

Report No. 15586

Kenya Impact Evaluation Report Development of Housing, Water Supply and Sanitation in Nairobi

First Nairobi Water Supply Project (Loan 714-KE)
Nairobi Sites and Services Project (Loan 1105-KE and Credit 543-KE)
Second Nairobi Water Supply Project (Loan 1520-KE)
Second Urban Project (Loan 1550-KE and Credit 791-KE)
Nairobi Third Water Supply Engineering Project (Credit 1566-KE)

April 25, 1996

Operations Evaluation Department



Abbreviations and Acronyms

BOD	Biological Oxygen Demand
CDD	Community Development Division
CED	City Engineer's Department
CHMP	Cooperative Housing Mortgage Program
COD	Chemical Oxygen Demand
GDP	Gross Domestic Product
GPT	Graduated Personal Tax
GOK	Government of Kenya
HDMD	Housing Development and Management Department
IRCU	Industrial Research and Consultancy Unit
KCHS	Kariobangi Cooperative Housing Society
KWAHO	Kenya Water for Health Organization
lcd	liters/capita/day
LDRP	Leak-Detection and Rehabilitation Program
M&E	Monitoring and Evaluation
MLG	Ministry of Local Government
NACHU	National Cooperative Housing Union
NCC	Nairobi City Council
NGO	Non-Governmental Organization
NHC	National Housing Corporation
O&M	Operations & Maintenance
OED	Operations Evaluation Department
OEDD3	Infrastructure and Energy Division
PAR	Performance Audit Report
PCR	Project Completion Report
PHD	Public Health Department
SAR	Staff Appraisal Report
UfW	Unaccounted-for Water
UNDP	United Nations Development Programme
USAID	United States Agency for International Development
WRF	Welfare Revolving Fund
WSD	Water and Sewerage Department

April 25, 1996

MEMORANDUM TO THE EXECUTIVE DIRECTORS AND THE PRESIDENT

**SUBJECT: Impact Evaluation Report on Kenya
 Development of Housing, Water Supply and Sanitation in Nairobi
 First Nairobi Water Supply Project (Loan 714-KE)
 Nairobi Sites and Services Project (Loan 1105-KE and Credit 543-KE)
 Second Nairobi Water Supply Project (Loan 1520-KE)
 Second Urban Project (Loan 1550 and Credit 791)
 Nairobi Third Water Supply Engineering project (Credit 1566)**

Attached is the Impact Evaluation Report (IER) on the subject projects prepared by the Operations Evaluation Department (OED). The main objectives of the impact evaluation were to assess the effectiveness of the complementary interventions in the development of housing, water supply, and sanitation in Nairobi, as well as to understand their medium- and long-term impacts, i.e. five to fifteen years after completion. These interventions involved 20 years and over US \$120 million of Bank lending. The study was launched in Nairobi in June 1994. In the preparation of the report, OED has focused on four areas: (i) impact on access to services; (ii) impact on environment; (iii) impact on land and housing markets; and (iv) impact on institutions. In all aspects, the socio-economic impacts on beneficiaries were carefully evaluated.

The impact evaluation has drawn several key conclusions, one of which is overriding; the projects helped support the rapid economic growth and, despite the population increase, raise the standard of living in Nairobi throughout the last two decades. The evaluation found that, particularly in the field of water supply and sanitation, the results are sustainable. On the other hand, although progress was made in developing housing programs, no lasting impact was achieved in terms of housing policies and cost recovery in the housing sector. This leaves the sustainability of future public housing programs in doubt.

In the area of institutional development, the Water and Sewerage Department of the Nairobi City Council serves as a good example of substantial achievements on effective capacity building. Engaging a local training institute under a specific TA operation helped the Department improve its manpower on a continuing basis and its efficiency has markedly improved over the last ten years. Institutional development results of other departments of the City Council responsible for housing, roads, and solid waste management were negligible and they could benefit from similar support.

The report presents three recommendations for future operations in the areas of sequencing of TA and investment interventions, design of housing programs, and involving beneficiaries in project design and implementation. A two-day meeting was held with officials of the Nairobi City Council and relevant ministries of the Government of Kenya in Nairobi in June 1995 and consensus was reached on the report's findings and the above main recommendations. A number of other comments were also made in the meeting and they are all reflected in the report. In addition, the meeting produced a list of follow-up actions for consideration in the City Council. The core of these actions deal with potential private sector involvement in the housing sector, removing critical obstacles to providing water to low-income consumers, and improving operation of solid waste collection and disposal. Follow up of these recommendations would yield rich development dividends.

Attachment

A handwritten signature in black ink, consisting of a large, sweeping oval shape on the left and a series of sharp, angular strokes on the right, resembling a stylized 'A' or 'H'.

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Preface

The Bank has supported five projects in Nairobi, Kenya—three in water supply and two in housing and urban development. This Impact Evaluation Report (IER) assesses the medium- and long-term impacts of more than 20 years and US \$120 million investment for these projects.

The IER was prepared by the Operations Evaluation Department (OED) of the Bank. The study was launched during the study team's first mission to Nairobi in June 1994. In July-September 1994, a team of local consultants conducted a socio-economic survey of 500 households in five areas in Nairobi, gathering the perceptions of beneficiaries about the outcomes and benefits of the projects. The survey results were supplemented with interviews of key informants and group discussions.

In December 1994, the study team revisited Nairobi to collect information on the impacts of these operations at the city wide level, focusing particularly on water and sanitation services, land and housing markets, cost-recovery, credit systems, and institutional development. The Nairobi City Council (NCC) and its relevant departments provided the bulk of information, but the study team also collected secondary data from general publications and earlier studies on the projects, as well as from Bank files. The kind cooperation and invaluable assistance of local authorities, stakeholders, and Bank staff in the Africa Region, the Regional Office in Nairobi, and OED in the preparation of this report is gratefully acknowledged.

As part of the impact evaluation, a two-day meeting was organized in Nairobi on June 19 and 20, 1995, to review the findings and conclusions of the study with Nairobi City officials and relevant ministries of the Government of Kenya.

Basic Loan/Credit Data (actual)

<i>Ln/Cr Number</i>	<i>Project Name</i>	<i>US \$ Million</i>	<i>Approval</i>	<i>Completion</i>
Ln. 0714	First Nairobi Water Supply	8.3	11/17/70	12/01/77
Ln. 1105, Cr. 0543	Nairobi Sites and Services	28.5	04/01/75	12/01/82
Ln. 1520	Second Nairobi Water Supply	30.0	02/14/78	12/31/84
Ln. 1550, Cr. 0791	Second Urban	50.0	04/18/78	04/01/86
Cr. 1566	Nairobi Third WS Engineering	6.0	03/26/85	06/01/91

Evaluation Summary

Projects Framework (Chapter 1)

Background

1. The population of Nairobi has tripled in the past two decades severely straining basic infrastructure. By the early 1970s, the quality of services and maintenance of facilities had deteriorated, as had the capacity of Nairobi's municipal government to address these shortcomings.

The Projects

2. The World Bank supported three projects to augment sources of potable water supply for Nairobi and to create and then strengthen the Water Supply and Sewerage Department of the Nairobi City Council. The Bank funded two other projects to develop and upgrade housing units for the urban poor, as well as expand sewerage coverage. The physical components of the water supply projects were implemented as designed, but procurement and contracting problems led to delays in implementation and to cost overruns. All physical components of the first urban project were implemented as designed, but institutional weaknesses with the second urban project led also to time and cost overruns.

3. The PARs rated the outcome of the water projects as satisfactory and institutional development as moderate; the sustainability of project benefits was rated as unlikely for the investment projects (WS I and II) and likely for the Engineering Project. In the PARs, the urban projects were rated as unsatisfactory as to their outcome, and their institutional development impact was rated as negligible; the sustainability of benefits was rated as uncertain for Urban I and unlikely for Urban II.

Impact Evaluation Methodology

4. This evaluation of the projects assesses their institutional, financial, technical, economic, social, and environmental impacts on households, neighborhoods and the city. Data to support the study come from a field survey of households, on-site observations of infrastructure facilities, a review of relevant documents and records, and key personnel and group interviews.

Access to Services (Chapter 2)

Water Supply

5. Supply capacity has largely kept pace with the population growth, and the availability of water has steadily increased as a result of the water supply projects which comprised new facilities for collecting and treating water from the Chania River as well as improvements to water distribution. Later, programs for leak detection and rehabilitation, and metering house connections were implemented, thus improving the efficiency of the system. A water tariff restructuring in 1978 followed by regular price increases kept the WSD financially viable.

6. To make water affordable to the poor, the WSD increased the number of water kiosks and maintained low tariff for kiosk operators. Yet, operators charge consumers up to six times the lowest rate for house connections, despite efforts to regulate kiosk operations through licensing. New approaches are being pursued, including kiosks operated by NGOs and community groups. The beneficiary survey reveals that consumers perceive water quality as satisfactory but see only minor improvements in reliability and standard of supply. The price of water is felt to be too high, especially in the low income, unplanned areas.

Sanitation

7. About 65 percent of Nairobi's population has access to a water-borne sewerage system today. While the coverage increased chiefly outside the Bank-funded projects, Urban I made a significant contribution with the construction of new trunk sewers and the initial phase of the new sewage treatment ponds at the Dandora Estate. Further improvements will be achieved when expansion of the ponds are completed under WS III. The beneficiary survey indicates that positive environmental impact, due to improved sewerage, is felt in many neighborhoods. Maintenance of sanitation facilities is, however, perceived as inadequate which may compromise the sustainability of benefits.

Access to Social Services

8. The survey indicates that the urban projects had a positive impact on increasing access to primary schools and health centers. A trickle-down effect was also recorded in a non-project site (Korogocho located near Dandora). Market stalls have not stimulated expected small trade and business, because their location is unsuitable, the costs of transporting goods are too high, rental fees are excessive, and basic services are inadequate.

Environmental Impacts (*Chapter 3*)

9. The steady increase in population and area coverage of the sewerage has markedly improved the environment in many areas of Nairobi. Similarly, efforts to improve the quality and capacity of the sewage treatment facilities have yielded positive results in the quality of water in the Nairobi River. On the other hand, because of the deteriorating solid waste collection and disposal system in Nairobi, both the health of citizens and the quality of the environment are at risk and sanitation problems go unabated in many poor neighborhoods. Sanitation in unsewered areas still represent a serious public health threat. Other pollution factors, such as industrial discharges, are not controlled effectively.

Impact on Land and Housing Markets (Chapter 4)

Nairobi Land Market

10. The price of serviced land in the project areas escalated because of the improved infrastructure. The increases, however, were lower than elsewhere in Nairobi. This relative tempering of price increases was caused by the increased availability of smaller size, and thus more affordable, plots. This impact helped fulfill one important objective of the urban projects.

Nairobi Housing Market

11. The projects increased the supply of affordable rental rooms and improved the efficiency of the rental market in the project areas although this positive impact was not the original intention. The projects did not increase home ownership among the low-income population both because the NCC did not manage the allotment of property and housing appropriately and because many low-income residents chose simply to rent.

Cost Recovery for Housing

12. NCC's cost recovery performance was initially good. Later, its deteriorating financial and administrative structure compromised its ability to contain delinquencies, increasing perceptions among homeowners that the enforcement of repayment terms was lax. Cost recovery under housing programs implemented by private developers was better than under Bank and NCC programs.

Resettlement

13. Resettlement of farm workers and squatters who lived in the project sites was handled poorly, although it was a Bank loan condition. Restraining the NCC from evicting or demolishing squatter settlements and stalls was another loan condition, but evictions without warning or compensation lasted until the early 1990s.

Rural-Urban Links

14. The survey findings did not support the presumption of the urban projects that promoting housing investments and ownership among low-income residents would help them change from transitory to more permanent family homes. The findings rather suggest that, especially groups that have their rural homes further away from Nairobi, maintain strong rural ties; the majority of these residents are even planning to retire in their rural areas of origin.

Gender Issues

15. Half of the original allottees were women and they did benefit from the first phase of the program. Those who managed to pay their mortgages regularly, and thus keep their plots, belong to higher-income brackets.

Impact on Institutional Development (Chapter 5)

Water and Sewerage Department

16. The two water supply investment projects provided only routine staff training at NCC's Water and Sewerage Department (WSD). Capacity building awaited a suitable training program funded under the Engineering Project, which created a more qualified pool of mid-level staff and reduced staff turnover; it also has improved working conditions. The WSD gave high priority to efficiency, as demonstrated by the commendable ratio of 8.5 staff to 1,000 connections, and by shorter response times to repairs and customer complaints. Although the O&M capacity of WSD has improved over the past 10 to 15 years, the sustainability of water supply and sanitation improvements is likely to be compromised if shortcomings with its vehicle and equipment repair workshop, consumer (water) meter repair and testing workshop, and sanitation support in unsewered areas are not addressed soon.

City Engineer's Department and Public Health Department

17. The two departments responsible for roads, drainage, and solid waste management received little or no support from the urban project to improve their institutional capacity. Their operations are badly hampered by the lack of equipment and staff inefficiency. As a result, for instance, only 20 percent of the waste generated in Nairobi is collected.

Housing Development and Management Department

18. The Housing Development and Management Department (HDMD) is NCC's implementing agency for all sites and services schemes, and is responsible for managing all tenant purchase schemes. The urban projects did not provide adequate support to HDMD to improve its capacity to handle technical, financial, and administrative functions. Today, it still lacks autonomy and flexibility, modern accounting and financial management systems, and strong training support to enhance its staff development.

Credit Systems for Housing Programs

19. Existing credit mechanisms were poorly administered and did not provide loan amounts that were sufficient to cover the escalating costs of labor and materials, thus making it difficult for allottees to complete construction on their homes. In fact, more effective credit mechanisms have been developed more recently by NGOs and housing cooperatives that might be better lending models in the future.

Conclusions and Recommendations (Chapter 6)

20. The impact evaluation study in Nairobi reviewed the impacts of three water supply projects and two urban development projects implemented with World Bank funding over a period of 20 years, between 1971 and 1991. Based on a survey of project beneficiaries, interviews and group discussions with key informants, and data collected by local consultants and the OEDD3 team, the evaluation yielded interesting findings and conclusions as discussed above.

21. Some of the key findings are highlighted here as follows:
- The projects had positive impact on access to water supply and sanitation services thus supporting the economic growth of Nairobi during the last 10 to 15 years.
 - Without the improved and expanded water supply and sewerage systems the housing programs would not have been technically feasible.
 - In the absence of matching improvements in solid waste collection and disposal as well as in controlling of industrial discharges, the positive environmental impact caused by sewerage improvements is seriously compromised.
 - The Bank urban projects, which aimed to support the government's policy to promote owner occupant housing, did not reverse the trend toward rental housing. Yet they helped improve the efficiency of rental markets by keeping rent-to-income ratios at an affordable level in low-income areas.
22. The impact evaluation confirms the ratings given to these projects in earlier evaluations, e.g. performance audits. Current findings hold especially true as to lack of the institutional development impact of the urban projects.
23. The analysis by the evaluation team points to the following recommendations and lessons:
- Future projects to develop municipal services in Nairobi should provide strong support to building institutional capacity. Sequencing of *technical assistance* and *investment interventions* proved particularly effective in the evaluated water projects.

The design for *technical assistance* should be broad-based and aim at:

 - strengthening operational autonomy of agencies including necessary policy and regulatory reforms;
 - improving all aspects of O&M capacity development;
 - developing a pragmatic financing mechanisms for enabling the poor to obtain adequate services at affordable costs; and
 - developing an environmental action program at the city wide scale.

