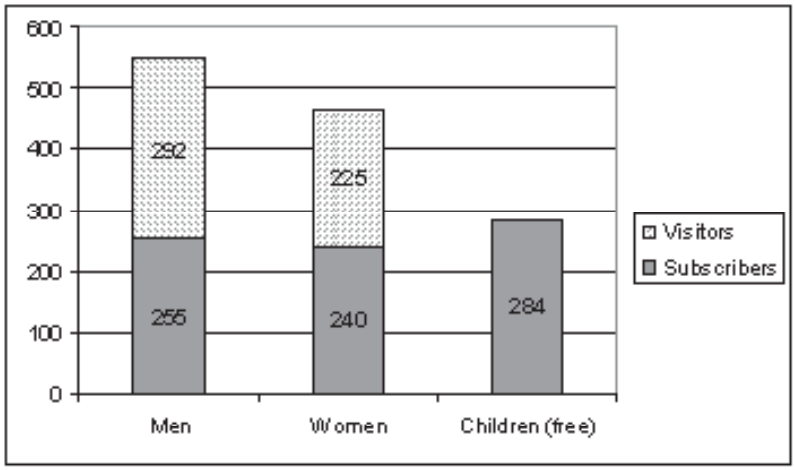
Use of the shower costs KShs 4. Water is sold for Ksh 2 per 20 litres. Each block has two attendants employed by the community management. Their salaries are paid from the income realized from the project.

Use of the facilities: toilets, showers, and water kiosk

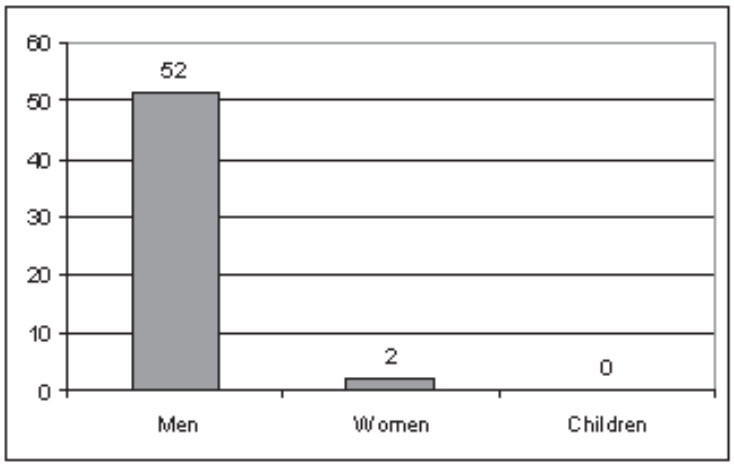
The toilet facilities have a huge daily use – an average of 1,296 people used the toilets each day. As in Kibera, there were important differences between men, women and children in their use of the toilet facilities over the week. Among *subscribers* the differences between numbers of men and women using the facility were small. However, among *non-subscribers* (who pay each time), far more men than women used the block (292 men compared to 225 women on average per day). This is despite that fact that more women stay in the settlement all day, while men leave for work. Usage by children was still low, making up 22% of the total usage. However, this is higher than in Kibera where only 15% were children.

This pattern was amplified in the use of the showers, which are only on a pay-and-use basis. Overall, usage was much lower than for the toilets (only an average of 54 people per day). But of all the people showering, 96% were men – an even higher proportion than in Kianda. Trade at the water kiosk was also brisk, with an average of 181 customers per day, 72% of whom were women.

Use of the toilets per day (average of 7 days)



Use of the showers per day (average of 7 days)



Environmental impacts

Users of the block reported that the 'wrap and throw' behaviour that is a common characteristic of slums have been contained in the area. Free access by children have also reduced (although clearly not eliminated) the careless disposal of excreta by children in the dumping sites and wastewater drains. Though not quantitatively verifiable, the community reported a significant decline in water and sanitation related diseases.

Economic and social impacts

The block makes a reasonable income from its activities, and is able to pay for good maintenance, as well as the wages of its two employees. The block provides a service for thousands of residents every day.

However, it remains important to understand what women and children could do to facilitate greater use. This is not easy as it confronts household dynamics in which men control the money. They may take the decision over whether to subscribe or not. Alternatively, the women are operating on a very tight budget from them and/or their husbands earnings, and do not feel able to spare the Kshs 50 each month in subscriptions. They find it easier to pay small amounts daily rather than a monthly lump sum, but this inevitably means lower use by women. On a daily basis they face choices over how to spend their money between the competing and immediate needs for food and water, weighed against the longer-term need for good health through better sanitation.

For children, who do not have to pay, the issues may be around convenience, distance to the block and general levels of awareness. Mothers might need to accompany younger children to the block, and this would require extra time, which they often do not have.

5.12.3 CONCLUSIONS

It is clear that the construction of these two sanitation blocks has been greatly appreciated by residents. It has improved their living environment; anecdotally it has improved health,

and made it more possible for them to welcome guests and relatives to their homes. There is an evident sense of pride in the changes the blocks have brought to the settlements.

However, there are clearly ways in which the blocks do not meet the sanitation needs of women and children as seen in their lower usage of the facilities. This is partly related to the centralised location of the block and the time taken reaching it. Women are often short of time, and combine a range of household activities within the home including cleaning, washing clothes, and washing themselves and their children. There also remain some problems with women's use of the facilities during their monthly periods when they may want to be able to wash themselves and their clothes in private even from other women. The charges for subscription and the way these charges are levied (as a lump sum) may also make it more difficult for some women to use the blocks. And for all residents, there were be times at which they will still need to use a nearby pit latrine (after dark, or when money is very short, or perhaps when they are ill). A trend that needs to be monitored, therefore, is landlords closing or not maintaining existing pit latrines which continue to be used (albeit less) in combination with the sanitation blocks.

6.0 WATER SERVICES AND POVERTY

6.1 Water Supply Situation in Maili Saba Settlement

The Kenyan population is currently about 32 million people. Half of this population lacks access to sustainable safe drinking water sources. It follows that it is unlikely that Kenya will meet the Millennium Development Goals by 2015 – that is, halving the proportion of people without sustainable access to safe drinking water.

The Water Services Regulatory Board (WSRB) in Kenya is empowered through the Water Act of 2002 and the Local Government Act Cap. 265 to delegate powers to water utility trust companies to effectively operate water and sewerage services to urban communities. These companies put in place the necessary mechanisms to provide the services in an efficient and effective manner to the satisfaction of the Regulatory board. In Nairobi city, the Nairobi City Water and Sewerage Company limited – a trust company institution has been established. The company's water supply network does not yet cover Maili Saba informal settlement as well as other slums within the city.

The survey found that, the dwellers of Maili Saba slum get most of their household water supply from two key water sources. The first is water vendor kiosks using piped water and stationed in various points in the slum. These vendors get their fresh water supply from the water trust company of Nairobi city. The Nairobi City water and Sewerage Company supplies all this water to the vendors' kiosks. They do the supply as a business. The residents buy it at about 20 times more, the cost of the supplier rates. Some of this compensates the suppliers for the high initial investment costs.

The second water source is a borehole sunk by the Baptist Children Centre whose water is salty. The slum dwellers are allowed to buy water from the borehole and it rarely dries unless the pump machines are broken down. The last source is shallow water wells dug by the slum dwellers along highly polluted Mwengenye and Maili Saba rivers that traverse the settlement. This water is of poor quality, but is free to all. Many who use it suffer from water borne diseases.

6.2 Water Vendors in Maili Saba

The Nairobi City Water and Sewerage Company has rules and regulations provisions where the informal settlements residents can access water, one being *Regulated Water Vending* particularly among the poor. The rules and regulation are designed to ensure that operators signs a binding agreement that clearly sets out the mode of operating these facilities and also the conformity to the existing City Council by-laws on public health. They must also be licensed to operate. In recognition of the roles they play in water provision in the slums, water vendors who operate the kiosks buy water in bulk at a cheaper rate than normal in individual household connection.

Until recently, when slum upgrading and MDG concepts were introduced, Water Vending was not a recognized alternative means of distributing water in the estates, and the Councils used to discourage their activities. However currently, NCC allows them to operate in the slums. The vendors have to meet the full costs of infrastructure from the end of the utility company's main line to their respective water point/kiosks (i.e. trench digging, piping and other requirements). The meter is cheaply rented from the utility company.

The Water Vendors in Maili Saba currently operate without any order or awareness of the existing legal provision that caters for their needs and interests. Their motivation to engage in this business is the desire to earn an income by taking advantage of the lack of water services in their community and the opportunities that exist. In most cases, vendors live in the communities in which they operate, and can be either plot-owners or tenants. There are two types of water vending. First are those who own and operate the fixed water kiosks that also sell water to consumers within the slums. The second are those who are purely water retailers operating using handcarts or bicycles – mobile water vendors. They usually sell water at higher prices than the kiosk owners.

The following table outlines basic infrastructure cost implications in setting up a water vendor's water point. This is the initial invest capital needed before start of selling the water to consumers.