Investment interventions should integrate various service provisions so that the benefits of an improved service (such as drainage) will not be negated by the absence of improvements in another service (waste collection). Such coordinated interventions will reinforce the outcome of investments and the sustainability of their benefits.
 - The design of future housing programs in Nairobi should include:

- a careful *market analysis*, so that the growing demand for both owner-occupied and (primarily) rental housing can be met in a balanced fashion; and
- reformation of the *policy framework* (and regulations) for housing development to ensure that financial support is available to low-income groups and to minimize opportunities for land/housing speculation.

The implementation of such programs should ensure that the selection of beneficiaries is stringent so that the owners will occupy the plots awarded to them. One option would be to add a contractual obligation of occupation for a minimum of five years. Furthermore, cooperation with local NGOs experienced in housing the poor should be encouraged to build on their close relationship with low-income populations.

- The *participation* of beneficiaries should be central to any future shelter projects if sustainability is to be reached. To build up participation, assistance should be provided to foster community cohesion, the community's capacity to focus on longer-term objectives of neighborhood management, and employment generation to enable beneficiaries to benefit fully from the program services. Such assistance should be targeted at all gender and poverty groups.

24. The June 1995 workshop, attended by the NCC and the Bank evaluation team to review the findings of this impact evaluation, endorsed the above conclusions and overall recommendations. NCC also suggested an action plan for immediate implementation as follows:

- The organizational structure of the NCC should be re-examined paying particular attention to those departments involved in housing.
- The NCC should promote joint ventures with the private sector in the provision of housing and infrastructure.
- Priority should be given to the establishment of a comprehensive planning data bank with the NCC.
- The NCC needs to charge realistic rents for its houses and, in the long term, to consider privatizing its rental housing stock.
- The NCC should control river pollution by containing waste dumping in drains and industrial discharges into rivers.
- The NCC should investigate how water could be made available to low-income consumers at more affordable prices.

The implementation of this action plan should be supported in future investment projects.

1. Projects Framework

Background

The population of Nairobi has tripled in the past two decades severely straining basic infrastructure. By the early 1970s, the quality of services and maintenance of facilities had deteriorated, as had the capacity of Nairobi's municipal government to address these shortcomings.

A Snapshot of Nairobi

1.1 Nairobi is the capital of the Republic of Kenya and its largest city. It is also the hub of trade, industry, finance, transport, communications, and cultural activities in the country, as well as the center of tourism. Nairobi is located near the central highlands, an average elevation of about 1,500 meters above sea level, sloping gently from west to east by about 300 meters across the city. Nairobi has two distinct wet seasons—the main rainy season in April-June and the secondary rainy season in October-December. Average annual rainfall is about 900 millimeters and the average annual temperature is about 20 degrees centigrade. Nairobi's urban district covers an area of approximately 30 kilometers east-west by 15 kilometers north-south; infrastructure services within this area are provided and maintained by the Nairobi City Council (NCC).

The Economic Setting in Kenya and Nairobi

1.2 Since Kenya's independence in 1963, economic development in the country has been rapid by African standards, but with substantial recessionary periods. The economy grew quickly in the first decade of independence (1963-73), but recession seesawed with growth throughout the rest of the 1970s and 1980s—the roughly 15-year period in which the projects in this evaluation were implemented. During the recession of 1978-84, GDP growth was slower than population growth (Annex A, Table 1). After a relatively high growth period in the second half of the 1980s, the economy began to deteriorate again in 1991, due to both external and domestic factors. External factors included the worldwide recession, the effect of the Gulf War on tourism, and three successive years of poor rainfall. On the domestic front, poor macroeconomic management prompted donors to freeze their balance-of-payments support in late 1991. Inflation, which remained comparatively contained throughout this period, escalated rapidly during this latest economic down turn. In 1994, the Kenyan economy again started to improve.

1.3 In Nairobi itself, employment in the formal industrial sectors has been about 50 percent of the total in Kenya; when informal-sector employment is included, employment in Nairobi has been about 28 percent of the total in Kenya. Although wage employment has grown by 3.2 percent per annum, Nairobi's economy has suffered from the effects of the recessionary periods. Moreover, a major source of Nairobi's revenue—tourism—has grown by only one percent annually since 1975 (Annex A, Table 2).

1.4 Population growth in Nairobi is among the highest of all world capitals (Annex A, Table 2). During 1979-89, the average annual growth rate of urban population was 5 percent and, by 1989, nearly 45 percent of the urban population of Kenya lived in Nairobi. The rate of urban population growth in the face of the recessionary periods has placed a tremendous strain on Nairobi's social and physical infrastructure, as well as on the ability of the municipal government to finance and administer service and maintenance activities. These shortcomings have their most adverse effect on the urban poor, who must rely on the government to provide them with municipal social services. In the 1970s, they were being particularly shortchanged, and had little access to such basic services as water, sanitation, and housing.

The Projects

The World Bank supported three projects to augment sources of potable water supply for Nairobi and to create and then strengthen the Water Supply and Sewerage Department of the Nairobi City Council. The Bank funded two other projects to develop and upgrade housing units for the urban poor, as well as expand sewerage coverage. The physical components of the water supply projects were implemented as designed, but procurement and contracting problems led to delays in implementation and to cost overruns. All physical components of the first urban project were implemented as designed, but institutional weaknesses with the second urban project led also to time and cost overruns.

Project and Institutional Setting

1.5 In response to Nairobi's expanding urban population and the fluctuating economy, the World Bank supported several projects to improve water supply and sanitation services and to provide affordable housing to the low-income population. The Bank support was initiated in the early 1970s. The first project approved by the Bank was the Nairobi Water Supply Project (WS I), followed by a series of projects: The Nairobi Sites and Services Project (Urban I), the Second Nairobi Water Supply Project (WS II), and the Second Urban Development Project (Urban II).¹ As WS II implementation was winding down, NCC prepared, and the Bank agreed to finance, the Third Nairobi Engineering Project to strengthen the Council's Water and Sewerage Department, and to prepare a follow-on investment project (WS III) that was approved for Bank funding in 1985 and is now nearing completion.²

1.6 Various departments of NCC have implemented the projects. The Water and Sewerage Department³ has been fully responsible for all water supply projects. The Housing Development and Management Department, conceived under Urban I, has had responsibility for implementing both urban projects, with assistance from the City Engineer's Department and the Public Health Department in their respective fields of specialty. The Ministry of Local Government provided input on policy matters that emanated from the national level.

1. This project was implemented in three cities--Nairobi, Kisumu, and Mombasa.

2. In urban development, the Bank also agreed to fund a follow-on operation to expand the approach taken under Urban I and II to other towns in Kenya; this Secondary Towns Project (Urban III), Credit 1390-KE, was completed in 1991. The impacts of WS III and Urban III are not covered in this study.

3. The Water and Sewerage Department was established in 1970 as a precondition for Loan 714-KE to finance WS I.

Project Objectives and Intended Impacts

1.7 Each project was targeted at specific facets of Nairobi's infrastructure—whether social, physical or institutional. Each facet, in turn, was targeted with different degrees of emphasis. Annex B provides a detailed breakdown of the objectives, components, and achievements⁴ of each project. The objectives and respective components are listed in Table 1.1 in summary form.

Water Supply Projects

1.8 The two water projects sought primarily to expand the supply of potable water to Nairobi by rehabilitating or constructing facilities to collect and treat raw water and then transfer the treated water to the city. The major component of the projects was the stepwise construction of the Chania scheme. The projects were also to expand the primary distribution network, particularly to the new residential developments and the industries in the eastern section of the city. WS I was to meet projected demand for a population of 1.1 million to the early 1980s; WS II was to augment that capacity by meeting the projected water requirements of 1.5 million by 1988.

1.9 WS I was also to develop an institutional mechanism for improving the efficiency and effectiveness of water and sewerage activities in Nairobi. WS II was to provide skill enhancement to WSD staff in accounting, management, and water treatment. The Engineering Project was implemented to further strengthen WSD's operational and financial management and improve its staff training program development. The Engineering Project also included a study component to assess the feasibility of constructing the (Thika) dam as the least-cost solution for maximizing the capacity of the Chania scheme.

Urban Development Projects

1.10 Urban I and II were implemented to develop and upgrade housing units for the urban poor; they also included components to make prices affordable to low-income groups, while providing appropriate cost-recovery mechanisms. Urban I initially targeted the Dandora site. Its goals were to improve living conditions for about 6,000 households, and provide trunk sewer infrastructure for the eastern section of Nairobi. The Nairobi component of Urban II extended the effort to other sites in the eastern part of the city. Its goals were to provide infrastructure to three unserved areas (Dandora extension, Mathare North and Kayole), build 15,000 serviced lots in those areas, and enhance community facilities, health services, and employment opportunities throughout the urban district. Both projects made housing loans available to households, and provided some assistance to NCC in operational and planning management.

1.11 In a broader sense, Urban I was to be the precursor to other sites and service projects in Kenya, serving as a model for government programs to provide urban shelter and infrastructure to low-income groups. Urban II was to help the Government accelerate the implementation of the housing programs, by mobilizing resources in the private sector, thus reducing public investment.

4. Achievements are summarized from the respective Performance Audit Reports (PAR).

Table 1.1 World Bank Funded Projects in Nairobi

<i>Project Name, FY, L/C No. Cost, L/C Amount</i>	<i>Objectives</i>	<i>Components</i>
First Nairobi Water Supply; FY71 L0714 US\$ 12.1 million US\$ 8.3 million	To expand and improve the water system in Nairobi to meet the increasing demand, and to strengthen WSD including its financial operations.	1. Construction of a river intake and treatment plant at Ngethu; 2. Provision and installation of raw water pumps, power facilities; 3. Laying of pumping main; 4. Laying of transmission main; and 5. New distribution mains.
Nairobi Sites and Services; FY75 L1105, C0543 US\$ 28.5 million US\$ 16.0 million	To demonstrate the feasibility of providing affordable housing services to the urban poor on a larger scale and at lower costs than previous government projects, and to expand trunk sewer infrastructure to meet the pressing sanitation needs of the city, and to improve project implementation capabilities of GOK.	1. Preparation and servicing of 6,000 new residential plots with individual water supply and sewer connections; 2. Construction of 6,000 sanitation core units; 3. Financing of materials loans for self-help construction of dwellings; 4. Addition of community facilities; 5. New trunk sewer infrastructure required for the project; and 6. Technical assistance for the project.
Second Nairobi Water Supply; FY78 L1520 US\$ 78.0 million US\$ 30.0 million	To increase the water supply capacity in Nairobi, improve and expand the distribution system, and provide training and assistance with the design and implementation of improvements to WSD's accounting and management systems.	1. Modifications to Sasumua Dam for use as a river regulating reservoir; 2. Construction of a river intake and raw water transmission tunnel and main; 3. Extension of the Ngethu plant capacity; 4. Construction of water transmission main; 5. Addition of distribution reservoirs, pumping stations and trunk mains, distribution mains; and 6. Technical assistance to WSD.
Second Urban; FY78 L1550, C0791 US\$ 69.4 million US\$ 50.0 million	To enable the Government to accelerate implementation of low-income housing programs in Nairobi and initiate similar programs in Kisumu and Mombasa to include squatter upgrading, lower standards in site and services plots, institutional strengthening, assistance to financial management of local authorities, and improvement of income generating activities and nutrition and family planning services for low-income groups.	1. Provision of basic infrastructure in 5 unserved settlements in three cities; 2. Preparation of 11,770 serviced plots in five sites; 3. Preparation of 2,500 surveyed plots with public water and sanitation facilities in Nairobi; 4. Financing of programs for construction of 3,240 serviced sites to be sold at market prices; 5. Housing loans; 6. Community facilities; 7. Improvement of nutrition and family planning; 8. Employment opportunities; and 9. Technical assistance to strengthen institutions (see note).
Nairobi Third Water Supply Engineering; FY85 C1566 US\$ 7.5 million US\$ 6.0 million	To help WSD prepare a third phase water supply investment project to meet the rapidly expanding water demands of Nairobi City up to the mid-1990s, to strengthen the operations and financial management of WSD to increase its efficiency and capacity to undertake the third phase, and to prepare recommendations for long-term institutional development.	1. Preparation of Nairobi 3rd Water Supply Project, including feasibility study, engineering, and bid evaluation; 2. Technical Assistance for Institutional Development: installation of computers to improve revenue collection in NCC's operation, and training for NCC's non-water operation staff.

Note: The details of the Nairobi components of the Urban II are described in para. 1.10.

Implementation Experience

Water Supply Projects

1.12 All physical components of WS I and II were implemented as designed. But delays were encountered with procurement procedures, the evaluation of bids and decisions about contract awardings. The completion of WS I was delayed by three and a half years, due almost entirely to a decision to expand the scope of the distribution component; in WS II, procurement problems delayed implementation by two and a half years and led to a cost overrun of 26 percent in KSh (2 percent in US \$).

1.13 The Engineering Project progressed well initially, but by late 1987 slow progress on engineering designs forced WSD to change the planning horizon of the follow-on project (WS III) from 1995 to 2005. The institutional and training components of the project helped WSD overcome its chronic staffing problem, and improved its operational efficiency. Later, the project added a component to detect leaks in the water supply system.

Urban Development Projects

1.14 Both urban projects had a lengthy implementation period. Urban I progressed rather well initially, but delays soon surfaced, due to the absence of support from NCC's City Engineering Department, a shortage of technical staff, disputes over construction standards, and changes in design specifications. Urban I did meet all physical objectives.

1.15 Urban II encountered considerably more difficulties, due primarily to its complexity and larger scale. Land acquisition proved to be a major bottleneck. The resistance of NCC to the specifics of the slum improvement program delayed project activities until the Bank agreed with NCC to eliminate this component. In addition, the inexperienced and understaffed project entities managed project activities poorly and had difficulty meeting loan conditions, especially those relating to municipal taxes.

Performance Ratings

1.16 The PARs rated the outcome of the water projects as satisfactory and institutional development as moderate; the sustainability of project benefits was rated as unlikely for the investment projects (WS I and II) and likely for the Engineering Project. In the PARs, the urban projects were rated as unsatisfactory as to their outcome, and their institutional development impact was rated as negligible; the sustainability of benefits was rated as uncertain for Urban I and unlikely for Urban II.⁵

Impact Evaluation Methodology

This evaluation of the projects assesses their institutional, financial, technical, economic, social, and environmental impacts on households, neighborhoods and the city. Data to support the study come from a field survey of households, on-site observations of

5. Project data and relevant project records are listed in annex A, table 3.

infrastructure facilities, and a review of relevant documents and records, and key personnel and group interviews.

1.17 Given the diversity of the project components, the impact evaluation adopts an integrative perspective that pools the accomplishments of all components and captures all impacts on the urban population—institutional, financial, technical, economic, social, and environmental. Measures of the impacts of the projects on target groups were derived from the survey findings and previous studies. The survey was fielded in the three urban project sites—Dandora, Mathare, and Kayole—and in two unplanned settlements that grew without much external intervention—Kibera and Korogocho. Kibera was selected because it is located in the western part of Nairobi, which received infrastructure support under the water supply projects, and Korogocho was selected because it is located near the Dandora site. As such, these two sites helped generate data on low-income areas in general. In addition, the survey targeted two fully developed middle-income areas, Woodley and Ayany, to supply information on project-related water supply development. Sanitation systems were analyzed in all survey areas.

1.18 *Methodology Framework.* The scope of the study extends from an analysis of socioeconomic impacts at the *household level* to an analysis of institutional, financial, economic, technical, and environmental impacts at the *neighborhood and citywide levels*. Each relevant stage of analysis addresses whether the projects and their specific components are sustainable (Annex C).

1.19 *Impact Evaluation at the Household Level.* The projects were expected to effect changes in the economic, behavioral, and health patterns of project beneficiaries. Measures of these impacts were based on a field survey consisting of personal and group interviews with households. A local survey team administered questionnaires to 500 households in the urban project sites—Dandora, Mathare North, and Kayole—and two unplanned settlements, Korogocho and Kibera (the location of each survey area is given in Map IBRD 27005). They focused on conditions before and after the project and covered such issues as the access, reliability, and affordability of project inputs and services, and public health and hygiene practices.

1.20 *Impact Evaluation at the Neighborhood and City Levels.* The projects were expected to effect changes in the institutional, financial, economic, technical and natural environment of the city and its neighborhood. Measures of these impacts are based on on-site examination of infrastructure facilities, a review of documents, publications and extract data, and key personnel and group interviews. A local consultant helped collect and analyze data in cost recovery, policy, and housing issues. The following items were investigated: physical works, service levels and technology, organizational management and capacity building, policy reforms, land tenure and house ownership, credit systems and self-financing, cost recovery procedures, land, housing and rental markets (Annexes D, E and F).

2. Access to Water Supply, Sanitation and Social Services

Intended Impacts of Service Improvements

2.1 The water projects were intended to have a positive impact on water availability, and thus the quality of life in Nairobi by (i) augmenting the supply of raw and treated water, and (ii) improving and expanding the distribution of treated water. Moreover, water service was to become more affordable to the poor by (i) increasing the number of kiosks selling water at very low tariffs, and also (ii) reflecting the capacity to pay in the new progressive block tariff system for the service through house connections.

2.2 The urban projects were intended to increase the sewerage coverage by constructing new trunk sewers especially in those housing areas that were to be developed under the projects (see Chapter 4). They were also to improve the sewage treatment capacity through construction of a new treatment plant. Improvements in the access by the poor to social services such as educational and health facilities were expected by providing new schools and health clinics. In addition, employment opportunities were expected to increase through the provision of market stalls for local vendors in the new neighborhoods.

Water Supply

Supply capacity has largely kept pace with the population growth, and the availability of water has steadily increased as a result of the water supply projects which comprised new facilities for collecting and treating water from the Chania River as well as improvements to water distribution. Later, programs for leak-detection and rehabilitation, and metering house connections were implemented, thus improving the efficiency of the system. A water tariff restructuring in 1978 followed by regular price increases kept the WSD financially viable. To make water affordable to the poor, WSD increased the number of water kiosks and maintained low tariffs for kiosk operators. Yet, operators charge consumers up to six times the lowest rate for house connections, despite efforts to regulate kiosk operations through licensing. New approaches are being pursued, including kiosks operated by NGOs and community groups. The beneficiary survey reveals that consumers perceive water quality as satisfactory but see only minor improvements in reliability and standard of supply. The price of water is felt to be too high, especially in the low-income, unplanned areas.

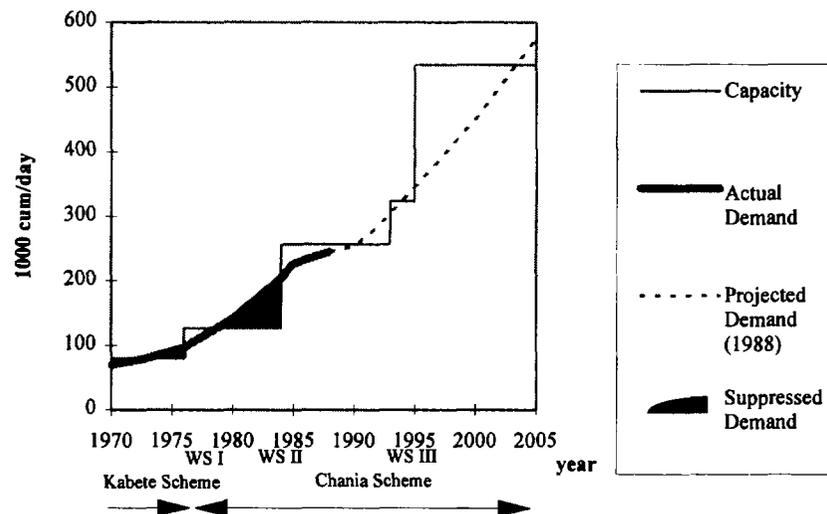
Sources of Water and Capacity Development

2.3 Nairobi's original source of raw water is known as the Kabete Scheme—a system that includes Kikuyu springs (constructed in the early 1900s); the Ruiru dam on the Ruiru River (constructed in 1939); and the Sasumua dam on the upper reaches of the Chania River (constructed in two phases, in 1956 and 1966). These sources supply a total capacity of about 80,000 cubic meters daily. Their transmission pipelines meet at Kabete, near the city center, which also is the site of a treatment plant and the main storage reservoir. The capacity of the Kabete scheme had become critically insufficient even for the higher-elevation areas supplied by the Kabete reservoir, let alone the city center; water shortages became increasingly common almost throughout the 1970s and the early 1980s.

2.4 To augment the capacity of the WSD to supply potable water to Nairobi, WS I and II initiated the new Chania scheme—a plan to build new facilities and infrastructure for collecting and treating raw water from the Chania River (downstream from the Sasumua dam) and transmitting the treated water to Nairobi. The initial phase of the Chania scheme was constructed under WS I between 1971 and 1976; it was expanded under WS II between 1978 and 1984; and it is now being completed under WS III including the connection between the two schemes—a pumping main from Gigiri to Kabete. Other project components included improvements in and expansions to the water distribution system in the urban district, and a leak-detection program that sought to reduce the extent of unaccounted-for water. The general location of the Kabete and Chania schemes—dams and raw-water intakes, transmission pipelines, end reservoirs at Kabete and Gigiri and interconnecting mains—is presented in Map IBRD 27006.

2.5 WS I and WS II provided temporary relief for a few years after their completion. The newly installed capacity under WS III should be adequate beyond the year 2000 (Figure 2.1).

Figure 2.1. Water Supply Capacity and Demand



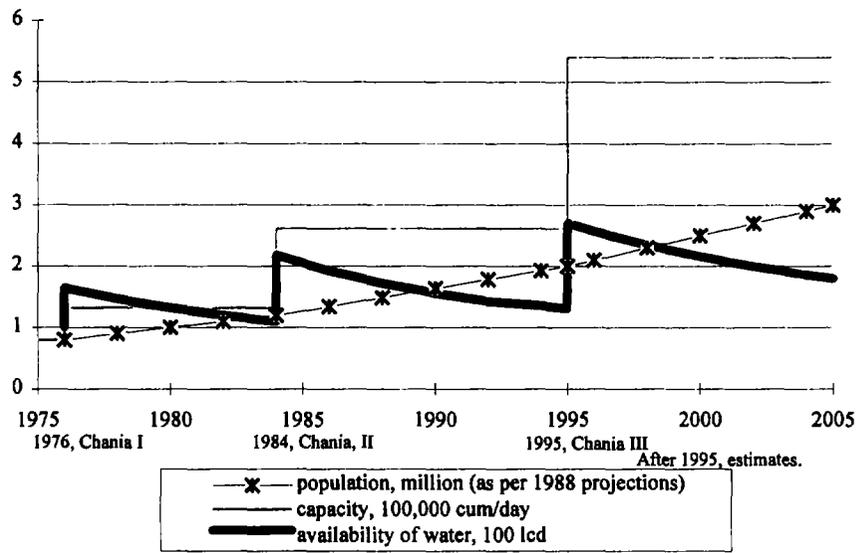
Impact on Water Availability

2.6 The availability of water—measured as liters per capita and reflecting the growing demand as the population increases—has improved markedly in the past 10 to 15 years (Figure 2.2). At the time WS I was completed, Nairobi had a population of about 0.8 million; the average total availability of water was about 165 liters per capita daily (lcd), including the unaccounted-for water (UfW).⁶ Between the time that WS II was initiated in 1978 and its completion in 1984, the population of Nairobi had grown to 1.2 million; the average total availability of water had fallen to 110 lcd. WS II expanded the Chania scheme by 130,000 cubic meters daily, increasing the total availability level to 218 lcd. The most recent estimates indicate that Nairobi's population was expected to be 2.0 million in 1995 and about 3.0 million by the

6. Total consumption captures domestic, industrial, and commercial consumption.

year 2000. Thus, by the mid-1990s at the very latest, the water supply capacity would become a serious constraint on Nairobi's economic growth. WS III has improved the situation again, increasing the availability of water to about 250 lcd; availability will remain at near 200 lcd up to 2005, at which time the next capacity increase will be imminent (see *para. 2.11*).

Figure 2.2 Availability of water



Impact on Network Expansion and Operation

2.7 As the availability of water improved it was possible to expand the reticulation system into previously unserved and poorly served areas. Extensions under WS I improved water service in the eastern section of the city for the first time, given that the Kabete scheme could supply only the city center and the suburbs in the higher-elevation western section. WS II provided critical new water mains from the Gigiri reservoir through the city center to the rapidly growing industrial section near the airport and to other industrial and residential areas of the eastern section. WS III will enable the WSD to strengthen the system in the eastern section of the city with the construction of a new main that will supply this area (including all urban project sites) from the north, supplementing the earlier, and thus far the only supply main through the city center. This measure is expected to improve supply reliability significantly.

2.8 The WSD initiated major operational improvements to the distribution system under the subsequent Engineering Project in 1987. One of the most effective improvements has been the zoning of the system. All zones are metered at specific supply points, enabling the WSD to monitor the amount of supply and the pressure at the delivery point in each zone. The system is now divided into 11 zones.

2.9 Zoning the system also facilitated major O&M improvements in the water supply facilities of Nairobi. The installation of the zonal meters and pressure control points has allowed the WSD operations to manage leakage control and repairs more effectively, and to reduce service interruptions. The WSD has also computerized its control system, enabling the

Department to monitor system operation on a real time basis and to respond to customer complaints more rapidly.

2.10 During the 1980s, the WSD implemented a sound program for multiplying and metering house connections (Table 2.1). The customer-to-connection ratio has decreased in the past 15 years to about 10 customers per connection (from about 14 customers per connection at the end of the 1970s) indicating that supply improvements have more than kept pace with population growth.

Table 2.1 Progress on Connection and Metering Program

<i>Year</i>	<i>Number of Connections</i>	<i>Increase (percent)</i>	<i>Consumers/Connection</i>
1979	60,000		14.2
1984	107,000	78	11.2
1989	149,000	40	10.7
1994	186,300	25	9.7

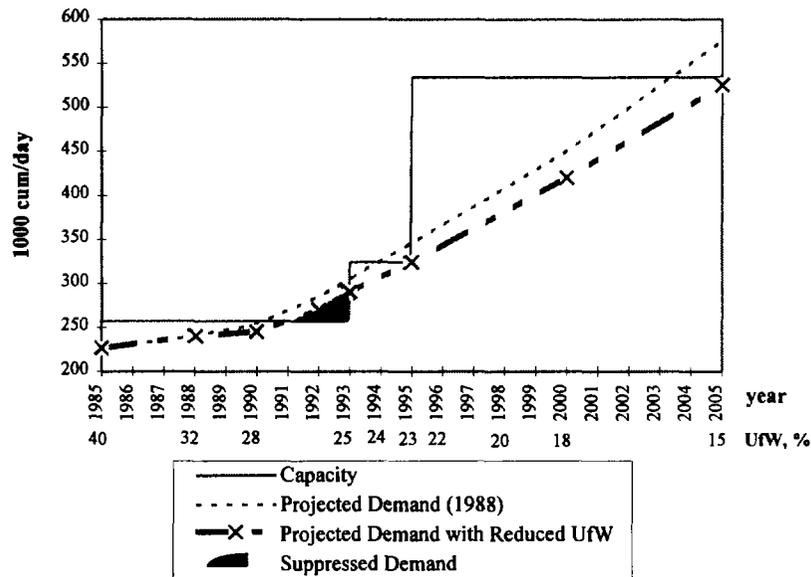
System Efficiency: Impact of the Leak-Detection and Rehabilitation Program

2.11 Capacity constraints were being experienced throughout Nairobi, due not only to the aging Kabete scheme, but also to the high rate of UfW, which was estimated at about 40 percent or more⁷ in 1984 when WS II was being completed. WS II did not address UfW; it was under the Engineering Project, when the WSD management made UfW reductions an essential and integral part of its overall water resource management plan. Targets for the leak-detection and rehabilitation program (LDRP) were specified in 1988 as follows:⁸ 26 percent UfW in 1990, 25 percent UfW in 1995, and 24 percent UfW by 2000. The program's achievements exceeded these UfW targets. As a result, critical water shortages in Nairobi were averted at the end of the 1980s and in the first half of the 1990s, when the new Thika dam and related structures were under construction. Assuming that the same progress in LDRP continues, and that overall demand estimates prevail, the need to install additional capacity can be postponed by perhaps two years. The revised projections are shown in Figure 2.3 based on the actual UfW ratio (1987-95) and the set new targets for 2000 and 2005. For the first time the NCC/WSD has some breathing room to plan for the future and concentrate on institutional strengthening. Moreover, a two-year postponement of the next phase would bring savings of over US \$30 million against each US \$100 million of investment (assuming the opportunity cost of capital is 15 percent). Preliminary estimates indicate that the next water source expansion would cost several times more.

2.12 The beneficiary survey indicates that about one-fourth of the respondents in Dandora and Mathare North moved from kiosk/well/river sources of water supply to individual connections thus improving their standard of living. The difference is less striking in Kayole and Ayane; in Woodley, no change in water source was noted (Annex E, *para. 77*).

7. The share of physical losses is estimated to be over 50%; the remaining losses are due to ineffective meter reading and billing, and other administrative deficiencies.

8. These targets were also recognized at the appraisal of WS III in 1988.

Figure 2.3 Nairobi: Impact of System Rehabilitation on Demand Projections*Impact on Service Standards and Supply Reliability; Beneficiaries' Perceptions*

2.13 The projects increased the number of water kiosks significantly.⁹ A large number of households, however, still share the services of a single water kiosk; for instance, a single kiosk serves as many as 50 households in Kibera and about 40 households in Korogocho. The beneficiary survey indicates that, as the population increased in these areas,¹⁰ the proportion of water connections (and on-plot taps) declined substantially over the years; in turn, the number of people using water kiosks for their supply increased significantly (Figure 2.4 and Annex E, *para. 71*). These findings can be explained in part by the flow of poor migrants from rural areas, some of it off set by the mobility of higher-income groups towards better housing in planned areas.

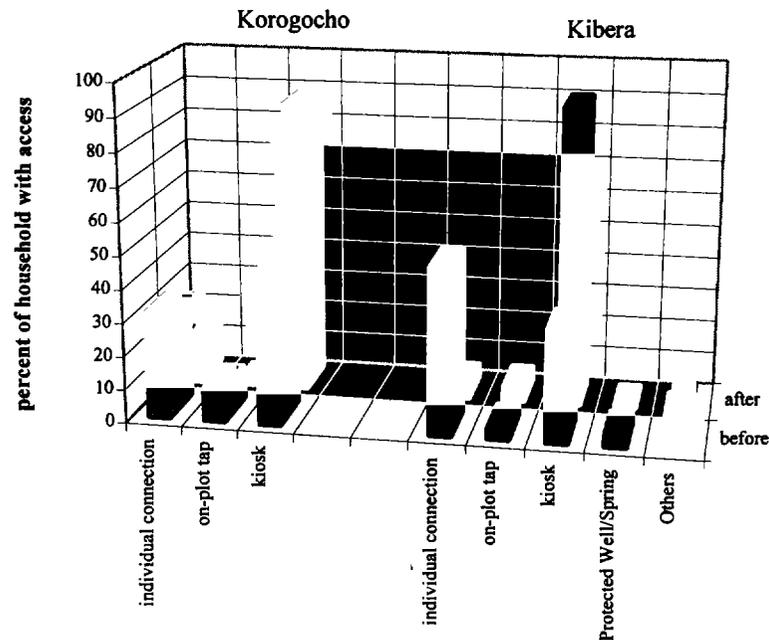
2.14 The increase in the number of kiosks has reduced the distance to water sources as well as the number of households per kiosk; yet more than 50 percent of the households in the survey areas do not have access to a water source in their compound. Considering that responsibility for fetching water still rests largely with women, the shorter distances do alleviate some of their daily burden and the amount of time spent in queuing for water.