Water Point Investment cost

Investment Item	Cost in Kshs
Application fee for connection into the water main line	2,400
Piping of the service line to the vendor's plot/selling point. This is variable depending on the distance from the vendor's plot and the water service line. The average for Maili Saba is 500 meters (1,00 pipes of 1 inch diameter PVC @ Kshs 180.00 per piece)	18,000
Water selling point housing made of corrugated iron sheet walling, concrete and other cost of masonry and logistics (Sometime housed in already existing shop room	6,000
Storage tank of approximately 10,000 litres (10 cubic meters) factory made hard plastic tank (Kentanks). Very few vendors have these tanks due to high cost.	10,000
Cost of land – rent of premises if not owner occupier	1,500
	37,900

Water Vending Operating Costs

The table below is based on average water vending sales of 20 cubic meters (2,000 litres) daily in Maili Saba settlement.

Table 2: Operating Costs of Water Vendors.

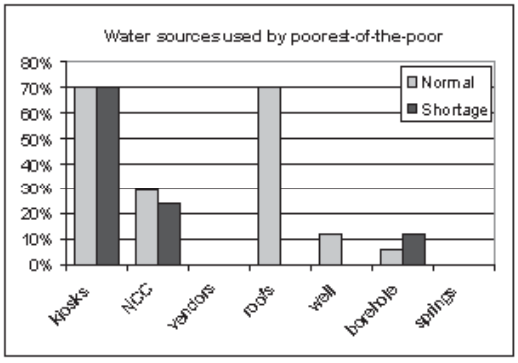
Investment Item	Cost in Kshs
Bulk purchase of water – approximately 600 cubic metres/month @ Kshs 10.00 per cubic meter.	6,000
Water meter rent of Kshs 25.00 to Nairobi City Water and Sewerage Company limited (NAWASCO)	25
Personnel cost – the person selling the water to consumers	No cost – usually the owner
Total	**6,025**

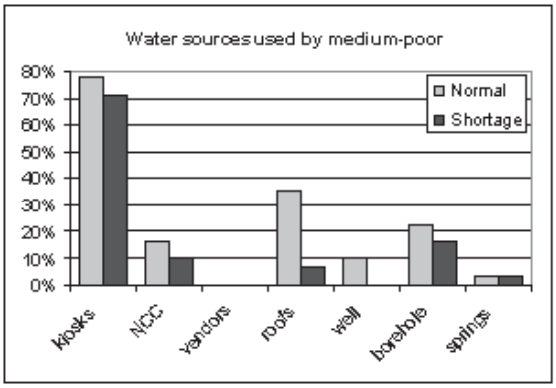
Women fetching water at a water vendors outlet

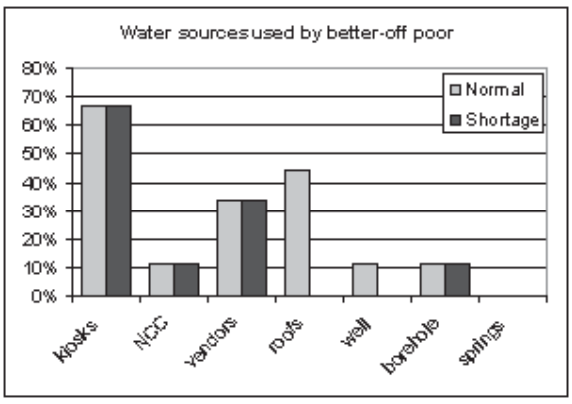
The water vendors in Maili Saba are usually those who can afford (though with difficulty) the above investment and average operating costs. These are mainly the better-off poor in the settlement. The landlords and most of the retail shop owners practice water vending business. Hardly can one find a vendor from the poorest of the poor and/or the medium poor.

6.3 General water usage and access.

Research findings indicated that three quarters of residents (76%) get at least some of their water from water vendor kiosks. Kiosk water vendors are stationed at different areas within the slum and sell piped water from the water supply run by Nairobi Water and Sewerage Company limited. The salty water from bore holes is the second priority source while the last being the shallow water wells. The graphs below show the percentage of households from the different socio-economic groups fetching water from different sources. Households from all three groups fetch water from fixed water kiosks, and continue to do so even during times of shortage. The better-off households are the only ones who have water delivered by vendors. The poorest rely more than others on water collected from roofs, but this dries up during times of water shortage, as does water from wells along the rivers.

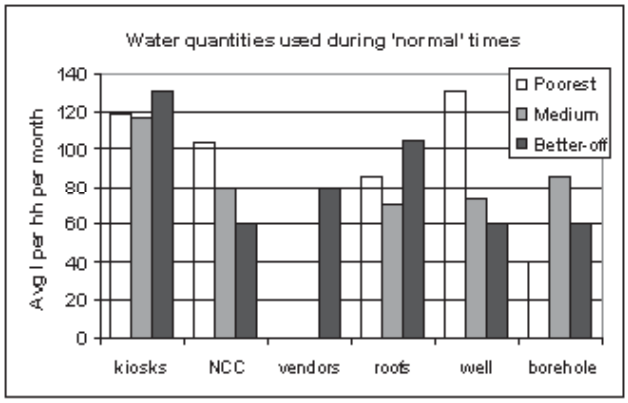


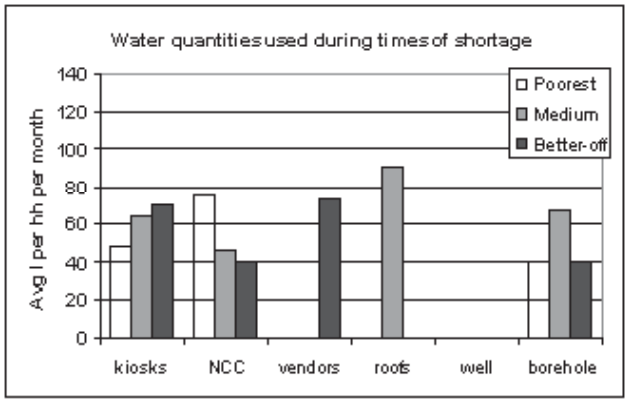




What varies most between the socio-economic groups is the amounts of water used, and the amounts used from different sources. The poorest residents spend on average Ksh 241 per month (in normal times) on water, compared to Ksh 495 spent by the medium-poor and Ksh 1,028 spent by the better-off poor. This is a reflection of greater amounts of water the poorest use from wells and roofs, and the fact that they do not pay for water delivery by vendors.

During times of water shortage, the poorest residents cut their consumption of water from kiosks the most (a reduction of 59% from an average of 118 litres to 48 litres). This compares to just a reduction of 46% by the better off (from an average of 130 litres to 70 litres). These are difficult times for all households because during times of shortage, the options of sources of water are more limited. Total water consumption decreases for all by 60% (from an average of 174 litres to just 70 litres), with the biggest decreases for the poorest residents.





But a careful look at some case studies show that, the poorest of the poor struggle in terms of cost to buy the water from the water vendors especially during shortages when prices shoot up. They thus cope by fetching water on credit and/or fetching poor quality water from shallow wells, which cause them to suffer from water born diseases.

Cost of water is almost fixed as households spent Kshs. 2 to obtain a 20 litre Jeri can during normal water supply. It goes up to Kshs. 9 when there is shortage. A few exceptions occur when the cost of water may rise up to Kshs. 14 during severe shortage.

A quick analysis of what households spend on water indicates that more than 6% goes to water. And due to the quality uncertainty, families end up spending their meagre resources on treatment of water borne diseases. This is more so to those households (mainly the poorest and the medium poor categories) who use free water from shallow water wells dug along the highly polluted Mwengenye and Maili Saba rivers.

Residents value the quality and convenience of a water source above its cost. And since most of the people involved in water are women, many would rather pay more than spend time looking for water. Gender factor renders women more vulnerable. Many a cases showed that women do not have a steady income and depend on their husbands. They are the ones who pay for the water leaving them with little income for other family needs.

6.4 Monthly Household Water Usage

The table below considers an average household size of six (06) members in Maili Saba informal settlement. This figure was used to compute per capita consumption of water as indicated below. In Kenya, the national standard water consumption per person daily is rated at fifty (50) litres. The table figures are extrapolations based on the household case studies carried in the settlement on water usage and sources in the three social–economic wealth groups. It was not easy to specifically apportion water amounts usage for separate household aspects e.g. washing food, cooking, utensils, house, clothes, and drinking. However general approximate amounts were pointed out by the survey respondents and are collectively indicated lumped together below in the table.

Even this child has to be involved in the search for water

Monthly Household Water Usage in Maili Saba informal settlement

Use	Water sources	Quantity of Water in litres			Cost in Kshs	
		Better off poor	Medium Poor	Poorest of the poor	Normal water Supply	Short Supply periods
1.0 Washing • Food • Cooking • Utensils • House • Clothing	Water Kiosk, mobile vendors & the laundry waste water re-use for house cleaning	3600	240	137	100.00 per 1000 litres	450.00 per 100 litres
2.0 Bathing and Washing toilet	Water kiosks, wells and borehole, seldom river	1800	150	129	Ditto	Ditto
3.0 Other uses	Ditto	Nil	Nil	Nil	Ditto	Ditto
Totals		5,400	1,590	266	Ditto	Ditto
Per capita per day		30 litres per person daily 8.82 litres per person per day 1.47 litres per person per day				
National standard		50 litres per person per day				

6.5 Determinants of Water Sources Access and Uses

6.5.1 Determinants of Access to Water Sources

Sources

The main water sources are the piped water kiosks and the borehole. All the three social economic categories in Maili Saba draw water here. However, the better off people tend to depend fully on piped water from water kiosks. They can afford to buy. The medium poor combine both borehole and water kiosks for water sources. The poorest of the poor are similar to medium poor but tend to resort to free shallow well water (which is partially contaminated by polluted river waters) to survive.

Price

Price of water is a key determinant to water access. Both water Kiosks is and borehole water sources charges between Kshs 2.00 – 3.00 per 20 litre water Jeri can under normal period and the water is generally accessible to all the three groups. However the price of water kiosks and mobile vendors skyrockets during shortage periods to about Kshs 9.00 for same 20 litre jeri can. During this period, the poorest of the poor and some medium poor cannot cope to buy from these sources. They tend to either get the water by credit but mostly go for contaminated shallow well water along rivers Mwengenye and Maili Saba within the settlement.

Distance

Distance to the water sources is not a barrier to access. The borehole, shallow wells, water kiosks and vendors are accessible within the village. It's the cost and quality that is the issue.

Quality

Borehole and water kiosk water are relatively of acceptable quality. However borehole water is salty while vendors' water is fresh. People prefer fresh water source than salty one but barrier remains the cost especially during the shortage times. Wells water is of poor quality and access to it is free but as a last resort source for the poorest of the poor category.

6.5.2 Household Water Sources in Nairobi City (Formal and Informal Settlements).

The Nairobi city households in different formal and informal settlements have access to different water sources. The table below gives the distribution of the households by water source in Nairobi city. The three tables below are extracted from "*Kenya 1999 population and housing census: Analytical report on housing and social amenities, CBS volume X, ministry of planning and national development.*

Water Sources	*Percentage of Household with access to the source*
Piped	91%
Borehole	1.6%
Pond	0.9%
Well	0.4%
River	0.3%
Dam	0.2%
Other	4.2%

6.5.3 National level Access to Clean Water - (piped, borehole and well).

The table below shows an implication of a worsening trend to portable clean water access nationally. This is presumably due to the inability of the water projects in urban areas to cope with the increased demand posed by the increasing number of households.

Region	Year 1989	Year 1999
Urban	84.8%	74.7%
Rural	28%	40%
Overall	30%	31.9%

6.5.4 Gender Issues and Access to Water:

It's a proved fact that, female-headed households are disadvantaged in most regions in Kenya than their male headed household counterparts. In 1999, the table below shows the national level percentage of gender access to piped water. The National statistics are shown below, although there is no disparity noted in Nairobi city, which can consequently reflect the situation in Maili Saba informal settlement.

Household head	Access %
Male headed	34.1%
Female headed	24.8%

6.5.5 Determinants of Water Uses

Quality: water quality is the key determinant for various ways water is used in Maili Saba. Borehole, water kiosk and vendors water is used for cooking and drinking mainly across the three social – economic categories of people in the settlement. To those households with some hygienic health know-how, they improve the quality by simply boiling the drinking water but the cost of boiling fuel is a challenge. Paraffin fuel cost ranges between Kshs 48.00 – 50.00 per litre. A 2 kg tin full of charcoal costs Kshs 25.00 and an average family size of six members requires double that daily.

Waste Water reuse: Seldom some households, mainly the medium and poorest poor do re-use of household waste-water especially for house floor cleaning purposes. This is a coping mechanism.

River waters use: Access to and use of rivers Mwengenye and Maili saba waters is free to all .As a coping mechanism, significant number of the slum dwellers use this water source for purposes of bathing and washing clothes along the river banks. The danger is that, the water is highly polluted especially by raw human waste and household liquid waste directed to the streams.

Other usage adjustments: from above table, its clear people here do not get adequate daily water amounts for household use. It follows that some household adjustments in water usage are key. From the survey, these include skipping bathing for long periods, washing clothes perhaps once weekly, while priority being only given to cooking and drinking only. It's even hard for women during their menstruation cycle that most end up having half baths only to wash off the dirt. Dr. Deepa was in Maili Saba settlement on 3rd March 2005 where she participated in probing the issue of monthly periods and water related sanitary aspects to two women – Mrs. Ann Wangui (a community leader) and Mercy Kagwe*. Asked about how they fair on during menstruation periods by Dr. Deepa, Mercy Kagwe – a medium poor lady responded *"enough water supply to me is a priority. It's not easy to get enough for my household use. During menstruation times, seldom I do only have a half bath – to remain clean! Instead of using modern sanitary pads, sometimes we use pieces of old cloth material instead since modern towels are expensive."* After use, its wrapped in polythene bag and either dumped in a pit latrine and/or in the river stream passing through the slum. I rarely wash hand after visiting a latrine since to spare my little water. I use old newspapers or some tree leaves at worst instead of tissue paper - the latter is expensive to buy always'' Ann Wangui always nodded her head in the affirmative to what Mary was expounding in response to Dr Deepa's question.

6.6 Water Case Studies across Social – Economic Wealth Groups in Maili Saba

The following water related case studies were collated in Maili Saba informal settlement's three villages - Mwengenye, Maili Saba and Shilanga. The cases were done across the three social – economic wealth group households identified within the villages. Once more the respondents were the household heads. The general households poverty overview has already been dealt with in sections 4.9 The following is an extraction of water related case study issues across the three social – economic categories of households.

6.6.1 Poorest of the Poor Households Water Case Studies

Most of the poorest of the poor households live under very difficult circumstances. Their livelihood hinges on unreliable incomes below the UN poverty line. Income sources include casual labour tasks, construction ballast making, and illicit brew sales. Their family sizes are usually large - some with about eight children. Access to quality and sufficient water for the entire family is an uphill task. The sources of water are borehole and water kiosks and vendors. But their ability to meet the cost of that water especially during shortage periods is very low. They hence cope by fetching the water on credit, skipping some household water needs (e.g. bathing, differed cloth washing, recycling household waste water) or fetching from free swallow water wells whose water is contaminated. They also cope by using contaminated river waters for bathing and washing clothes and hence often suffer from water born diseases like typhoid, diarrhoea For this reason most look dirty and smelly with clothes not often washed for a long time.

Monicah Njoki– Mwengenye Village.

Monicahis a 70 years old widow and a guardian of 5 orphans who live in her family house in Mwengenye village. Her only source of income is making and selling building ballast and can hardly manage to earn a daily gross income of Kshs 42.00. The cash is mainly spent for food and water as priorities.

She mainly gets her household water from a water vendor kiosk in the village. She uses the resource for cooking, drinking, bathing and washing clothes and utensils. There is water shortage and she copes by going to fetch it in adjacent Maili Saba village and/or Dandora estate. At worst she fetches from shallow water wells along Mwengenye river whose water is of poor quality due to polluted river waters. Her household daily water usage is 60 litres (three 20 litre Jeri cans). Each full Jeri can costs her Kshs 2.00 during normal supply but the price can shoot up to Kshs 9.00 per Jeri can during shortages when mobile water vendors are selling expensively. The quality of water is sometimes not clean and she copes by boiling it to avoid water born diseases. When buying water, she prefers looking at quality and access issues.

Monicah's household and the rest of the villagers like her cope in different ways – controls number of baths per week, takes her baths in the house for privacy, reuse of household waste water in the house to curb dusty earthen floor, washing clothes after a long spell of time weekly or fortnightly.

Anthony Mutisya – Maili Saba Village.

Mutisya is married with 12 children and has lived in Maili Saba for ten years. There are only two income sources to Mutisya's household – part time shoe repair work and ballast making. He seldom gets less than Kshs 100 daily from part time shoe repair. He however manages to sell an average of 20 buckets a day selling at Kshs 10 (Kshs 200 daily though this cash is not always assured). Food including water first Mutisya's expenditure preference while hospital bill rank third due to lots of water born diseases in his household – typhoid, diarrhoea, and stomachaches.

Mutisya's family gets household water from three sources – Water vendor kiosk, borehole at Baptist Centre for orphaned children in the village and from shallow water well along side highly polluted Mwengenye river. Water price per 20 Jeri can is Kshs 2 from Water vendor kiosk, Kshs 1 from borehole salty water and free from swallow wells. There is serious water shortage especially when borehole pump breakdown and supply to water kiosk is reduced. This forces his family members to fetch water from shallow water well whose quality is poor leading to water born diseases in his household. " I spend a lot of money treating my family members from infections of poor quality water. I suspect it's the water from the wells since the rivers are polluted with raw human waste, which is dumped there by people who exhaust shallow pit latrines manually. Almost every week somebody gets sick here." Reveals Mutisya during an interview session" The family's average daily water usage is 100 litres of water (5 jeri cans each of 20 litres) for all household water needs. " We use free water wells especially when we can't afford buying from water vendors mainly during shortages or when my income gets down"

Patricia Wacera: Shilanga village.