9. Number of Kiosks:

	Korogocho	Kibera
Before 1976	1	5
Under Water Supply I	11	11
Under Water Supply II and after	49	65
Total	61	81

Today, there are about 800 water kiosks in Kibera and 300 in Korogocho. The survey sample covered about 10 percent of the water kiosks in Kibera and 20 percent in Korogocho.

10. In Kibera, for example, the population quadrupled between 1980 and 1993.

Figure 2.4. Water Sources Before and After Bank Projects

2.15 In areas supplied by water kiosks, a majority (65 percent) of respondents believe that water is reliable (that is, service is regular and water shortages are infrequent), but this proportion is much lower than it used to be ten years ago at 84 percent. Findings on reliability must be assessed with three caveats in mind: that the survey contains about 20 percent fewer answers on before-project conditions than on current conditions, that the respondents may have lived in areas where water was more abundant (in Korogocho, for example, 79 percent of the respondents lived elsewhere before the project), and that, in Kibera, population growth was significant and the water system serving this area (the Kabete scheme) is heavily overloaded. Finally, the survey findings indicate that water is accessible slightly less than an average of four days a week (Annex E, *para.* 72).¹¹

2.16 In the sites and services areas which are supplied through house connections fewer respondents than ten years ago believe that water supply is more reliable with the exception of respondents in Mathare North (Figure 2.5). The number of respondents in the middle-income area of Woodley who believe that water is reliable has also declined drastically.¹² But, only in Kayole did respondents indicate a reduction in the average number of days per week that water is available (from 3.3 to 2.9 days).¹³ Although many respondents believe that reliability is still a problem and although there are specific instances in which technical shortcomings justify their

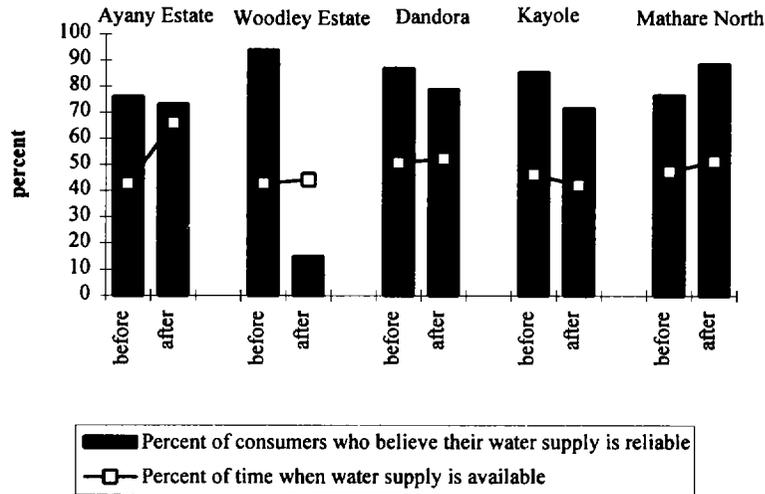
11. These results are not significant because there were too few observations, and a cross-tabulation shows that the majority of those who found water unreliable (64 percent) had access to water four or five times a week, whereas the majority of those who found water reliable (80 percent) had access to water only once a week.

12. The explanation lies in the fact that Woodley is an old City Council estate with an outdated water reticulation system.

13. In Kayole, it should be mentioned that although illegal, allottees and owners of plots have built additional stories to let, thus reducing water pressure at the higher level, and that most plots have been built without the basic infrastructure.

perceptions, it is clear that the water distribution provided by water projects in the city as a whole has improved (Annex E, *para.* 78).¹⁴

Figure 2.5 Reliability of Water Supply Before and After Project Implementation



Water Consumption and Impact on Hygiene Practices

2.17 The beneficiary survey indicates that the per capita consumption level of water is low in unplanned areas (16 liters per day in Korogocho and 21 liters per day in Kibera). A large majority (over 90 percent) of the respondents in Korogocho believe, however, that they have enough water for dwelling cleansing and bathing. In Kibera, fewer people now than ten years ago believe that they have enough water for daily hygiene. Boiling water before use is not a common practice in Nairobi, indicating that the public trusts the quality of water provided by the NCC. In the survey, less than ten percent of respondents reported boiling water before drinking it.

2.18 Despite different conditions and higher consumption levels, the findings in planned (project) areas are quite similar to those of unplanned areas: almost 100 percent of respondents in Dandora and Mathare North are satisfied with water availability for cleaning and bathing, representing a slight increase from the pre-project period. In Kayole, 90 percent are satisfied with water availability, which is no better than ten years ago.

Tariffs for Water Service

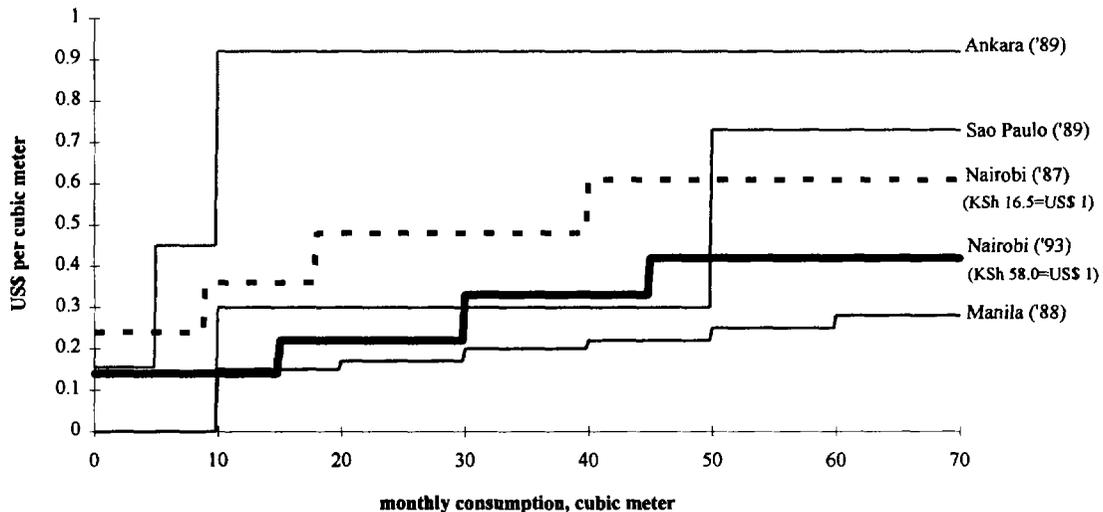
2.19 As the Bank was preparing WS II, it specifically targeted a water tariff scheme to ensure both that water would be affordable to consumers and that the WSD would remain financially viable. The WSD introduced a three-tier block tariff structure in 1978 (based on cubic meters of water consumed monthly), and started billing on that basis immediately. It then increased the tariffs regularly, in 1982, 1985, and in 1987; in the 1985 increase, it converted the tariff into a

14. It should also be noted that, at the time of the survey (mid 1994), WS III was not yet in operation at its full design capacity.

four-tier block structure. These tariff levels did indeed maintain the financial viability of WSD enabling it to earn an annual rate of return of 8 percent throughout the 1980s. By mid-1991, the Bank became concerned that the tariff was no longer adequate. Under continued pressure from the Bank, the WSD again increased tariffs in two steps in 1993.

2.20 The water tariffs in Nairobi compare well with tariffs in other large metropolises in developing countries as shown in figure 2.6. It should be noted, however, that despite the increase from 1987 to (September) 1993 -- between 90 and 135 percent in KShs depending on the consumption block -- tariffs were actually lower in terms of US dollars by some 30 to 50 percent. In 1986/87, the cost of water was KShs 3.40 per cubic meter¹⁵ (equivalent to US\$0.21) and was below the average tariff of KShs 5.55. In 1993/94, the cost of water was KShs 9.20 per cubic meter¹⁶ (equivalent to US\$0.15) and was well within the range of the new tariffs as of September 1993. Furthermore, the cost of water in Nairobi is relatively unaffected by foreign currency fluctuations; (i) the bulk supply is by gravity with low energy requirements, and (ii) the main chemical needed in the water treatment process, alum sulfate, is produced locally. Indeed, the financial position of the WSD has continued to be so strong that it has been able to meet its funding obligations (38 percent of the total cost) from the internally generated revenues throughout the implementation of the WS III.

Figure 2.6 Water Tariffs in Nairobi and Other Major Cities



Affordability of Water Supply

2.21 A large majority of the residents in the project areas believe that the price they pay for water is too high.¹⁷ These findings differ from those of the 1990 socioeconomic survey, in which only 15 percent reported that water was expensive. It appears that people with house

15. As per Annex 13 of the SAR for WS III, showing the actual income statement for the year ended June 30, 1987.

16. As per the audited accounts for the year ended June 30, 1994.

17. Answers on water tariffs were obtained primarily from owners because the rents of most of tenants cover water charges.

connections clearly resent the latest increase in water tariffs—by over 50 percent in 1993 for the lowest block—especially when compared with the more moderate increases in 1985 and 1987 (Annex E, *para.* 79).

2.22 In the areas served by water kiosks, more than half of the respondents spend 5 percent of their income on water; 25 percent spend between 5 and 10 percent of their income (Annex E, *para.* 73). Dissatisfaction expressed by respondents has considerably mounted over the last ten years—80 percent currently, compared with 58 percent before the project—a trend supported by previous surveys.

2.23 To make water affordable to the poor, WSD, with the Bank's help, increased the number of water kiosks in low-income areas from about 150 in 1978 to nearly 1,500 in 1994. The rate for kiosk water service was established at KShs 1.40 per cubic meters monthly, which in 1978 was 50 percent of the tariff for Block I; the rate has remained at this same level, and it has effectively become less than 20 percent of the lowest tariff for house connections.

2.24 Clearly, the deliberate effort by WSD to keep the kiosk rate low did not yield all its benefits for low-income groups. The WSD has received frequent complaints that kiosk operators are charging much more than the fixed tariff; the beneficiary survey showed that the rates range from KShs 0.50 to KShs 1.50 per bucket (20 liters), yielding an average price of KShs 50.00/per cubic meter, more than twice the highest rate for a house connection (or more than six times the rate of the lowest tariff block). Already, neighborhoods (and community groups), disappointed with the lack of improvements, have begun to form committees for managing their own kiosk, a trend that WSD is encouraging. A third response, also encouraged by WSD, is the installation of house connections even for poor people, as it may make economic and financial sense.¹⁸

2.25 Increasing the number of kiosks was expected to bring in competition on the market and thus reduce the retail price for water charged by the kiosk operators. The licensing of kiosk operators by WSD, however, failed to improve the situation because the licensing kept the ownership of the kiosks in the hands of a few owners who hire operators to run the kiosks. A vast majority (over 80 percent) of water kiosks are operated by individuals who have organized and secured a water supply cartel. One remedy would be better control of the licensing mechanism, including criteria for selection of owners, establishing retail rates, and monitoring the operations of the kiosks. Another response, community action as described above, should prove to be useful (see Box 2.1).

18. In the long run, a low-income consumer will be better off with a house connection, provided that a funding mechanism is available to make the house connection more affordable; the consumer will have better service, and will be able to consume more water at lower cost. This option would be preferable to carrying overpriced water from a distant kiosk. A simple calculation shows that WSD could fund the initial connection fee of KShs 300 (currently charged in low-income areas in eastern Nairobi) and could recover this cost in about 3 to 4 months at an interest rate of, say, 20 percent.

Box 2.1. KWAHO Water Kiosk Project

The Kenya Water for Health Organization (KWAHO), an NGO supported by the Ministry of Water Department, seeks to improve water and sanitation conditions by mobilizing community participation. Its strategy—to involve the community in ownership—is to promote community participation in project planning, implementation, and management, thereby ensuring the sustainability of developmental activities.

Fourteen women's groups are involved in KWAHO's water kiosk project. At the planning stage, requests for water facilities were submitted by the women's groups, followed by discussions to ascertain the types of facilities they needed and to select the site. KWAHO helped them set up 14,000-gallon water tanks and to have them connected by the WSD. The groups collected funds and organized labor for the initial construction and management of these facilities.

Their work has increased access to water and reduced charges. Water is sold at half the price charged at other kiosks, and the income generated from this project is used for other community-related activities, such as charcoal distribution. Through its role as intermediary between the authorities and the communities, KWAHO was a major player in breaking monopolies of the water vendors in certain areas.

This project is successful because KWAHO correctly targeted women's groups as the major players of this project. The lack of water services has the most serious impact on women, because they are largely responsible for collecting water for their households. They were thus more than willing to participate in community efforts to alleviate water problems. Their participation enabled them not only to improve their access to water, at a more affordable price, but also to generate income (an unintended benefit) that strengthened and broadened their activities and helped them to improve their standard of living.

Source: NGO Support to Informal Settlements.

Sanitation

About 65 percent of Nairobi's population has access to a water-borne sewerage system today. While the coverage increased chiefly outside the Bank-funded projects, Urban I made a significant contribution with the construction of new trunk sewers and the initial phase of the new sewage treatment ponds at the Dandora Estate. Further improvements will be achieved when expansion of the ponds are completed under WS III. The beneficiary survey indicates that positive environmental impact, due to improved sewerage, is felt in many neighborhoods. Maintenance of sanitation facilities is, however, perceived as inadequate which may compromise the sustainability of benefits.

Sewerage Coverage

2.26 The original sewerage system of Nairobi consists of a trunk sewer that runs along the Nairobi River and discharges to the treatment plant at Kariobangi (constructed in 1963).¹⁹ The

19. The Kariobangi plant is located about seven kilometers northeast of the city center, between Mathare Valley and Dandora near Thika road.

treatment plant is designed to produce a high-quality effluent²⁰ which is discharged into the Nairobi River at the same site. Urban I initiated a major extension of Nairobi's sewer system by constructing a 14.5-kilometer trunk sewer from the Dandora housing area to the Dandora Estate, the site of new stabilization ponds, that were also constructed under Urban I.

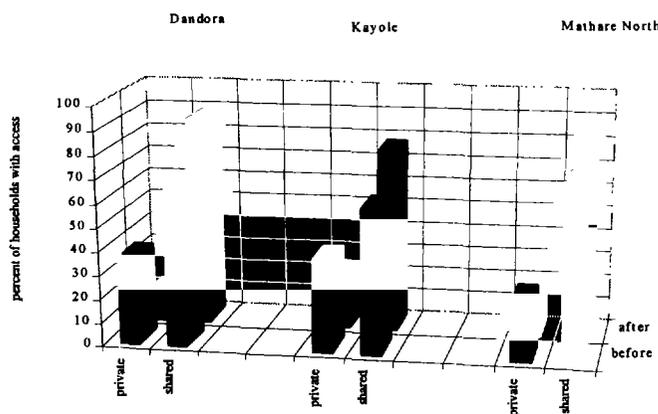
2.27 Urban II then expanded the trunk sewer system to cover the housing areas developed under the project. Because the capacity of the Kariobangi plant is limited, a new interceptor sewer was constructed to divert the extra load to the new ponds at Dandora Estate. The Dandora plant also discharges its treatment effluent into the Nairobi River. The population not served by sewerage use septic tanks, cesspools, and various types of latrines. The location of the main sewer structures are presented in Map IBRD 27007.