Patricia is a single mother who arrived in Mali Saba in 1995 from Muranga. She has 6 children and is separated from her husband. The house also serves as her food kiosk.

There are no toilets or bathroom connected to the household. No one takes responsibility to clean the bathroom or toilets. She often finds herself cleaning up the bathroom to protect her children.

She also stated that the dirty water from the bathroom is poured anywhere. In respect to water she purchases from water vendors at 2/= for the 20 liter cans. She purchases approximately 200 liters of water per day; 140 used for cooking and 60 for bathing and washing. She believes the water she is purchasing is clean and does not boil the water used for bathing and washing. The more water goes to the food kiosk business for income generation.

6.6.2 Medium poor Households case studies.

For the majority of the medium poor residents, quality of water and the prices are factors considered when fetching water during normal supply. A bigger proportion of them avoid consuming contaminated well water along the polluted Mwengenye and Maili Saba rivers. Their main water sources thus remain fresh water from water vendors and salty borehole water. This category of the poor can slightly afford basic household needs including water compared to the poorest of poor group. Their livelihood, better than the poorest, hinges on informal businesses for income sources - vegetables, hawking, ballast sells.

Samuel Muchiri – Shilanga Village.

Samuel is married to a lovely wife Nancy Wanjiru and is blessed with 5 children.
The only two sources of income are vegetables business run by wife in the village while Samuel does masonry construction work when available. The family's daily income averages between Kshs 150 – 200 though its not always assured and mainly from the vegetable business (note this is a gross income, hence net profit could be far too less). The wife ranked the family expenditure lines in a priority order as food, kerosene (for cooking fuel and lighting), water and hospital bills. Food is a priority due to children demand of the same. Hospital bill ranks least due to wife's effort to boil family drinking water.
Water sources for this household are two fold – water vendor kiosks and borehole at Baptist Centre. Water here is a bit expensive at Kshs 3 per 20 litre Jeri can

especially from the piped water vendor kiosks whose water is fresh. The family uses 7 Jeri cans of water (140 litres) daily worth Kshs 21.00 Water is mainly used for cleaning business vegetables to attract customers, cooking drinking, bathing, washing clothes and utensils. Quality of water not an issue because she prefers buying from quality sources and further compliments water quality by boiling.

Water supply by the private water vendors at Kiosks is not enough leading to long queuing for the resource and consequent higher selling price of Kshs 9.00 per 20 litre jeri can. Baptist Children Centre has helped here by sinking a salty water borehole that is accessible to the villagers.

Lucy Kanyiva – Mwengenye village.

Lucy Kanyiva is 22 years old, a mother of three and lives in Mwengenye village. The main economic activities Lucy and her husband are engaged in are ballast making and construction labourer respectively. Lucy sells an average of one lorry load of ballast at Kshs 3, 500 monthly while the husband earns less than Kshs. 200 per day from his work.

Expenditure preference on water is ranked second in this family after food. She says, '' food and water are the two priority basic needs that I consider when spending cash daily''

Kanyiva fetches water from water vendor in the slum. A 20 litre jeri can costs Kshs. 2 during normal supply but can go up to between Kshs. 9.00 – 10.00 during shortages. The family ensures that there is water for drinking, cooking, washing utensils, bathing and washing clothes all prioritized in that order. Lucy acknowledges that there are times of shortages and they have to cross to Maili Saba village to fetch water. This really limits her daily usage of 10 jeri cans per day. The water is usually of good quality although Lucy have had a case of typhoid with her elder son in 2004.

When buying water she is guided by the need for quality water having had the typhoid case before. She avoids water from the wells, which is contaminated from river pollution nearby. This is then followed by access while the price and quantity may alternate.

Jeniffer Wafula – Shilanga village

Mama Jeniffer Wafula lives with her husband and her four children; three girls and one boy, in a very small, two room mud house. Jeniffer used to wash clothes for households in a middle class estate and earning Kshs.100 day. Although the husband is handicapped, like many others in Mali Saba, he earns income from crushing blast, or stone.

She stated that her income varies, some days she earns 100/=, and others nothing. She estimates that the family spends roughly Kshs. 200 a day. This money though is not available every day. There are days that they have only one meal, or no meal at all.

All the children suffer from chronic health problems including diarrhoea, typhoid, and malnutrition due to lack of clean safe drinking water. Jeniffer tries to reduce this trend by boiling water but the daily cost of fuel for boiling is a challenge. The family uses a collapsed house as sanitation facility for bathing.

On water, the family purchases water from vendors at Kshs 2 per 20 liters Jeri cans. The estimation of household usage includes washing clothes once a week, 60 litres; cooking/ washing utensils daily, 20 litres; bathing three times a week, 30 liters. If there is not enough money to buy adequate water, Jeniffer get well water but boils it using paraffin to improve quality, which cost Kshs 20.00 per day. During water shortages, she gets water from the salty borehole water. She identified the problem of water as accessibility and safety due to the inability to determine how clean it is.

6.6.3 Better off poor Households case studies

The better off poor are the top cream society section of Maili Saba informal settlement. Their livelihoods depend upon some relatively reliable income sources - small retail shops, water vending kiosks businesses, vegetable businesses and landlord mainly of informal housing units. Average incomes are higher than the other two groups – about Kshs 200 daily though also irregular and businesses especially small retail shops can bring in more gross incomes – Kshs 1000 daily. They have access reliable water sources mainly fresh water supplied by the water company. Daily water uses is higher than the other groups and rarely mention issues of water born diseases affecting their family members. Some examples are given below.

James Githae – Maili Saba Village

Githae is married with a family of two boys and five girls. The family's only source of income is the retail shop from which they make Kshs 2000.00 gross daily sales on average. Mr. Githae's household expenditure is centered on food, water, fuel, rent, school fees, clothes and others.

The family uses an average of 100 litres of water, which they fetch from a nearby water vendor kiosk. The usage is always prioritized as follows; drinking, washing utensils, cooking bathing, washing clothes and others in the descending order. They also use water to sprinkle the compound to hold dust especially the waste household water. There is water shortage in the village and the prices go up – people have to travel some good distances to get the water.

The water is not always of good quality hence the family always boils their drinking water. Due to this extra care, the households have had no cases of water borne diseases. This is a testimony of a household that values water quality than any other factor. Githae also agrees that there is need for more water points in the settlement. Increased water points would lead to reduced water prices which currently stands at 2/= per 20 litre jeri can and almost Kshs 10.00 during. Githae's coping mechanism is through household storage of water in huge plastic containers and being ready to travel long distances to get the resource.

Kamau –Shilanga village

Mr. Kamau is married and have three children aged 11, 8 and 6 and are in classes 5, 3, and 1 respectively. He runs a retail shop within the building and gets an average of 2000/=

per day from sales. Kamau estimates a daily expenditure of 300/= per day. Prioritisation of the household's expenditure is food, water, fuel, fees and others.

Kamau has got water connection for his family's use within his family house. He ranks the water usage priority as: drinking, cooking, washing of utensils and clothes, cleaning the house and watering the animals that he keeps within his compound – zero grazed including; a donkey, goats, chickens and a cow.

In order to cope with sudden shortages of water associated with NCC connections, Kamau has an additional storage tank for rainwater and hence he hardly experience water shortages for his household uses. The family uses 10 jeri cans of 20 litres while each while the animals uses additional 5 jeri cans daily. He says, " the water I get is of good quality and that the family has never experienced any water born diseases. It's supplied by the Nairobi water utility company."

Kamau further says, " not all the settlement residents can afford the connections from the water utility company. Its expensive." Kamau observes that the whole of Shilanga village need to have access to more facilities of water to meet the people demands. Therefore priority should be given to more water points to ease the high prices charged and the distances covered.

Monicah Njenga – Mwengenye village.

Monicah is a single mother of four children and she owns a 0.125-acre of land where her two roomed mud walled house is build. The waste water from her corrugated iron sheet bathroom is discharged into the open and oozes mercilessly in the street.

The house also serves as a kiosk to sell water to the villagers and fuel charcoal. Monicahis thus a full time fixed water vendor operating from her house. Her average daily sales income is Kshs 120.00 (from water) and Kshs 50.00 from charcoal – approximately around Kshs 5,100 per month though not regular.

Monicah is one of the few who does not pay house rent and water bills because she owns the house and is the proprietor of the piped water vending business. However, she has problems of frequently getting inflated water bills from the water utility company, which supplies her with the water.

6.7 Community Coping Mechanisms on Water.

- Forgoing some vital household water needs in the family in favour of the priority needs of cooking and drinking. The poorest and the medium poor usually skip bathing, washing clothes for longer periods.
- Re use of household waste water for purposes of cleaning the house to spare the little safe water accessible by households.
- Washing clothes and bathing seldom done along side polluted waters of rivers Mwengenye and Maili Saba as a last alternative during water shortages when water vendor price is at peak.
- Seldom the people carry water home using small water Jeri cans from their respective working places. This is a complementing strategy to cope with in adequate water supply.
- Walking long distances in search of water at distant neighbouring estates.

6.8 Suggestions to improve water supply in Maili Saba

- The cost of water could be improved by the Nairobi city water company limited - regulating the cost of water by getting into formal agreements with the current water vendor providers and metering the water effectively and ensure that revenue is collected from fewer handlers. Helping to improve the pipe connections, and possibly increasing storage capacity in the communities, could reduce problems during times of shortage.
- The Nairobi city water and sewerage company limited should take advantage of the favourable water policy to deliberately design rules and regulations and hence strategies to avail water to the people living in informal settlements including Maili Saba slum.
- ITDG –EA and other civil organizations involved in water and sanitation interventions should enhance awareness creation at both service delivery level and consumption level.
- The next issue would be to ensure that quality of water is safe, to be in tune with governments policy and MDGs realization.

Even a burst underground pipe can act as a water point

7.0 LESSONS LEARNED AND RECOMMENDATIONS

This research took place in a context in which hundreds of thousands of poor residents in Nairobi's informal settlements have very poor access to water and sanitation both in terms of quality and quantity. They pay more and travel further for these services than their richer counterparts in formal settlements. The reasons for this very poor provision are partly to do with the legal framework and its application, and partly to do with the limited financial resources of the various stakeholders, and how spending is prioritised. There is an evident lack of planned interventions, or regulation of service provision by local authorities or other public entities, partly because local authorities are under no legal obligation to provide services to informal settlement dwellers.

There have been recent reforms of Water policy, and sanitation policies are currently under review. New programmes for slum upgrading are also under way. As urban population and urban poverty grows in Kenya, there is clearly a need to identify the most appropriate means of delivery.

As the parallel report on water-providing enterprises notes: "current Government policy is to withdraw from direct involvement in the implementation and management of water schemes and instead, hand them over to communities, local authorities and other service providers… Handing over also requires clearly defined mechanisms to guide the process, and a functional legal and institutional framework. The Water Act (2002) addresses these issues." However, the needs of the poor are still not explicitly covered in the Water Act, or the Sessional Paper No. 1 of 1999.

To date, the provision of water and sanitation services in urban poor slum areas has been piecemeal and unsystematic, with initiatives carried out by different agencies. Projects have usually benefited relatively small numbers. In the absence of other provision, local entrepreneurs sell water in informal settlements through kiosks and mobile water vending. People also collect water from wells, boreholes and roofs. Landlords build poor-quality latrines and bathrooms for their tenants which are poorly and irregularly cleaned and maintained. Some residents dig their own latrines, while others share latrines and bathrooms between many households.

In this context, the critical questions that this research sought to address were:

- The meaning of "appropriate sanitation" for poor women and men in poor urban areas.
- Gender factors determining the access to water sanitation and hygiene services.
- How well the current delivery of sanitation meets the needs of poor women and men especially those in poor urban areas.
- The linkages between sanitation, water and livelihoods.

Poverty and livelihoods

There is a marked stratification of the poor in the informal settlements covered by this research. Residents identified clusters of the 'very poor', 'medium poor' and 'better-off poor'. The varying levels and regularity of incomes affects the level of access to water and sanitation of these groups. The very poor get more of their water from the cheapest, but poorest quality sources. The quantity of water they can afford reduces drastically during times of shortage. They are less likely to have access to their own latrine, and in payment for sharing one, women usually have to take on the burden of cleaning them. In contrast, the better-off poor buy much of their water from kiosks and mobile water vendors. They are more likely to own and control their own latrine and bathroom.

However, the 'flying toilets', poor drainage and overflowing pit latrines which are common-place in Maili Saba affect all residents and make them all potentially vulnerable to associated health problems. Water quality and a lack of availability of water can be a problem during times of shortage even for the better-off poor partly because the kiosks and vendors use illegal and poorly maintained pipe connections.

This stratification means that when new initiatives are planned, the very poor are less likely to be able to afford the rates thought to be 'reasonable' for the other groups of the poor. This was evident in the discussions about paying monthly subscriptions to use the toilet blocks. The poorest could not always afford the lump sum. They used the facility occasionally when they had funds available from their irregular incomes. However, they still relied on using free pit latrines at other times. Any planned interventions need to ensure that they do not reduce the options available, especially for the poorest. A range of services will still be required.

At the same time, water and sanitation services offer business opportunities for some. The community toilet blocks are able to employ staff from their charges and provide some profit for the groups which could be invested in other initiatives. Water vending provides an income for some. The investment costs required for opening a water kiosk mean only the better-off can afford that, while mobile water vending provides employment for the medium-poor. A small number of people are also employed by kiosk-owners. Many businesses use water, for example in making illicit brews, and in urban agriculture. These require different quantities and qualities of water, so again, a range of services is required to help cater for these needs.

Gender

Women tend to be responsible for making sure that the household has sufficient water for drinking, cooking and washing. Women are not the only ones who may collect water, but they often have to pay for it from limited household budgets. Women are also the ones who look after family members when they are sick, and who take care of children – including being responsible for their access to sanitation.

Three factors constrain women's access to and use of the improved sanitation facilities offered by the community blocks. One is financial. While they have responsibility in the household for water, sanitation and health for the family, they also control limited resources and have to make difficult choices about its use. When funds are short, food and health care are prioritised, and the family may buy less water or not pay their subscription to use the sanitation block that month. A second constraint is time. Many women combine domestic responsibilities with income-generating activities. To save time (and precious water) they may wash their children at home, and then use the water for cleaning the house or sprinkling on the floor to keep the dust down, as well as washing themselves. They may not have time to visit to the block just to use the toilets.

A third factor is concerns about safety. Women and children fear going to distant latrines (or the block) at night for fear of attack. Fears of attack and rape also prevent some women from washing in the existing bathrooms or using pit latrines, especially at night. Children also fear using the pit latrines because of the danger of falling into the hole.

Appropriate Sanitation

'

Appropriate sanitation' for poor women and men in urban areas, is sanitation which is affordable, and safe for people and the environment. Systems do not need to be hi-tech or complicated, but should be those that the poor can help design, use, own, operate and easily understand. It is clear from this research that 'appropriate sanitation' means more than just latrines or toilets. It includes these, though. Women were particularly concerned about the cleanliness and safety of the facilities. Both men and women disliked the smells from poorly managed pit latrines, and thought convenience was important. Convenience included the distance to the latrine, and the time spent queuing to use it, especially during busy times in the morning.

Beyond latrines, 'appropriate sanitation' also included washing, which meant having a safe and private place to wash (especially for women), and having sufficient clean water. Water for washing clothes and keeping the house, latrines and bathrooms clean was also important. Drainage of water used for all these purposes was also a problem as it tends to run out onto the streets, and collect in pools which are breeding grounds for mosquitoes.

Design and use of sanitation blocks

The community sanitation blocks in Kianda and Kiambiu are clearly very popular. Both serve many hundreds of customers each day. Usage is much more than envisaged during the design phase, which causes problems for the block in Kianda which relies on a septic tank which has to be emptied often. The blocks were designed through a participatory process and are managed by community-based organisations. Users particularly value the cleanliness, lack of smells, and warm water in the showers. This mirrors experiences with community-managed blocks in India where community-designed blocks have been highly valued by users because they provide better privacy, a constant supply of water for washing, and better provision for children.

However, there are clearly some aspects of the design which did not fully meet the needs of users. This is evident in the records of use which show that far fewer women than men use the blocks – largely because fewer of them pay-and-use. Children also use them less often even when they are free. Women and children also make far less use of the showers than men. Some of the reasons for this were explained under the section on 'gender' above. The blocks do improve the sanitation situation and result in noticeable improvements in the environment in the settlement. However, they are not the complete solution to the sanitation needs of residents. There will still be a need for some pit latrines and bathrooms.

While every effort was made to incorporate the views of all sections of the community in the design process, some issues did not emerge, and perhaps others were not foreseen even by the residents. Now that the blocks have been constructed and are in operation, there is scope for exchange visits from other communities as they are designing their own blocks. The process of design can therefore be iterative and improvements can be made. Two issues that were not foreseen included the disposal of materials that women use when they are menstruating. In the absence of other places to dispose of these, they often block the pipes. Secondly, the blocks are used for multiple functions. Women find that the concrete or digester slabs make good places for washing clothes, close to the water kiosk. The blocks are also used as shelter from the rain. And people are finding that they are sociable places too. These additional uses may need to be planned for, or extra space reserved when the plans are drawn up.

Overcrowding at a water vending point

Policy issues

In the current policy climate where the government has moved towards playing the role of facilitator rather than implementer, there is a clear need for co-ordination of interventions amongst the various stakeholders. The provision of water and sanitation services in urban poor slum areas has been piecemeal and unsystematic, with initiatives carried out by different agencies and local communities. These have tended to benefit relatively few people. There is a need for all agencies to pool lessons and best practices, and resources so that solutions can be taken beyond the scale of demonstration models. Capital costs can be relatively high, but communities themselves can cover the costs of operation and maintenance. Communities also need to take a lead in questions of design and management – learning from each other about what solutions will best meet their needs. At the same time, there is clearly a need to manage slum dwellers' expectations of what the government can provide for them.