2.28 WS III recently increased the capacity of the pond system at Dandora Estate, so that the effective treatment capacity currently covers about 65 percent of Nairobi's population—an increase of about 85 percent over a period of ten years. The WSD has been working on expanding sewerage coverage primarily on its own without major support from external donors, and it has developed sound plans for expanding the system even further.

Public Health Impacts

2.29 The beneficiary survey indicates that the vast majority of respondents use water-borne toilets thus showing a significant improvement in their standard of living from about 10 years ago, when one-third were still using pit latrines. But on the other hand, access to private facilities has declined in the past ten years, increasing the number of households who must share toilet facilities (Figure 2.7).²¹

Figure 2.7 Private and Shared Toilet Facilities Before and After Project Implementation



2.30 The urban projects provided all three sites with an adequate sewer system. Therefore, the incidence of dumping of liquid waste in open drains has declined considerably from before the projects. Problems with flooding and stagnant water have not disappeared completely,

20. The system of biological filters is designed to produce an effluent of 20mg/l for biological oxygen demand (BOD) and 30 mg/l for suspended solids.

21. This finding is consistent with the increase in rental accommodations, which mainly provide shared toilet facilities.

however (Annex E, *para. 44*). Neither problem is considered serious in the three project sites, primarily because the topography allows flood water to drain quickly and in part because drains are considered adequate, despite the fact that solid waste dumping makes them susceptible to blockages. In the unplanned settlements, liquid waste is still largely disposed of in open drains, creating an environment conducive to bacteria and disease vectors. Residents complain about mosquitoes, rats, insect breeding, and bad odors.

2.31 Respondents in project areas face problems due to inadequate maintenance of sanitation facilities and sewer systems, and to the absence of garbage collection (Annex E, *para. 51*). Community mobilization with the assistance of community-based organizations and NGOs, has proved to provide effective garbage collection and sanitation maintenance (Box 2.2). In Mathare North, respondents suggest such a scheme; in Dandora and Kayole, on the other hand, respondents believe that the NCC should take responsibility for these services, and that they should not have to volunteer to take direct action to improve their environment, either individually or as a community.

Box 2.2. KWAHO Latrine Emptying Service

Financed by the Norwegian Development Agency, KWAHO has also established a latrine-emptying vehicle service in Kibera. The service is provided to ten villages on a rotational basis each week. Although the machine is operated by a community-based crew, access to the latrines must be ensured by landlords, who are required to prepare the sludge in advance to facilitate emptying.

The vehicle is managed by a 13-member community management team and operated by a crew consisting of a loader, driver, and supervisor. Working five and a half days each week for eight hours a day, the crew empties between three to ten loads daily, depending on distance, accessibility, and the nature of the sludge to be emptied. Requests for the service are paid in advance. The charge per load is KSh 150, which covers the operating and maintenance costs of the vehicle, which in turn accounted for about 89 percent of gross monthly income in the first six months of 1991. As a result, the fee was recently raised to increase the revenue base and to make it financially self-sustaining.

Maintenance and repairs are the responsibility of a community-based mechanic. Few major repairs have been made thus far. The majority of repairs have been punctures caused by rough roads and sharp materials, such as nails left behind by builders.

About 6,000 people were served in the first five months of 1991, but a backlog of 30 to 60 requests usually exists. The management committee would like to obtain a second vehicle to provide better service to community members.

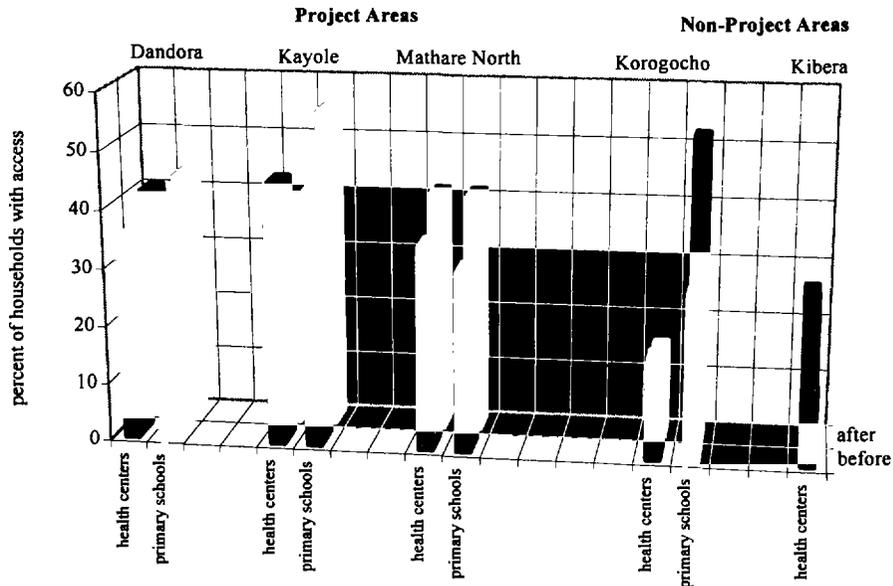
Source: NGO Support to Informal Settlements (UNDP-WB W&S Program), 1991.

Access to Social Services

The survey indicates that the urban projects had a positive impact on increasing access to primary schools and health centers. A trickle-down effect in access to schools was also recorded in a non-project site (Korogocho located near Dandora). Market stalls have not stimulated small trade and business as expected, because their location is unsuitable, the costs of transporting goods are too high, rental fees are excessive, and basic services are inadequate.

2.32 The survey and key informant interviews identified the extent of impacts the projects had on access to such social services as schools, health centers, and market facilities. The overall picture is shown in Figure 3.1 area by area.

Figure 2.8. Access to Social Facilities Before and After Project Implementation



Educational Facilities

2.33 The survey demonstrates, and the key informant interviews confirm, that the projects had a positive impact on the availability of educational facilities in Dandora: students have greater access to schools, which also have reliable water supply and electricity. The results for the other two sites, where some schools draw their students from other areas of the city, are mixed: some schools are not connected to electricity, and water supply for more than half of the schools in Kayole is unreliable. It is also worth mentioning that all schools have promoted educational opportunities for girls at all primary levels (*Annex E, para. 54*).

2.34 The survey also reveals that access to primary schools in Korogocho, the unplanned settlement located next to Dandora, has improved in the past ten years (*Annex E, para. 53*). According to key informants, better access to schools in Korogocho is due in part to the construction of primary schools in Dandora. Thus, a trickle-down effect of the urban projects was felt in Korogocho, enabling children to attend nearby schools.

Health Facilities

2.35 The projects improved access to health centers among both Dandora and Mathare North respondents but not among those in Kayole, because the health center there is still not operational, nearly ten years after project completion. Whether the Dandora and Mathare North health centers had an impact on health service use cannot be determined, because citywide caseload data and disaggregated population data were not available at the time of the survey. But caseload data indicate that the share of curative-service use in Dandora and Mathare North (among all NCC health centers in 1989) was 12 percent and 9 percent, respectively (*Annex E, para. 58*). The use of curative services has declined in both sites since 1989, and dropped

sharply in 1990.²² Available data on family planning, immunization, and water-related diseases in the health centers provide some information on their operations, but no analysis was performed given the lack of citywide data.²³ The survey did not confirm the trickle-down effect of the Dandora health facilities in Korogocho that had been suggested by key informants.

Employment-Generation: Market Stalls

2.36 All market stalls in Dandora, Kayole, and Mathare North have a reliable water supply and clean, although under-used, toilet facilities. They have fixed opening hours, which is not the case with roadside vendors and ordinary kiosk vendors (*dukas*). Refuse collection is poor, as it is throughout all of Nairobi. Most stall operators voiced concern about high rents and unequal competition from *dukas* operating near the markets; the kiosks pay lower rents, have flexible working hours, and often enjoy more strategic and profitable locations (Annex E, *paras. 59-63*). Competition from hawkers is fierce, even from those within the markets, since they sell similar merchandise. Security is often inadequate due partly to the large number of unemployed people. Market stall operators singled out the lack of access to credit facilities and business counseling services, and the poor location of the markets as their major operating constraints. Furthermore, in Dandora and Mathare North, many of the market stalls have no electricity, and the cost of individual electricity connection is prohibitive (more than KSh 10,000 per stall). In Dandora, the parking spaces that had been provided along the market stalls have been taken over by kiosks and other roadside stalls.

2.37 Roadside vendors and *dukas* who compete with market stall operators have a constant fear of eviction, and they lack access to credit facilities because they have no collateral. They also lack access to such basic services as water, toilets, and refuse collection, as well as to business counseling services. Moreover, in Kayole and Mathare North, distance makes transporting goods expensive, compounding their hardships. *Dukas* in Kayole reportedly pay fees to the NCC for the spaces they occupy, but they have no documents to support their claim and are under constant threat of eviction.

2.38 The conclusion is that although market stalls were built as part of the integrated urban projects in order to develop informally, no assistance to the potential vendors had been envisioned, nor had locations been evaluated properly. Despite making substantial payments to run the market stalls, users were left on their own, without knowledge of the market in which they were going to operate. The considerable potential of the informal market in Nairobi and its remarkable flexibility were not addressed adequately in project preparation. The construction of

22. According to NCC officials, the reasons for the decline are the shortage of drugs in that year and the introduction of the cost-sharing system.

23. The frequency of family planning visits and the use of contraceptives (IUCD and injectables) has declined somewhat in Dandora since 1986, but has increased in Mathare North. Immunization appears to have been performed regularly, despite some decline since the opening of the centers. Water-related diseases, such as scabies and ringworm, in Dandora and Mathare North account for 2.5 percent and 0.6 percent, respectively, of the total caseload for curative diseases.

market stalls has set up a rigid framework that does not respond to the needs and abilities of stall operators. These operators represent only one segment of the informal sector. Thus, designing a project component to generate employment requires a preparation analysis of the labor market, as well as mechanisms for providing assistance in credit access, market management, and business counseling.

3. Environmental Impacts

The steady increase in population and area coverage of the sewerage has markedly improved the environment in many areas of Nairobi. Similarly, efforts to improve the quality of the sewage treatment facilities have yielded positive results in the quality of water in the Nairobi River. On the other hand, because of the deteriorating solid waste collection and disposal system, both the health of citizens and the quality of the environment are at risk and sanitation problems go unabated in many poor neighborhoods. Sanitation in unsewered areas still represent a serious public health threat. Other pollution factors, such as industrial discharges, are not controlled effectively.

Intended Environmental Impacts

3.1 Although it was not explicitly stated in the SARs of the urban projects, it can be expected that the sewerage improvements (as described in Chapter 2) would have a positive impact on the neighborhoods of Nairobi as well as on the water quality of the Nairobi River. Although on a small scale, improvements to solid waste management practices were also to have similar environmental benefits locally in the targeted housing areas.

Sanitation at the Neighborhood Level

3.2 Sanitation in unsewered areas still poses an alarming threat to public health, especially in many low-income areas. Neighborhoods with septic tanks systems are better off, because the lot sizes are generally larger, and owners can use vacuum-tank trucks operated by private contractors for emptying their septic tanks. The situation is more serious in densely populated low-income areas where households use pit latrines. Also upgrading programs supported by various donors agencies and NGOs have improved the quality of latrines in the past 10 to 15 years. Proper maintenance of latrines requires support service, but equipment for sanitation—that is, for emptying latrines and septic tanks—is inadequate. Vehicles are scarce, and many of them are beyond repair. WSD has taken some steps to improve this service, but the situation is far from satisfactory.

3.3 Solid waste is routinely dumped in streets and open drains in many areas, even in the very center of Nairobi. The ineffective and deteriorating collection service by NCC's Public Health Department leaves the residents with no other option (see Annex E, *paras. 49-50*). The amount of waste collected by PHD was some 150,000 ton in 1984. By 1992, it had dropped to a mere 77,000 tons, only slightly more than 20 percent of the estimated total amount of the waste generated in Nairobi.²⁴ Consequently, unsightly heaps of uncollected refuse decompose in the streets, creating an eyesore and health and environmental hazards.

3.4 The problem is becoming more overwhelming each day, making the streets unpassable and leading to other undesirable environmental problems. Drains become blocked and do not

24. Information in this section is based on the data provided by PHD and on specific papers presented at the Workshop on Abatement of Pollution in Rivers Traversing Nairobi City, held on October 17-18, 1994.

carry storm water as intended. Eventually rain causes flooding, and stagnant water remains long after rains are over. Poorly maintained roads add to the problem.

3.5 Solid waste in Nairobi consists of more than 70 percent organic material, with a high proportion of vegetable waste; the rest consists of plastics, rubber, metals, glass, and so on. In some neighborhoods the waste is often burned in an attempt to control the problem thus adding to the air pollution. The end result is that the water in rivers becomes polluted. Furthermore, waste heaps, flooding, and stagnant water within residential areas are breeding grounds for rodents, flies, and mosquitoes.

3.6 Today, environmental hazards are a reality in many Nairobi neighborhoods. Some wealthier neighborhoods have started to hire private contractors to collect their waste. Similar examples can be found in low-income areas, usually with the assistance of NGOs. Substantial improvements were made initially at the sites of the urban projects but the momentum was soon lost, due to inadequate institutional strengthening at the city level.

Water Quality of the Nairobi River

3.7 The Nairobi River, which runs through the entire city, and the Ngong River, its main tributary, are the dominant bodies of water and the core of the drainage system in Nairobi. They are also, unfortunately, the recipients of pollution caused by solid waste when the collection and disposal systems fail to perform appropriately. The rivers receive (uncontrolled) discharges from industrial plants as well. The Nairobi River is also the recipient of effluent from the city's sewer system.

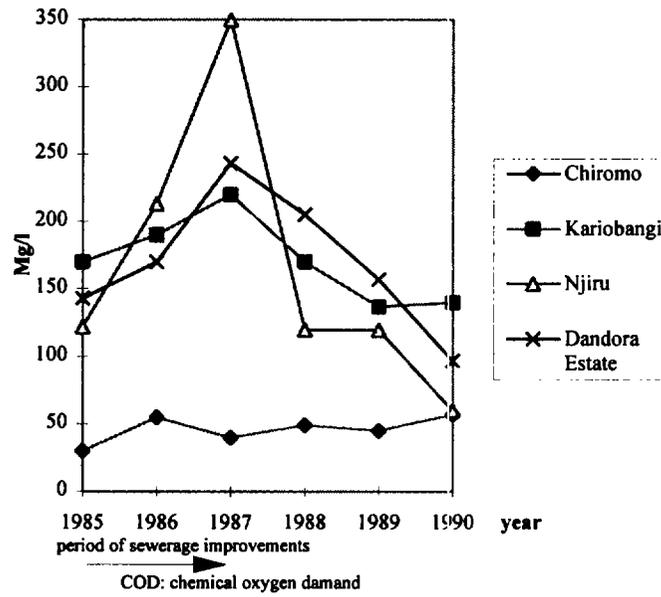
3.8 Most of the pollutant load enters the Nairobi River between the city center (Chiromo) and the Kariobangi sewage treatment works, originating from market sites and unplanned settlements along the river banks.²⁵ An extensive industrial area adds to the load. The flow of the Ngong River is even more heavily polluted than the Nairobi River; it runs through unsewered residential and industrial areas.