A clear lesson from this research is that plans for interventions in water or sanitation need to take into account the livelihoods of residents, and their concepts of 'appropriate sanitation'. Plans also need to recognise that the population of informal settlements are far from homogenous. Certain solutions may be positive for some sections of the community, but negative for others. Any intervention must try to increase, rather than decrease, the options available to people for accessing water or sanitation – which is especially important for the very-poor and for women.

Land tenure has been a significant stumbling block to improving access to water and sanitation in Nairobi's informal settlements. Conflicts over land ownership and threats of mass evictions by either the government or landlords mean long-term planning is not possible. All the stakeholders become wary of investing in permanent structures. Greater efforts towards regularising land tenure and promoting upgrading, or at least allowing for the provision of certain types of water and sanitation systems in illegally-settled areas could make improvements for hundreds of thousands of people possible.

A second legal issue relates to the role of water vendors who are among the main suppliers of water to informal settlements. Because they are not given legal recognition, they risk harassment from government and water company officials who blame them for not paying for water used, and for significant leakages from pipes. Residents often feel exploited by the vendors, especially when they raise their prices during times of shortage. The Water Act provides grounds for the recognition of water vendors, but action needs to be taken to make this a reality. Legal recognition can bring with it regulation and possibly more regular supplies, improving the situation for all parties (the water company, the vendors, and the residents). These recommendations are further developed in ITDG's report and case study on 'small water providing enterprises' in collaboration with WEDC.

ANNEX 1

SELECTION AREA FOR RESEARCH -GUIDING KEY

POPULATION DENSITY		UTILITY	
Low	**2**	NCC and borehole	**2**
Medium	**4**	NCC	**4**
High	**6**	Borehole	**6**
		Other	**8**
LEGALITY		**SUPPLY VOLUME**	
Legal	**2**	Good	**2**
Legal and illegal	**4**	Medium	**4**
Illegal	**6**	Bad	**6**
INSPECTIONS		**ACCESSIBILITY**	
Inspected	**2**	Good	**2**
Not inspected and inspected	**4**	Fair	**4**
Non inspected	**6**	Bad	**6**
SWP'S		OWNERSHIP	
Wholesale + distributing and direct vending	**2**	NCC + Private	**2**
Distributing and direct	**4**	NCC	**4**
Direct	**6**	Other	**6**

Explanation:
SWP's : Small Water Provider
NCC WSD : Nairobi City Council Water and Sewerage Department
Wholesale vendors: Tankers used
Distributing vendors: Door-to-door sales
Direct vendors: Charge for water at the source

Score sheet

	Population density	SWP	Legality	Utility	Inspections	Supply volumes	Accessibility	Ownership	Total
Mukuru kaiyaba	6	6	4	4	2	2	2	4	30
Mukuru kwa njenga	4	4	2	4	2	2	2	4	24
Quarry	4	4	4	4	2	6	4	4	32
Soweto	6	4	4	2	4	6	6	2	34
Kawangware	6	4	4	2	2	4	2	2	26
Huruma	4	6	4	4	2	2	2	4	28
Kuwinda	2	2	4	2	2	6	6	2	26
Maili saba	4	4	4	2	4	4	4	4	30
Kangemi	4	4	4	2	2	4	4	2	26
Njiru	2	4	2	2	4	4	4	4	26
Sinai	4	6	4	4	2	2	2	4	28
Githurai (kamae/ soweto)	4	6	4	4	4	6	6	4	38

KUWINDA (KAREN)

Settlement profile
This informal settlement is situated 25kms south of Nairobi city centre, next to the up market Karen C estate. It has an estimated population 6,832 with 2,380 households and covers an area of nearly 19.4 sq. kms. With a population density of 352.

The main economic activities undertaken are from small retail shops, to water vending, grocers and liquor brewing and selling outlets. To supplement these income generating activities are the casual jobs available at the affluent Karen C Estate where many residents of Kuwinda earn a living by working as labourers.
The settlements occupies land which is allegedly owned jointly by a group individuals and have given tenancy to residents although there is a current land dispute between the current owners of the land another entity which claims ownership by virtue of being sold to by some of the members of the group. Neighbouring institutions are the **Don Bosco catholic centre, A.I.C. church Kuwinda, Darasani mission, P.C.E.A. kuwinda** and the up market **Karen C Estate.**

Utility
- N.C.C. WSD
- Privately owned water tankers.
- Private bore holes supplies owned by the **don Bosco catholic centre** and the **darasani mission.**

SWP's

Type 1 water provider:- Tanker supply. Due to acute water shortages, residents with storage tanks purchase water from the tankers in order to refill their tanks and in turn sell it to the consumers at a profit prices.

Type 2 water provider:- Water kiosks. They buy water from the tanker and sell it to the consumer at a higher price at Ksh 3 for a 20-litre jeri can. Depending on the availability of water in the council pipes connected to the tanks, the same cost 1-2.
Individual and community water groups own these water kiosks.

Type 3 water provider:- bicycle vendors. They buy water from water points far from the settlements during acute shortages and sell the water door to door at an exorbitant rate of Ksh 5-10 for a 20 litre jeri can.

NB. On humanitarian grounds, the Don Bosco Centre and an individual provide water to the residents for free during biting shortages.

Constraints
- Supply from the NCC WSD, have a very insufficient supply not able to sustain the livelihoods in the settlements.
- Water kiosk owners receive irregular bill charges and meter readings, which has a heavy toll on their profit.
- Poverty in the area limits the viability of investment therefore there are limited initiatives.

Legality
All water points are legal.

Inspection
All council and bore holes are inspected.

Accessibility
Poor

Supply volume
Poor

Approximate sales per day
25 –30, 20- litre containers

Interventions
The A.I.C. Kuwinda has initiated various self-help projects in the area including the facilitation of forming water groups.

MAILI SABA (DANDORA)

Settlement profile
Maili saba is an urban informal settlement, situated approximately 10 kms East of Nairobi city centre, behind the sprawling Dandora estate. It has a population of 9,872 with 3,368 house hold and covers an area of roughly 3.9 sq. kms. With a population density of 2,531.
The main economic activities undertaken by the residents are retail shops, carpentry workshops and grocers, though, the main source of income in majority of the house holds is casual and formal employment in industries and also small contracts in the neighbouring estates.
Pertaining to the land tenure of the settlement, it is **quasi – legal** as the residents hold no legal ownership to the land although, having been given the mandate to settle there by the local administration.
Legal provisions have been arranged to allocate portions of land to the current occupiers though some allocations have fallen into non- deserving hands resulting to spontaneous evictions.
Neighbouring industries are the **K.P.C.U. Sorting plant, city engineering works** and the sprawling **Dandora estate.**

Utility
- N.C.C. WSD
- Borehole supply owned by the Baptist children's centre
- Annual unprotected spring and perennial rock catchment (not owned)

SWP's
Present in Maili Saba are water kiosk vendors with legitimized authorization from the N.C.C. to establish water points and abstract water along the distribution lines.
Price: Kshs 2-5 depending on reliability of supply.
The Baptist children's centre that owns a borehole with a piped system also sell water to the public at a constant rate of Kshs 2.
Also present are the push carts or bicycle vendors who fetch water from water kiosks and other outlets and sell to the consumers during shortages.
Price: Kshs 3-5.
The area MP provides water in times of shortages for free as an incentive to help the area residents.

Legality
All water points are legal and have been metered. The borehole owned by the children's centre has also been legitimized.

Inspection
Both council and borehole supplies have been inspected and treated. The spring source and the rock catchments, which are free of charge are, pose a health hazard as they are not inspected are they are close to sewage affluent.

Accessibility
Fair

Supply volume
Medium

Approximate sales per day
35-40, 20-litre jeri cans.

Interventions
Apart from the Baptist church providing a bore hole, for the community and their own personal use, there are no organizations with future plans to improve the area as regards water.

KM 1 (KAMAE / SOWETO) GITHURAI

Settlement profile

Kamae/soweto is an urban informal settlement situated approximately 20kms north of Nairobi city centre in Githurai area. It has an estimated population of 7,896 with 2,426 households and covers an area of nearly 1.8 sq.. kms. With a population density of 7,178.
The main economic activity is small retail shops. The main source of income for most homesteads in the area is from casual labour in the coffee plantations, which are a distance from the settlement, neighbouring Kenyatta University College and Kahawa west estate.

The settlement possess a quasi-legal land tenure status to the residents, with a land allotment exercise to the land occupiers, but characteristically, the land allotment process is dogged by malpractices and unfair practices and unfair allotment. This has resulted to instances of forceful evictions.
Neighbouring institutions are **Kenyatta university college, Kahawa barracks, Kamiti maximum prison** and the **kamae catholic church.**

Utility
- N.C.C. WSD
- Water ponds
- River source

SWP's
The developed neighbouring KM estate has water kiosks owned by individuals and sell it to the informal sector at a rate of Kshs 5-10 which is expensive for them. The residents obtain water from an unmetred water point which was provided to them on humanitarian grounds from a prior arrangement between the N.C.C. and the Kenyatta university administration. This has not actually been the case as a high handed individual in collaboration with a senior official of the university decided to hijack the process and charge a fee to the residents for drawing water at the price of Kshs per 20 litre jeri can.

This supply is subject to rationing hours that are from 10am – 12pm and from 5pm – 8pm and is not sufficient. Water is also obtained from a nearby river and ponds and used for drinking. This option is used by the poor residents who cannot afford the price of water sold at the water points in the KM estate. This poses a health hazard as the water is not wholesome. During acute shortages, the catholic church gives water to the residents free of charge to the residents.

Legality
All point are legal

Inspection
N.C.C. supply lines are all inspected. Water pond and river sources are polluted and not inspected.

Accessibility
Poor

Supply volume
Poor

Interventions
The catholic church provides water to the residents free of but with no immediate plans to improve the situation.
World vision conducted a survey related to the provision of water in the area but have not so far implemented any project. As a result of this, there is a feeling of hostility towards the presence of world vision in the area.

SOWETO (KAYOLE)

Settlement profile
This informal settlement is situated in the East land of Kayole, 8 km from the city centre. It has an estimated population of 76,015 with 24,630 households, population density of 40,008 and occupies an area of 1.9 sq.. kms. the main economic activities include, retail shops, bars and liquor brewing, barber shops, grocers and hair salons.

Some residents work casual and odd jobs in industrial area and in the neighbouring **Komarock, Umoja, and Jacaranda estates.**
The status of the land it occupies is quasi-legal with isolated portion being allocated to individuals who have constructed permanent structures. Quarrying is also a major activity near soweto and also serves as a water reservoir for abstraction of water.

Utility
- N.C.C.
- Private borehole (owned by imani children's rehabilitation centre)
- Quarry catchment

SWP'S
Small water providers include water kiosks connected to council line, which do not provide sufficient supply and costs Kshs 2 per 20-litre jeri can.
Imani children's centre owns a borehole with piped system and sell water to public at a price of Kshs 1.
Bicycle and push cart vendors buy water from kiosks and other sources and sell it at Kshs 5-20 depending on availability and

accessibility of water.
Door to door vendors who walk from household to household sell at a price of Kshs 5. the quarry water is drawn for free but is unfit for human consumption.

Legality
Due to the congestive nature of the Soweto settlement, illegal water points have been set up due to the difficulty of possible detection this has led to pipe vandalism and intermittent shortages. Legal metered water points are also in operation. Borehole water is also legally established.

Inspection
Council and bore holes supplies have been inspected.

Supply Volume
Insufficient

Accessibility
Poor.

Approximate sales per day
20 Jeri cans

Interventions.
Non

KANGEMI (KAPTAGAT ROAD)

Settlement profile
This settlement is situated approximately 5 kms west of town centre and has an estimated population of 8,112 with 2,805 households, occupies an area of 0.8 sq.. Kms and has a population density of 5,200. The main economic activity in the area is retail shops, grocers, liquor brewing and car washing. Others have formal and informal employment within the city. Neighbouring estates are Loresho, Mountain View and the Coopers Limited.
The status of the land it occupies is Quasi and there have been no allocations to individuals.

Utility.
- NCC
- Bore holes water point owed by St.. Martin Catholic Parish.

SWP's
Water Kiosks are the main type of providers in this area. They are connected to the city council utility
Pipes and metered. Individuals own the kiosks as well as community water self held groups in the area. The price of water per 20 Litre Container is KShs 3
Push carts and bicycles vendors are also present mostly during shortages and sell water to residents at Kshs 5 a container. This water is only available from Thursday to Sunday

St. martins parish gives water to the residents fro free in cases of acute shortages.
Security guards from the neighbouring Estates of Loresho usually take advantage of water shortages and sell water to the slum dwellers at a price of Kshs 5 per 20-litre Container.
Door to door vendors constitute of the least numbers of vendors and sell their water at Kshs 3-5
NB the NCC have provided stand pipes which are not metered free of charge as an initiative to held for the poor people whom may not be able to afford to buy water at the present rates. This water is supplied from Monday to Wednesday only.

Legality
Both legal and illegal connections

Inspections
All inspected

Supply Volume
Fair

Accessibly
Fair

Approximate sales per day
20 cans

Interventions
Non.

GATINA (KAWANGWARE)

Settlement profile
This settlement is 15kms south west of the city centre and has a population of 34,707 and 12,581
Households and occupies an area of 1.4 sq. Kms with a density of 24,791. The main economic activities in the area are retail shops, liquor brewing, second hand clothes selling, grocers and water vending, Many residence of the settlement work in the adjacent up market estates of Lavington and Kilimani and some have formal employment.
The status of the land it occupies is Quasi-legal and is not prone to demolitions and evictions.

Utility
NCC

SWP'S
Water kiosks from the greatest number of water providers in the area. All water points have been connected to the main distribution pipe some being metered, others not
As regards ownership, community groups have been formed and out up water points. Others are individually owned
Price Kshs 2
Push carts and bicycles vendors sell their water at Kshs 5 per Jeri can
Door to door vendors sell water at a price between Kshs 3-5 depending on the availability of water.

Legality
Water points are legal and illegal

Inspection
All inspected.

Supply volume
Fair

Accessibility
Fair

Approximately
20-4- Jeri cans

Interventions
Non

Settlement profile
The informal settlement is situated 3.5 Kms South East Of Nairobi City Centre in Nairobi Industrial area along off enterprise road, It has an estimated population of 36,232 with 10,224 households and covers an area of nearly 2.3 sq. Kms with a population density of 15,753
The main economic activities undertaken by residents in this area are retail shops, grocers, liquor brewing and selling, food kiosks, barber shops and hair salons and water vending, Supplement income to various households is generated by formal and informal employment at the middle class neighbouring estates of Hazina, South B and South C and in the near by industries where they usually work as casual labourers, very few having permanent jobs. The land is under Quasi-legal land tenure and has never been prone to sudden evictions and demolitions, though some portions of the land has been sold off to institutions like churches and children centres, Neighbouring the areas is the industrial area and the above mentioned estates.

Utility
NCC

SWP'S
The informal settlements posses only one type of small –scale water provider, which are the water kiosks. These \kiosk owners obtain water from city council distribution lines and sell water to the public at a rate of Kshs 2. Ownership of some other these water points is subject to controversy due to the presence of a cartel in which one cannot obtain access to get formal authorization to establish a water kiosk unless with a prior arrangement with the group which in turn negotiate dubiously with corrupt city council workers at a subsidized cost. Cartel Members also own water points with the area but rent them out to tenants living around the points and collect rent at the end of every month.

Legality.
Many of these water points are not metered of have connections of questionable procedure despite being metered, subsequently some points are legitimately authorized by the local authority to operate

Inspection
All are inspected

Accessibility
Good

Supply Volume
Good

Approximate sales per day
50.70,20 litre container

Interventions
Non

MUKURU KWA REUBEN

Settlements
Mukuru Kwa Reuben is an urban informal settlement, situated approximately 5 kms Southeast of Nairobi City Centre in industrial area, Along off Enterprise road, West of Mukuru Kayaba settlement when approaching it from town direction. It has a population of 17,252 with 6,189 households and covers an area of roughly 5.9 sq. Kms with a population density of 2,924
The main economic activities undertaken by the residence are retail shops, carpentry workshops, water vending and grocers though the main sources of income in majority of the homesteads is though casual and formal employment in industries
Pertaining to the land tenure of the settlement, it is Quasi-Legal though; some institutions have legal ownership to the land their structures occupy. St. Jude Catholic Mission and the Baptist Church.

Utility
NCC WSD

SWP's
The common providers of water are the water kiosks. They are diverse ownership and the prices at the points slightly differ
Individually owned.
Price Jerrican 20L Kshs 3
Community group owned price per Jerican 20L Kshs 2
Baptist Church and St. Jude Catholic Church owned 20L can Kshs 1

The other SWP in the area are bicycle and push carts vendors. In the time of shortages, they fetch water from the neighbouring settlements or area and sell it to the residents above the regular prices
Price Kshs 3-5

Legality
All legal and metered though, cases of meter tampering have been reported and appropriate action taken

Inspection
All inspected

Accessibility
Good

Supply Volume
Good

Approximate sales per day
35-40 20L jeri cans

Interventions
Non.

MUKURU KWA NJENGA

Settlement Profile

Mukuru kwa Njenga is an urban informal settlement situated approximately 6kms East of Nairobi City centre in the Industrial area. It has an estimated population of 44,704 with 16,139 households and covers an area of nearly 8.5 km with a

population density of 5,259
The main economic activities are small retail shops, grocers, second hand clothes and liquor brewing.
Some residents earn a living by working casual jobs in Industrial area and in the Imara Daima estate. The settlement possesses a Quasi- legal Land tenure status to the residents, the have been no frequent eviction despite recent confrontation between a private developer and the residents.
The middle market estate of Imara Daima is adjacent to this settlement.

Utility
NCC WSD

SWP's
The only type of SWP present in the area is the water kiosk owners, These points are managed by water cartels and are then rented out to the resident owner, they are connected to councils lines and some are dubiously legitimized

Price Ksh 3

Legality

Water points are metered and not metered. Regular cases of meter tampering have been sighted in that area. (Legal and illegal)

Inspection
All local authority water points have been inspected.
Accessibility

Fair
Supply volume
Poor
Approximate sales per day
15 containers per kiosk

Interventions
Non

SINAI (DONHLOOM)

Settlement profile
This informal settlement is situated 6Kms East of Nairobi city off Outer ring road adjacent to the middle class Donhoolm Estate and within the vicinity of Industrial area Lunga-Lunga and the railway line.