3.9 The water quality of the rivers has deteriorated over time; the all-time high for critical pollution indicators in the Nairobi River was reached in 1987, when the chemical oxygen demand (COD) ranged between 200 mg/l and 350 mg/l at various sampling points. The biological oxygen demand (BOD) level in the Nairobi River is normally between 60 mg/l and 80 mg/l. Fewer results are available on the quality of the water of the Ngong River. It should be mentioned, however, that the BOD ranged between 50 and 500 mg/l and COD between 100 and 1,000 mg/l in 1992.

3.10 Since 1987, after major sewerage improvements were completed in the eastern and southern sections of Nairobi, the water quality of the Nairobi River has shown signs of improvements. COD levels now range between 50 and 150 mg/l (Figure 3.1).

25. The data and information in this section are based on the paper "Findings of the Pollution Survey and the Need for Pollution Control" (from a workshop held on October 17-18, 1994 and on operational data collected from WSD).

Figure 3.1 COD Levels at Various Sampling Points of the Nairobi River



3.11 This improvement is attributable to the expansion of the sewerage coverage and the improved treatment of sewage. In fact, today, the effluent of the sewage treatment plants (with BOD regularly below 20 mg/l) improves the quality of water of the Nairobi River even while the other polluting factors, such as solid waste collection (and disposal) and industrial discharges, are not controlled effectively.



4. Impact on Land and Housing Markets

Intended Impacts of the Housing Components

4.1 The housing components of Urban I and II were larger than those of any other housing programs in Nairobi at the time and thus were expected to have a significant demonstration effect. The Bank sought to implement an "incremental housing model" as an alternative to demolishing the informal settlements that had proliferated with rapid urbanization. Under the model, poor households would be allotted parcels of land and core housing and then provided with loans and technical assistance to expand and upgrade their dwellings over time. Public housing subsidies could be thus minimized.

4.2 Three developments were expected to have a cumulative, positive effect on this process of settlement upgrading: one, the housing components would provide enough small-size lots to meet rapid demand growth, thus tempering land price increases; two, with small-size land parcels at affordable prices and loans for housing construction and renovation, the projects would increase home ownership among low-income residents; and three, beneficiaries would be able to pay utility tariffs and municipal fees and to make loan repayments that the NCC could recirculate into a housing development fund to be used toward infrastructure O&M.

4.3 This chapter reviews the impacts on the land markets and the housing markets. Annex G presents a chronology of activities under the above policy agenda and Annex H elaborates on the activities undertaken for improving the housing policy framework.

Nairobi Land Market

The price of serviced land in the project areas escalated because of the improved infrastructure. The increases, however, were lower than elsewhere in Nairobi. This relative tempering of price increases was caused by the increased availability of smaller size, and thus more affordable plots. This impact helped fulfill one important objective of the urban projects.

4.4 The Bank projects influenced the economics of land markets in Nairobi because they substantially increased the existing stock of housing in their areas. They had several economic impacts, mostly positive. The urban projects reduced the backlog of un-met housing demand. They converted large tracts of agricultural land into residential land --an urban transformation that increased land values, confirming previous Bank findings. The two urban and the two water projects extended water, sewerage, and road infrastructure to areas of the city with either limited or no access to such services before. The market was brisk because sites and services schemes subdivided land into small parcels that were affordable by many, but the majority of land parcels and dwellings were bought by absentee landlords, who were not the beneficiaries targeted by the projects.

Land Prices

4.5 The housing components of Urban I and II were expected to temper increases in land prices in the project areas (generally eastern Nairobi) as compared with those in the surrounding

neighborhoods. The assessment methodology was first to measure the impact of bringing in infrastructure by comparing the prices of serviced land and unserviced land in eastern Nairobi. Although this comparison falls short of a detailed price breakdown at the level of project lots compared with adjacent tracks, it provides a reasonable and relevant proxy for the impacts of the Bank projects on land prices.²⁶ The second step was to compare the price changes in eastern Nairobi against those in the broader urban district.

Land Price Changes in Eastern Nairobi

4.6 The comparison between the real-term prices per square meter (m²) of serviced and unserviced land in eastern Nairobi (Map IBRD 27005 provides the general location of the project area) since 1980 is shown in Table 4.1. Price changes for both sets of land reflected an inflation rate of 515 percent during 1980-93, as measured by consumer prices (IMF, *International Financial Statistics*, various issues). As expected, the price of serviced land has risen more rapidly than the price of unserviced land (8.5 percent versus 5.0 percent annually); the serviced to unserviced land price ratio has risen from 4 to almost 7.

Table 4.1 Changes in Prices for Serviced and Unserviced Land in Eastern Nairobi (average 1988 KSh per m²)

<i>Year</i>	<i>Price of Serviced Land (1)</i>	<i>Percentage Increase per annum</i>	<i>Price of Unserviced Land (2)</i>	<i>Percentage Increase per Annum</i>	<i>(1)/(2)</i>
1980	104	-	24	1	4.3
1982	138	15.2	24	0	5.8
1985	141	.7	25	1.4	5.6
1986	182	29.1	30	20.0	6.1
1988	149	-9.5	25	-8.7	6.0
1990	205	17.3	36	20.0	5.7
1993	301	13.7	45	7.7	6.7

Source: Data collected by local consultant.

4.7 A comparison with price changes in the rest of the urban district (Table 4.2) shows that until 1986 the price of serviced land increased more rapidly in the eastern area than the price of land in Dagoretti, a suburb of the western area, which also increased rapidly because the European Economic Commission financed an infrastructure project that improved the desirability of locating to that district. But subsequently, prices rocketed in all areas except in the east; over the long run the eastern area experienced the lowest increases.

26. A precise assessment of this impact is not feasible, for two main reasons. One, several factors external to the Bank projects have contributed to the observed price changes. Other low-cost housing projects were developed in eastern Nairobi at the same time and had similar effects. And, more broadly, the interplay of supply and demand conditions in Nairobi land markets governed overlap price movements separating the overlapping effects of these influences on land prices in the past decade is difficult. Two, the absence of systematic data on land sales in the project sites limits the quantitative analysis.

Table 4.2 Changes in Prices for Serviced Land in Nairobi (% p. a.)

<i>Period</i>	<i>All Nairobi</i>	<i>Eastern</i>	<i>Western</i>	<i>Northern</i>	<i>Southern</i>	<i>Dagoretti (S.W.)</i>
1979-82	11.3	15.9	2.3	n.a.	n.a.	22.3
1982-86	-10.6	7.2	-10.6	-11.1	-.6	2.8
1986-88	108.5	-9.5	234.0	66.1	143.1	7.5
1979-88	16.1	4.6	22.8	9.5	33.9	10.0

4.8 These steep price increases reflect a lagged response to demand growing in two stages. In the period up to 1979 and after 1986, the economy expanded, driven by high prices for coffee and tea, stimulating demand for residential land. In the early 1980s, a sharp economic downturn, rising energy prices, and a severe drought, dampened demand, pushing land prices temporarily down. The Dagoretti and eastern areas were exceptions as the ongoing infrastructure projects made these locations desirable and as revised city council regulations that lowered minimum lot sizes made land affordable to more buyers. The most rapid increase occurred in the western area of Nairobi, where the city council lowered the minimum for parcels of land size. Overall, these volatile demand and price trends are typical of the severe supply constraints facing land markets when they are forced to react to rapid urbanization. The market response in the short term is a sharp increase in prices.

Impacts of the Projects on Land Prices

4.9 By releasing a large number of affordable lots in the eastern area, the two urban projects had a positive impact on supply, and temporarily tempered land price increases. The impact, shared with other low-income projects in eastern Nairobi, was dramatic when compared with the rates of change in other parts of the city. One possible explanation is that by preempting large tracks of land, the various low-cost housing projects may have redirected land speculation elsewhere.

4.10 Another explanation, however, is the inability of regulatory authorities to work with land owners to accelerate the supply of serviced land in other areas. Regulations on the minimum size of lots were relaxed and rapid price increases ensued to meet the greater demand for small plots although buyers were not provided with infrastructure services. When the private sector was left alone, deregulation (rezoning) led to more rapid price increases, despite a reduction in the size of plots.

Nairobi Housing Market

The projects increased the supply of affordable rental rooms and improved the efficiency of the rental market in the project areas although this positive impact was not the original intention. The projects did not increase home ownership among the low-income population both because the NCC did not manage the allotment of property and housing appropriately and because many low-income residents chose simply to rent.

4.11 The housing market has become predominately a rental market. In 1983, 66 percent of households were tenants; ten years later, this proportion was 87 percent. Owner-occupiers, who accounted for 29 percent in 1983, represented less than 16 percent in 1989, and only 7 percent in 1993 (see Box 4.1).²⁷ The figures indicate that almost the entire demand for housing in the past ten years has been satisfied through rentals. They also suggest that the Bank projects did not reverse a broader trend affecting the entire city. The land price increases have made plots less affordable to the low-income population. The preference of the low-income population to rent rather than to own housing is another determinant (see *paras. 15-20* in Annex E), and this trend has become increasingly pronounced in the past decade.

4.12 The total stock of housing was estimated at 244,000 units in 1983. Assuming that it has been growing at about 5 percent annually (the approximate rate of household formation), the number of dwellings in 1993 was about 400,000. By supplying only about 5,000 dwelling units each year, the public agencies and the formal private sector have been unable to meet the estimated demand of 25,000 units annually. It is believed that informal dwelling settlements are dominating the stock of housing, and that about 60 percent of recent additions to the housing stock can be characterized as temporary construction. Urban I and II helped mitigate the unfavorable trend in the quality of dwellings, they did reduce the number of these dwellings. The urban projects did have the demonstration effect sought by their designers, but the delivery capacity has not increased in a sustainable manner.

4.13 While not an intended effect, Urban I and II substantially expanded the supply of rental rooms in the Nairobi housing market. Moreover, the rooms were affordable to low-income groups, although not the lowest in the income distribution. The number of rooms within the three project sites is estimated at more than 80,000, accommodating about 174,000 people, or 10 percent of the population in Nairobi.

4.14 An efficient market rent should not place an undue burden on household incomes: a rent that absorbs up to 25 percent of income is acceptable. Urban I and II improved the efficiency of rental markets, as measured by the rent-income ratio. In the various urban project sites for which data are available, this ratio has been low, and has also been about half the level for all of Nairobi (Annex I, Table 1). In Dandora, the ratio has been stable over time although the average rent has more than doubled. A positive correlation was also found between the level of income and the rent-income ratio. In Kayole and Mathare North, which are inhabited by a "wealthier" group of tenants, the ratio is only slightly higher than in Dandora; in Korogocho, the poorest settlement, the ratio is much lower. These outcomes are consistent with findings from a 1983 urban housing survey.

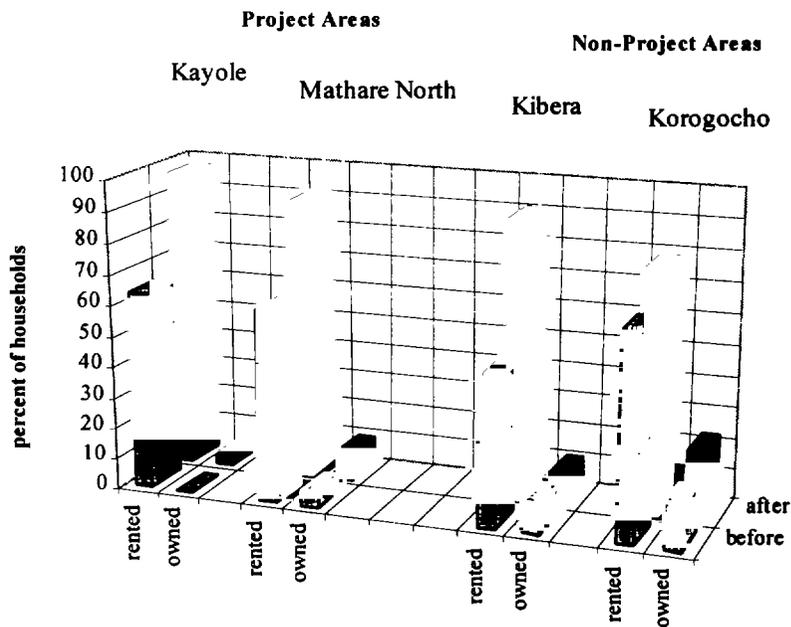
4.15 The field survey confirms that the urban projects were successful at providing affordable shelters to low-income groups (Figure 4.1). Despite the increase in Dandora, the average rent has declined in the past ten years, and renting is the predominant form of tenure in the Urban II sites, accounting for 97 percent in Kayole and 91 percent in Mathare North.²⁸ When asked why they moved to their current settlement, respondents in all survey sites gave "cheap rent" as the primary reason because they simply could not afford to buy their dwellings (Annex E). Except

27. Figures on ownership and tenancy come from the 1983 Urban Housing Survey, the 1989 Metropolitan Household Survey, and the 1993 Welfare Monitoring Survey.

28. The proportion of owners in Dandora was not derived from the field survey, because the sample was stratified by ownership: 30 owner-residents and 70 tenants.

in Korogocho, only 10 percent responded that they moved primarily to purchase their dwellings. Very few owner-occupiers were found in the project II sites. In Dandora (Urban I), a rapid appraisal of lot owners indicates that 70 percent are absentee owners (Box 4.1 and Annex E, paras. 83-88). About two-thirds of these landlords are original lot owners, and one-fifth live outside Nairobi, implying that the extent of total subletting for speculative purposes is likely to be much lower than 70 percent. Thus, the objective of the urban projects to provide ownership to low-income residents was not achieved in the Urban II sites, but was achieved partly in Dandora.

Figure 4.1 The Proportion of Owners and Renters in Kayole, Mathare North, Kibera, and Korogocho Before and After Project Implementation



Before project, the percents of people classified as "Lived with others and Other" are 36%, 33%, 43%, and 19% for Kayole, Mathare North, Kibera and Korogocho, respectively.

Box 4.1. Absentee Landlords in Dandora

A sample survey conducted in Dandora revealed that 70 percent of lot owners were absentee owners; 21 percent of these were reportedly living outside Nairobi.

Interviews with absentee landlords yields insights into their socioeconomic characteristics, although the sample surveyed (31 landlords) was small.

Several characteristics suggest that their socioeconomic status is lower than that of the typical tenant or owner-occupier in Dandora, Kayole and Mathare North. More of them (39 percent) had no education. The proportion of self-employment is higher (50 percent) than in Dandora (30 percent), Kayole (32 percent) and Mathare North (26 percent). They are, on average, much older (54) than the average age in Mathare North (32) and Kayole (30).

Other interesting attributes: two thirds were original lot owners, but the other third had either bought or inherited their plot. Nearly 40 percent had never lived in Dandora, but 70 percent stated that they would live there in the future. Those who had lived in Dandora gave various reasons for leaving: two reported that they preferred to live closer to their work place; two had been provided with housing by their employers; and another two believed that living with their tenants was improper. Three respondents reported that they had migrated to rural areas—one upon retirement, and two to become farmers.

Of those who responded, eight lived in temporary dwellings, and 13 in houses of permanent construction.

Source: A survey conducted by local consultant in January 1995.

Cost Recovery for Housing

NCC's cost recovery performance was initially good. Later, its deteriorating financial and administrative structure compromised its ability to contain delinquencies, increasing perceptions among homeowners that the enforcement of repayment terms was lax. Cost recovery under housing programs implemented by private developers was better than under Bank and NCC programs.

4.16 The purpose of cost recovery in a housing market characterized by severe supply constraints like Nairobi is to expand the access of low-income groups to home ownership by recirculating funds recovered from original beneficiaries to new ones. In the early 1970s, NCC lacked a standard policy for allocating and recovering the costs of its public housing programs. An important objective of Urban I and II was to introduce a system for recovering costs from both beneficiaries and the NCC.

Cost Recovery Principles

4.17 In Urban I, with the exception of 5 percent of lots that were to be sold at market prices, the cost-recovery objective was to ensure that the project would be "largely self-financing and therefore replicable." NCC was to finance the costs of sewerage trunk infrastructure, on-site water reticulation, primary roads, community facilities, and technical assistance, and to recover these costs from utility tariffs, user fees, and property rates. Beneficiaries were to cover directly

the costs attributable to residential use: site preparation, lot demarcation, part of the on-site infrastructure, core units, and loan repayments for building materials.

4.18 The cost recovery principles in Urban II were broadly similar to those in Urban I, but some differences are worth highlighting. The proportion of lots that were to be sold at market prices was more than 10 percent. A uniform 30-year loan maturity was applied to all beneficiaries, rather than the option of 20 or 30 years in Urban I. While the interest rate on loans remained at 8.5 percent, the real lending interest rate fell because inflation had risen in the meantime. One-half of the administrative costs of the Housing Development and Management Department were assigned to lot owners; in Urban I, they had been charged to the NCC. Thus affordability improved with Urban II, and was better than for a USAID-sponsored low-income project developed at the same time in the same area (Table 4.3).

Table 4.3. Cost Recovery Terms

		<i>Annual Interest Rate (percent)</i>	<i>Repayment Period (years)</i>	<i>Remarks</i>
Urban I	Type A	8.5	30	
	Type B	8.5	20	
	Type C	Sold at market rates		5 percent of all lots
Urban II	Type A	8.5	30	
	Type B	Sold at market rates		more than 10 percent off all lots
Umoja		10.0	20	a USAID-sponsored project in eastern Nairobi (4,400 units; completed in 1989).

Cost Recovery Performance

4.19 Cost recovery performance as measured by actual loan repayments made by beneficiaries varied substantially over time and across projects. While high, arrears generally stayed within acceptable limits (16 percent or lower) until 1979 (Annex I, Table 2). After 1980, the magnitude of arrears amounts to deliberate defaults: by mid-1994, cumulative arrears stood at KSh 9.2 million, equivalent to about 57 percent of the amount due in that fiscal year. Cost

recovery also varied considerably by area within the Urban I sites (Annex I, Table 3) but was nowhere satisfactory. Cost recovery deteriorated under Urban II due primarily to the Kayole site. There, accumulated arrears exceeded annual debt by a whopping 160 percent (Annex I, Table 4). Given that loan terms under Urban II were more favorable, this result is disappointing.

4.20 Two other NCC sites and services projects in eastern Nairobi, although small, can be used as comparators. Cost recovery was comparable to that for Urban I and better than for Urban II, even though they did not receive sustained external supervision and oversight.

4.21 While the large majority of the original lot owners could not meet their monthly payments, those who received lots under Phase 1 of Urban I are a noteworthy exception. In their previous place of residence, most of them derived their earnings (between KSh280 and 450 monthly) from the informal sector. After they were allotted their plots, NCC's Housing Development and Management Department helped them develop self-help building skills and form building groups. About 90 percent of the initial lot owners benefited from the project, and were able to resume their informal activities in Dandora—small commodity production and small trade. All of them built additional rooms on their lots for rental purposes, providing an extra source of income and helping most of them pay their mortgages.

4.22 The sale of 5 percent of lots in Urban I at market prices was partially successful since the NCC chose to sell some of the lots at prices well below what the market could bear.²⁹ But the cross-subsidization that was expected in Urban I was compromised when the deteriorating financial position of the NCC prompted it to divert some of the proceeds of sales towards other recurrent expenditures. The NCC also decided to sell about 20 percent of allotted lots to higher-income groups. In Urban II, the market-sale lots were reportedly overpriced, thus dampening sales.

Cost Recovery in the Private Sector

4.23 NGOs and the private mortgage market in Nairobi have a much better cost recovery record than does the NCC. One NGO, the National Cooperative Housing Union (NACHU) made small loans to housing cooperatives to enable their low-income members to rehabilitate their sub-standard dwellings. The loan recovery performance of four housing cooperatives in Nairobi (Table 4.4) is significantly better than the less supervised public programs in the Huruma and Ngei sites and services projects, and considerably better than the Bank projects. Another NGO has been able to recover practically all of loans, and arrears have been minimal and transient (Box 4.2). The profit-making private housing finance market has been able to keep arrears at relatively low levels. At the Housing Finance Company of Kenya (the country's largest housing finance institution), for instance, arrears in proportion of mortgage assets have historically been about 3 percent, and have usually not exceeded 15 percent of annual repayments due.

29. According to the PAR (p. 42) of Urban I, 54 Type C lots in Phase 1, or about 16 percent of this category of lots, were sold at KSh 28,000, rather than at the market value of KSh 36,000 to 48,000. Later, lots were sold at prices approximating market values.

Box 4.2. Community Participation (In a small-scale project)

In Nairobi, the Undugu Society (an NGO) assisted in the implementation of an urban shelter and services project comparable to Urban I and Urban II. In 1982, Undugu provided building-material loans of KSh 5,000 per unit and technical assistance to the urban poor for the self-help construction of 500 dwellings in Kitui Village. The remarkable performance of this project—cost recovery exceeded the amounts due—was attributed to the community's involvement and "ownership", the adoption of a business approach to shelter (subletting was a means for generating income), and the provision of technical and financial assistance. The conditions for sustainability were realized—a high level of community commitment and involvement, and effective cost recovery.

Source: Field Report by local consultant.

Table 4.4 Arrears on NACHU Loans to Housing Cooperatives, October, 1994 (in thousand Ksh)

<i>Housing Cooperative</i>	<i>Annual Amount Due a/</i>	<i>Arrears or Pre-payments</i>	<i>Arrears or (Prepayments.) as a Percentage of Amount Due</i>
Huruma	294	(39)	(13)
Embakasi	405	118	29
Soweto-Kayole	520	(3)	(1)
Marura	258	26	10
Total	1,477	102	7

Source: Data collected by local consultant.

a/ This is the amount due over 6 months for Huruma and 9 months for the other three.

Determinants and Impacts of NCC's Poor Cost Recovery Performance

4.24 Projects supported by NGOs tend to be small, and loan collection thus places fewer demands on the management capacity of these institutions. And private housing finance institutions make loans primarily to middle and higher-income borrowers. Private lenders are also able to offset their risk by collecting loan repayments directly from wages. On the other hand, private-sector lenders charge much higher interest rates than NCC's public programs, and NGOs offer substantially shorter maturities.

4.25 The systematic deterioration of NCC's cost recovery record since 1980 may be attributable to three internal factors. First, the manual accounting system of HDMD, which had coped successfully with the 1,000 lots in Phase 1, was overwhelmed by the rapid expansion of the number of lot accounts allocated in Phase 2. Second, the governance structure of NCC deteriorated over time; in fact the council was dissolved temporarily in March 1983. Growing political interference with HDMD management undercut its ability to contain delinquencies via

evictions, thus reinforcing community perceptions that loan repayments on public housing programs are not readily enforced. Third, cost recovery has been constrained by the inflexibility of loan collection procedures that do not accommodate non-regular payments by low-income beneficiaries.

4.26 The relatively better cost recovery performance in Area 1 under Urban I (Annex I, Table 3) may be due to the greater number of owner-occupiers or, conversely, to proportionately fewer absentee landlords. Lot charges in the other areas were also greater because NCC adopted more stringent infrastructure standards. The higher costs must have had an adverse impact on affordability.

4.27 NCC's poor cost recovery performance has had several impacts. The most important is that, contrary to what was envisaged in the SARs, the urban projects failed to demonstrate that they were sustainable. NCC was unable to meet debt service on Urban I and II loans.³⁰ The Bank's intent to establish a development fund for additional housing and infrastructure also could not be implemented.

Resettlement

Resettlement of farm workers and squatters who lived in the project sites was handled poorly, although it was a Bank loan condition. Restraining the NCC from evicting or demolishing squatter settlements and stalls was another loan condition, but evictions without warning or compensation lasted until the early 1990s.

4.28 From 1975 to 1990s (as detailed specifically in Annex F), city squads frequently smashed homes and cleaned out shanties and informal businesses often without notice—this despite the Bank's condition for Urban I: "In accordance with present Government policy, NCC would not engage in substantial demolition of unauthorized dwellings in areas subject to its jurisdiction." Urban II, however, was not subjected to this condition. Occasionally, these evictions were reported in supervisory reports, and efforts to remind NCC of its engagement were noted in World Bank correspondence.

4.29 The Mazingira Institute (1993) conducted a survey to assess the extent to which people affected by Urban I and Urban II had been compensated and resettled. While the estate owners were adequately compensated for their loss, laborers and squatters were treated differently. In Urban I, the land of Dandora Phase 1 belonged partly to the NCC and partly to a sisal estate farmer. The study reports that balloting was used to resettle some of the laborers employed on the sisal estate. However, their number is unknown, and they never appeared as respondents in the surveys conducted for Dandora Phase 1. Squatters living on the premises of Dandora Phase 2 (their number is also unknown), received a notice of intended eviction of about 2 years and were offered an alternative site, but it turned out that those with permanent houses were forced to sell them to the NCC, which later resold the houses to other people.

4.30 The Bank made a loan condition under Urban II that farm workers and squatters be resettled on the project sites and be allocated a lot regardless of their incomes. However, Bank monitoring was weak and supervision reports hardly mention the issue. The Mazingira study

30. In 1989, arrears on Urban I and II loans disbursed by the National Housing Corporation to Nairobi, Mombasa, and Kisumu municipal councils stood at KSh 250 million, with Nairobi accounting for the major share.

notes that about 380 squatters were living on the farm estate in Mathare North, and 675 laborers on the farm estate in Kayole. Laborers and squatters qualified automatically for lots within the same area, but they did not participate in determining their actual new areas of resettlement, nor did they receive any compensation for the loss of their properties. Cases of speculation were also noted, whereby squatters would move from one site to another in order to benefit twice from plot allotments under Urban II.

Rural-Urban Links

The survey findings did not support the presumption of the urban projects that promoting housing investments and ownership among low-income residents would help them change from transitory to more permanent family homes. The findings rather suggest that, especially groups that have their rural homes further away from Nairobi, maintain strong rural ties; the majority of these residents are even planning to retire in their rural areas of origin.

4.31 The survey findings on rural-urban links disproved the hypothesis underlying the project objectives—that by promoting home investment and ownership among low-income residents, the urban projects would help them change from a transitory to a more permanent family home. The survey shows, first, that between 20 and 50 percent of families left their children behind in rural areas; second, that the majority of respondents continued to own a house and/or land in their rural area of origin and send remittances to the households, regardless of their income level; and, third, that more than 50 percent claimed that they intended to retire in their rural area of origin (Annex E, *paras. 8-14*). These findings strongly suggest that people's ties with their place of origin have remained very close, despite evidence of mass migrations to urban areas.

4.32 The survey also found that rural-urban links differ by groups originating from different areas (Annex E, *paras. 12 and 13*). These ties are strong among those who originated from far away areas, and inversely, home ownership in Nairobi is more common among those who have their family homes near Nairobi. Land in the surrounding areas of Nairobi has become scarce, thus striving for ownership in Nairobi. Conversely, those who are still landowners in their more distant areas of origin tend to hold on to their land rather than to try to become owners in Nairobi (information is based on key informant interviews).

Gender Issues

Half of the original allottees were women and they did benefit from the first phase of the program. Those who managed to pay their mortgages regularly, and thus keep their plots, belong to higher-income brackets.

4.33 Two studies of female beneficiaries of the Urban I project found that beyond having difficulty in meeting selection criteria—that beneficiaries be heads of household with children to support, have low monthly income, and provide a relatively substantial down payment—women faced income, gender, and marital status discrimination (see Annex F, Nimpuno-Parente 1987;

and Malombe, 1990).³¹ Furthermore, the self-help construction model was unsuited to female allottees: they did not have the skills necessary for meeting the comparatively high construction standards required, and few of them could simultaneously build their dwelling, take care of their children, and earn a living. They had to hire skilled or semi-skilled labor, forcing them to exceed their building-material loans and incur heavy debts. Given these difficulties, female owners in Dandora necessarily belong to a higher income bracket, have secure employment, and, in general, enjoy better standards of living than the average female heads of household in Nairobi (Malombe 1990).

4.34 These study findings are supported by the beneficiary survey. The incomes of female owners are slightly higher than those of their male counterparts in Dandora (Phase I). The survey also shows that almost half of the female owners and half of the male owners had acquired their lots before 1980, meaning that they are original allottees. Thus, female household heads did benefit from the first urban project (in Dandora, half of the original allottees were women), but when lots were allotted, the female allottees belonged to the targeted group (between the 20th to 40th percentile). The most vulnerable were obliged to resell or to have their lots repossessed. The project design had no provision to help them generate sufficient income to afford building their homes or, if built, to keep up with mortgage payments (Box 4.3).

Box 4.3. The Fate of a Female Allottee in Dandora

"When I interviewed Margaret, she was 52 years old and had four children. She had previously lived in the Mathare Valley squatter settlement, where she was a semi-skilled business woman with a well-stocked kiosk and a trading license. In Dandora, Margaret had exhausted her savings by building three rooms at a time when construction costs were still affordable. Since her lot was incomplete, she was not attracting reliable renters, and, at the time of my visit, she was subsisting by selling vegetables from a roadside stand. Community development workers had interviewed Margaret for a stall in the new market place, where she would have had access to more customers and a higher margin of profit. She did not, however, receive any of those 400 stalls, of which 59 percent went to higher income and non-targeted residents or outsiders. Margaret has currently fallen more than a full year in arrears over mortgage payments."

Source: MacInnes, 1987.

31. Urban I was originally biased against female household heads, given that family units could traditionally be headed only by men. This initial bias was overcome as Urban I was implemented, but, according to key informants, it again emerged in Urban II. Malombe (1990) indicated that among all Phase I of Urban I households interviewed, 44 percent were headed by women, and all but two were married. Thus, women could not have benefited from the project if they were divorced or were single household heads.

5. Impact on Institutional Development

Intended Impacts of the Technical Assistance

5.1 All the projects under this evaluation had TA components aimed at improving the institutional capacity of the respective departments of the NCC. The main focus of these activities was to strengthen the capacity to plan, implement, and manage new investment projects, and improve operational and financial management of the departments. The impact was expected to materialize through training and the provision of necessary equipment such as computers.

Water and Sewerage Department

The two water supply investment projects provided only routine staff training at NCC's Water and Sewerage Department (WSD). Capacity building awaited a suitable training program funded under the Engineering Project, which created a more qualified pool of mid-level staff and reduced staff turnover; it also has improved working conditions. The WSD gave high priority to efficiency, as demonstrated by the commendable ratio of 8.5 staff to 1,000 connections, and by shorter response times to repairs and customer complaints. Although the O&M capacity of WSD has improved over the past 10 to 15 years, the sustainability of water supply and sanitation improvements is likely to be compromised if shortcomings with its vehicle and equipment repair workshop, consumer (water) meter repair and testing workshop, and sanitation support in unsewered areas are not addressed soon.

5.2 The water projects, especially the Engineering project, included clearly defined institutional objectives.³² The results of the training effort under WS II are, however, poorly documented; even Bank supervision reports are silent about the issue. The PCR (Part II) mentions only that some 20 WSD staff benefited from this training, and that the training component improved the general capabilities of staff. Throughout the 1970s and most of the 1980s, in any case, WSD's daily operations were performed largely by expatriate technical staff who were hired on a contract basis.