The settlement has an estimated population of with households and covers an area of approximately With a population density of. The main economic activities in the area are retail shops, food kiosks, water kiosks and grocers. Despite these activities, some of the residents also supplement this income with formal and informal jobs in the industrial area and in the neighbouring Donhoolm Estate.
The land on which the settlement occupies is trust land, they have **Quasi -legal** land tenure and has never been prone to evictions and demolitions recently.

Neighbouring industries and estates include **National Cereals** and **Produce Board silos**, **Brush** industries**, KPLC, IBER Africa** and the middle class **Donhoolm estate.**

Utility
N.C.C

SWP's

The only SWP in the area are the water kiosk owners. These providers have been connected to the NCC water distribution lines. There is the heavy presence of a cartel controlling the water connections both new and old. To get a connection, one may have to consult with the cartel pay a small fee and in turn the cartel members consult with errant City Council officials to establish a connection for a water kiosk. The Water kiosks owners are mostly the cartel members and rent these water points out for a monthly fee to the individuals who also charge the residents. Normal price per jeri can 20L is Kshs 2

Legality

All legal though Police initiative not metered.
Inspection

All water points inspected apart from the borehole source.

Supply volume

Poor

Accessibility

Fair

Interventions
The Kenya Police (Kayole police station)

REDEEMED VILLAGE AND MAHIRA (HURUMA)

Settlement profile
This informal settlement is located approximately 8Kms North East of Nairobi city centre behind Huruma city council flats, off Juja road.
It has a population of 29,728, with 8,864 households and occupies an area of 0.7sq Kms with a population density of 8,621.
The main economic activities undertaken in the area are livestock and meat selling, retail shops, secondhand clothes selling, food kiosks and carpentry workshops. Other residents have formal and informal jobs at the nearby Kariobangi light industries.
The settlements occupy trust land and residence has **Quasi -legal** tenure to the land they occupy. This land is not prone to evictions and demolitions by external forces.
Neighbouring areas **are Kariobangi estat**e **and light industries, Huruma flats, Kiamaiko slaughterhouse** and **Babadogo estate**.

Utility - N.C.C

SWP's

Type 1 small water provider: Water kiosk«; These water kiosks have been connected to the council's distribution pipes. Individuals own them and a community owns some self help group namely **Mungano wa wanavijiji group Huruma**. Water at these points goes for between Kshs 1-2 per 20L jeri can.

Some water points have been provided with water free of charge to the nearby residents as a local incentive of the area councillor and the city council.

An alternative water source is at a car wash site which was at the centre of controversy a while a go due to illegitimated water

points. The car washers sell water here at the price of Kshs 2 per 20L jeri can

Legality

Both legal and illegal

Legal and illegal water points due to meter tampering and improper procedures during application for meters and connections.

Inspection
All inspected

Accessibility
Good

Supply volume
Good

Approximate sales per day
Average of 20 cans per kiosk.

Interventions
Non

MATOPENI SQUATTER SETTLEMENT (NJIRU)

Settlement profile.

This informal settlement is situated approximately 20Kms East of Nairobi city off Kangundo road and has an estimated population of 8,173 with 2,980 households and covers an area of 6.3sq Kms and a population density of 1,297.

The main economic activities in the area are retail shops, livestock rearing and selling. (Mostly cattle) and grocers. Many residents earn a living from working at the slaughterhouse and in the adjacent Kayole estate.

The settlement occupies trust land and is Quasi -legal although efforts though Matopeni Squatters.

Settlement Scheme, is currently in progress to allocate the land to the residents currently occupying the land. They have not been prone to evictions and demolitions. Neighbouring industries and estates are the Njiru slaughterhouse and the sprawling Kayole estate.

Utility
N.C.C
Borehole

SWP's

There is a water kiosk located near the chief s camp, which obtains water from the local authority connection. It is owned by an individual and a 20L jeri can is sold at Kshs2.

Stand pipes are present in the area and water is supplied for free to the residents of this area through an intervention called Kayole Matopeni Squatters and Police Station project which is facilitated by The Kenya Police, Kayole police post and Matopeni self help group in agreement with the N.C.C to provide the poor slum residents with accessible clean piped water.

In the event of water shortages, the some of the residents who cannot afford to by water obtain it from an abandoned borehole in the nearby Mihango informal settlement, which used to belong to a quarrying company. This borehole yields unsafe and saline water.

Inspection
All inspected

Accessibility
Good

Supply volume
Good

ANNEX 2 - THE QUESTIONNAIRE

Livelihoods and Sanitation

Questionnaire No. _____
Date _____
Location _____
Name _____
Interviewer_____

General information
Q1. Which district do you come from?_____
Q2. When did you move to Nairobi?_____
Q3. When did you move to this estate?_____

Q4. Please fill in the table below

Sex	
Age	
Highest level of education	
Household size	
Household head	

Q5. Please fill in the table below on household structure

	Male (no.)	Female (no.)
Age 0-5 years		
School going children		
Non-school going children		
Adults		
Disabled		
Elderly, retired		

Q6. Please describe the relationships between the respondent and other members of the household_____
_____
_____
_____
_____
_____

Q7. Please fill in the table below on the main sources of income of household members

Sources of income	Income/month (Ksh)	Who?

Q8. Please fill in the table below on the main expenditures of household members (specify if monthly, yearly etc.)

Expenditure type	Cost (Ksh)
Fuel	
Food	
Water	
Sanitation	
Rent (if applicable)	
Clothing	
School fees	
Transport	
Security	
Household goods	
Others (please specify)	

Q9. Please fill in the table below on housing characteristics

Wall	
Roof	
Floor	
Number of rooms	
Size of house	
House ownership	

Q10. How do you rate problems related to the following (very important, important, not important)? Please rank them in the order you believe they should be solved.

	Rating	Rank
Water		
Sanitation		
Food		
Health		
Employment		
Education		
Other (please specify)		

Q11. Why have you ranked water and sanitation in those positions?

_____

_____

_____

_____

_____

Q12. Please fill in the table below on monthly water usage (specify if for individual or household)

Use	Source of water	Amount (20 litre jerrican)	Cost (Ksh) Normal supply	Cost (Ksh) Shortage
Washing food				
Washing utensils				
Cleaning the house				
Washing clothes				
Bathing				
Toilet				
Others (specify e.g. sprinkle on floor)				

Delivery and Access to Sanitation Services

Q 13. Please fill in the table below on sanitation systems

Type of sanitation system	Use (tick)	Own (O) or Shared (S) how many people use it?	Frequency used day/week	Distance from household (metres)	Cost per use day/ week
Bucket/Pan Latrine					
Flushing toilet					
Pit latrine					
Public latrine					
Bush					
Bath					
Public bath					
Others (please specify)					

Q14. Are there times when sanitation is a particular problem?

_____
_____
_____
_____
_____

Q 15. Please fill in the table below
Rating – 1 = Very good, 2 = good, 3 = average, 4 = poor, 5 = very poor

	Toilet	Shower
Who is responsible for cleaning?		
How often are they cleaned?		
How do you rate them in terms of cleanliness?		
Who is responsible for keeping them in working order?		
How do you rate them in terms of convenience?		
How do you rate them in terms of use by children?		
How do you rate them in terms of use by the disabled?		
Are you exposed to any dangers when using them? Please explain.		

Q 16. Is there water for washing your hands after using a toilet? Yes____No____If yes, how far away is it from the toilets and do you know its source?_____

_____
_____

Sewer Connection and Septic Tanks

Q17. Do you have a connection to a sewer line or a septic tank?

Part 1. Sewer line
(a) How long have you been connected?_____
(b) How much was your last bill?_____
(c) How would you rate the service - good/ fair/ poor ? Delete as appropriate. Please explain_____
_____
_____

Part 2. Septic Tank

(a) How many people/children use it?_____

(b) Who empties it? (e.g manual or pump/truck) _____

(c) How often it is emptied? _____

(d) How much does it cost? _____

(e) How do you pay for the maintenance and emptying of it?

Part 3. Neither

How do you dispose of dirty water and faecal matter?

Public Sanitation Projects

Q18. what public sanitation projects do you know about in this area?

Q 19. Are you (or your household) involved or have been involved in a public sanitation project? Yes___No____ If yes please explain how_____

Q 20. If no, would you invest in public sanitation project? Yes_____No_____ Please explain why _____

Q 21. What is your opinion of public sanitation projects?_____

Governance

Q 22. What is your opinion of the following's provision of sanitation?

(a) Nairobi City Council_____

(b) Private sewer services (e.g. septic tank emptying companies)____

(c) Others_____

Q 23. How do you rate the sanitation conditions of this estate over the last five years. Very good, good, average, poor, very poor? (tick appropriate) Please explain why?

Q24. Has the situation got worse or better over the last 5 years – please explain why?

Q 25. How could sanitation be improved? Please give details.