5.3 The Engineering Project implemented a much more rational and thorough program. Under the project, the WSD hired the Industrial Research and Consultancy Unit (IRCU) of the University of Nairobi to develop a suitable training program, including a detailed outline of its various elements. The timing of the training was also coordinated more effectively with WSD's staff development needs. In addition, IRCU operates the program, which is now in its fifth year, and reports on progress quarterly. Each progress report includes a set of recommendations from trainees for improving various aspects of WSD's operations.

5.4 WSD's personnel and training policy places high priority on internal promotions as a way to develop its institutional capacity. The training program run by IRCU under the Engineering Project has provided invaluable feedback on WSD staff, while also improving

32. Sources for this section are the NCO "Organization and Finance Study, Short Term Implementation Plan" July 1986; and the WSD, "Duties and Functions" (a memorandum from the General Manager of WSD to the Chairman of NCC), October 23, 1989.

morale and working conditions through participatory input from trainees. Key informant interviews yield the following conclusions:

- The turnover of trained and qualified staff has been reduced, and the capabilities of staff at all levels have improved.
- The staff profile has been upgraded—mid-level (supervisory) staff are now more qualified having received comprehensive, on going internal training.
- Improved work arrangements and system rationalization have reduced the number of low-level staff.
- Response times to water-main repairs and to customer complaints are reportedly shorter.

5.5 WSD is now staffed more effectively to operate and maintain its facilities than before the Engineering Project. One indicator of WSD's operational efficiency is the ratio of the number of service connections—which in mid-1994 was 1,600 staff to about 186,500 connections, or a ratio of 8.5 to 1,000. The ratio before the new training program was initiated in 1987 was 10 to 1,000. This ratio is still on the high side compared with the ratio in highly mechanized water utilities of industrialized countries, but it compares favorably with water utilities throughout Africa, and is clearly below the average ratio of water utilities in Asia and Pacific cities.

City Engineer's Department and Public Health Department

The two departments responsible for roads, drainage, and solid waste management received little or no support from the urban project to improve their institutional capacity. Their operations are badly hampered by the lack of equipment and staff inefficiency. As a result, for instance, only 20 percent of the waste generated in Nairobi is collected.

5.6 The urban projects also contained road, drainage, and solid waste management improvement components. The City Engineer's Department (CED) of the NCC was responsible for overseeing the construction of roads and drainage in the project areas. The Public Health Department (PHD) has been responsible for collecting and disposing solid waste.

5.7 A determination was made that the technical quality of the roads was compromised. The design met standard specifications, but contractors were allowed to lower the standard of bearing courses and foundations during construction (perhaps against financial gains for supervisors), creating the disastrous road conditions that exist today. The lack of maintenance quickly caused serious damage to the poorly constructed roads. Heavy rains washed away what was left of the original structure, and today many roads are impassable.

5.8 The CED was involved in project preparation only marginally, merely reviewing the design of roads and drainage prepared by outside consultants. And when the urban projects were implemented, CED staff served as backups to HDMD engineers in supervising contracts. The urban projects did not include any special training or other institutional support to the CED. The CED has about 3,300 staff; its staff profile is heavily distorted toward low-level staff (skilled and unskilled, see Annex I, Table 5). The bulk of maintenance work is still carried out manually; all

road rehabilitation and new construction is awarded to contractors. CED reports that its capital budget for FY93/94 was about KShs 460 million (equivalent to US \$11.5 million), only 4 percent of which was for vehicles and plants. The total value of new contracts prepared for implementation, including urgent rehabilitation of major roads, currently stands at KShs 150 million (equivalent to US \$3.8 million); funding decisions are still pending. CED operations are badly hampered by the absence of equipment and funding, and the staff profile must be rationalized.

5.9 The situation in the PHD is even worse, given that the urban projects did not provide the unit with any institutional support. Although, it was not involved in the urban projects substantively, it still shoulders responsibility for handling solid waste collection from the project areas. In 1983, the PHD had 2,800 staff; its staffing is unbalanced, distorted heavily, toward low-level staff (Annex I, Table 6). It also lacks the equipment necessary to run its operations satisfactorily. The deteriorating capacity of the unit is best demonstrated by the disparity between collection activities and the number of staff on board in the past decade; the tonnage or waste collected has fallen by nearly 50 percent, despite the fact that its labor force has increased by 30 percent. The beneficiary survey shows that less than 2 percent of respondents benefit from regular garbage collection service. As a result, crude dumping is the dominant method of solid waste disposal, generating heaps of decomposing waste along the roads in the project sites (as elsewhere in Nairobi), and creating breeding grounds for disease.

5.10 The urban projects did little to strengthen the institutional capacity of the CED and PHD, preventing them from becoming strong operational units. Initially improvements were noticeable, as new roads were constructed and dust bins were provided for dumping waste. The sustainability of such services as roads, drainage, and waste collection (and disposal) was lost soon after project work on these services was completed.

Housing Development and Management Department

The Housing Development and Management Department (HDMD) is NCC's implementing agency for all sites and services schemes, and is responsible for managing all tenant purchase schemes. The urban projects did not provide adequate support to HDMD to improve its capacity to handle technical, financial, and administrative functions. Today, it still lacks autonomy and flexibility, modern accounting and financial management systems, and strong training support to enhance its staff development.

5.11 The urban projects lacked clearly defined objectives for capacity building.³³ HDMD started operations in 1975 as the Dandora Community Development Project and it became the Housing Development Department in 1978, acquiring the same status as other NCC departments. It then became the NCC's implementing agency for all sites and services schemes. Later, it acquired the portfolio of managing all NCC tenant purchase schemes as well and was renamed the Housing Development and Management Department (HDMD). The Department's main objective is to provide affordable shelter and related services to the low-income segments of Nairobi's population.

33. Sources for this section are HDD *Annual Reports* 1975, 1976, 1979, 1982, 1983 and 1990; the Canaan Village Proposal, 1993; visits to HDMD offices; and interviews with HDMD staff.

5.12 The HDMD has three main divisions: one for community development; one for technical functions; and one for finance operations. The Community Development Division (CDD) processes applications for plots, trains allottees prior to the occupation of plots, works with families during the construction phase, and assists residents in all aspects of community development. The Technical Division is responsible for architectural and engineering design, preparation of tender documents, and the supervision of construction contracts. The task of the Finance Division is to maintain project and allottee accounts, and to monitor and manage arrears.

5.13 Departmental staff increased from 23 in 1975 to 174 in 1983, and reached over 200 in 1994. High and middle level staff account for a little less than 50 percent of the establishment, and skilled and unskilled workers for the remainder. In the early years of the HDMD, occasional training, in the form of courses, seminars and study tours, was provided to some members of staff. The latest annual reports, however, make no further mention of training.

5.14 The HDMD has faced a number of constraints in its operations. During the implementation of the urban projects, for instance, serious problems were encountered: slow processing and issuance of title deeds,³⁴ shortages of staff, manpower and equipment; inability to control unauthorized plot sales; lack of group management skills for self-help building groups; and considerable arrears as a result of defaulting allottees. Presently, the Department lacks autonomy and flexibility, and its development initiatives must first receive the sanction of NCC committees and the Ministry of Local Government. This has naturally introduced delays in project planning. Moreover, it does not have an efficient accounting and financial management system.

5.15 In spite of the constraints it has faced, the HDMD has launched a number of initiatives. It has, for instance, cooperated with an NGO whose activities include managing building materials and business loan schemes for informal sector workers, and training women.³⁵ In another initiative, which ultimately was frustrated by poor management, it attracted EEC sponsorship for workshops meant to generate employment within the informal sector (see Box 5.1). In yet another, it is collaborating with a donor agency on a proposal to upgrade informal settlements within the Dandora area. The project will emphasize community participation and is expected to be the forerunner of other upgrading projects in the city.

5.16 Although the impact on its capacity building fell short of expectations during the implementation of the urban projects, the HDMD did contribute to urban poverty alleviation in terms of shelter and service provision. In addition to assisting some of the most needy to resettle in the project sites, it also strove to involve vulnerable groups in urban development. In particular, CDD staff worked closely with allottees, especially in Urban I, and its attempts to create cohesive communities and community-based organizations have been successful to some degree. On the whole, however, the HDMD has not been able to embark on sustainable housing programs.

34. For almost 20 years, it has been difficult to obtain the Lease per se, or the Title Deed for all project beneficiaries. Without the Title it is not possible for the allottees to get loans, even after full payment of their mortgages. Allottees received only an Agreement of Lease, which too often was received after substantial delays.

35. This is the Welfare Advisory Committee (WAC), an NGO started by the Holy Cross Fathers (Catholic Church)—the HDMD director is a member of the Board of WAC.

Box 5.1. HDMD and the Workshop Cluster Unit

The purpose of the Workshop Cluster Unit (funded by the European Economic Commission) is to provide income generating facilities for the urban poor by supporting clusters of market stalls in Dandora (several clusters comprise one unit). For example, the general manager of one unit advised cluster tenants on how and where they could buy materials and machinery at wholesale prices, and how they should market and sell their products. The general manager also informed them about market opportunities, and how to take advantage of them. The cluster tenants rented the market stalls, and were working largely in the informal sector. But these supportive activities have gone by the wayside.

Today, the occupants of the units are on their own; if they do not pay their monthly rent, they are evicted from their stalls. Business counseling is no longer being provided for example, the general manager who had originally provided support to one of the clusters has become more involved in his own business and appears to be using the facilities for himself.

Staff from the Workshop Cluster Unit appear to be underutilized, and have largely been reassigned to HDMD maintenance operations.

Source: Director of HDMD.

Credit Systems for Housing Programs

Existing credit mechanisms were poorly administered and did not provide loan amounts that were sufficient to cover the escalating costs of labor and materials, thus making it difficult for allottees to complete construction on their homes. In fact, more effective credit mechanisms have been developed more recently by NGOs and housing cooperatives that might be better lending models in the future.

5.17 The credit mechanisms implemented under the urban projects were supposed to have carried over into the post demonstration period. In both Urban I and II, HDMD played the central role in administering credit, which consisted primarily of loans to cover lot development costs and building materials. Part of the credit for building materials was channeled through building groups formed by some of the poorest allottees. A welfare fund was also established by HDMD with grant funding from NGOs to help the neediest cases. The outcomes in these three areas were mixed.

5.18 *Loans for building materials* were numerous in Urban I, but they were difficult to manage and their disbursement was slower than expected (PAR of Urban I). The computerization of loan accounts did not materialize, thus weakening HDMD's administrative capacity. Underestimated building costs obliged poorer recipients to seek additional financing elsewhere,³⁶ a task made difficult by their limited creditworthiness and the absence of land titles. Given their lower income, female allottees had even greater difficulties in securing other funding (Nimpuno-Parente, 1987). It is clear that the limited loan amounts available constrained the completion of construction and renovation. In response, some of the low-income allottees formed their own building groups.

36. Although materials loans were later increased to KSh 6,400 per room, this amount was still only about half of actual costs (Urban I PAR).

5.19 Under Urban II, Kayole had the worst performance (Annex I, Table 4). Lot owners did not receive loans for building materials, and they have faced considerable odds in their attempts to improve their dwellings. Available data show that only 26 percent of lots in Kayole are fully developed, compared with 50 percent in Mathare North, where loans for materials were provided. Moreover, lot titles have not yet been prepared, thus also restricting the access of Kayole owners to other sources of finance.

5.20 The survey showed that the disbursement of loans for building materials fell far short of their demand. The survey shows that most of the owners who still live in Dandora relied on their savings rather than on loans for building materials (Annex E *para. 40*). Some had to turn to other financial institutions, whose lending terms were so stringent that the borrowers either had to transfer their plot dwellings or were evicted due to arrears. The survey indicates that beneficiaries believed that more funds at affordable interest rates should have been made available, and that surveillance and control over the officials issuing these loans should have been made stringent (Annex E, *para. 33*).

5.21 Overall, the high demand for material loans would have been met more effectively if it had been channeled through experienced NGOs, rather than local authorities. Moreover, loan amounts needed to be more flexible, not only because construction costs were underestimated (given that most allottees hired labor for the construction), but also to eventually help the beneficiaries build more rooms for subletting, thus enhancing their ability to service the loans. Larger loans with shorter maturities would also have been acceptable to HDMD, which would have recovered the funds more rapidly, and could have thus created a revolving fund for granting similar loans to other low-income households.

5.22 *Building groups* were encouraged by HDMD as an innovative mechanism for channeling credit to low-income beneficiaries in Urban I, most of whom were under severe financial stress. Group members pooled their financial contributions to enable each member to have a room built. Completed rooms generated rental income, in turn making it possible for all groups members to draw down their material loans.

5.23 Despite their innovative approach, the building groups had several weaknesses, eventually eroding their effectiveness and use. Because their members did not have a common bond before the project, little social cohesion existed within the groups. Key positions in the groups also went to "better-educated people, who tended to be men and who sometimes used their positions to favor construction work on their own plots" (Nimpuno-Parente, 1987). Record-keeping and financial management were also often poor. Some members withdrew as soon as their own rooms had been completed, thus weakening group cohesion even further.

5.24 *The Welfare Revolving Fund* was founded in 1980 with grants from NGOs and impetus by the Catholic Church. Between 1980 and 1991, about 450 building and 80 business loans were disbursed. Fund borrowers are organized into small groups of five households, encouraging joint savings and placing peer pressure on members to comply with loan conditions. But despite a subsidized interest rate of 5 percent, debt service delinquency was high. By 1991 the Fund had lost its momentum. Following a consultant's recommendations, HDMD transferred the Fund's management to non-church professionals. This move changed the perception of beneficiaries about the nature of the loans, which they had thus far considered to be grants. Thereafter, the repayment record improved substantially (to an 87 percent recovery rate for building loans).

5.25 Unlike the building groups, the Fund has survived, and now represents an effective lending mechanism for both building and business loans. Although a small-scale operation, the Fund is significant, not only because it channels housing credit to low-income groups, but also because it emphasizes community involvement. In the future, it could serve as a model for granting loans to the urban poor.

6. Conclusions and Recommendations

6.1 The impact evaluation study in Nairobi reviewed the impacts of three water supply projects and two urban development projects implemented with World Bank funding over a period of 20 years, between 1971 and 1991. Based on a survey of project beneficiaries, interviews and group discussions with key informants, and data collected by local consultants and the OEDD3 team, the evaluation yielded interesting findings and conclusions; they are presented in summary paragraphs in front of each section of this report.

6.2 Some of the key findings are highlighted here as follows:

- The projects had positive impact on access to water supply and sanitation services thus supporting the economic growth of Nairobi during the last 10 to 15 years.
- Without the improved and expanded water supply and sewerage systems the housing programs would not have been technically feasible.
- In the absence of matching improvements in solid waste collection and disposal as well as in controlling of industrial discharges, the positive environmental impact caused by sewerage improvements is seriously compromised.
- The Bank urban projects, which aimed to support the government's policy to promote owner-occupant housing, did not reverse the trend toward rental housing. Yet they helped improve the efficiency of rental markets by keeping rent-to-income ratios at an affordable level in low-income areas.

6.3 The impact evaluation confirms the ratings given to these projects in earlier evaluations e.g. performance audits. Current findings hold especially true as to lack of the institutional development impact of the urban projects.

6.4 The analysis by the evaluation team points to the following recommendations and lessons:

- Future projects to develop municipal services in Nairobi should provide strong support to building institutional capacity. Sequencing of *technical assistance* and *investment interventions* proved particularly effective in the evaluated water projects.

The design for *technical assistance* should be broad-based and aim at:

- strengthening operational autonomy of agencies including necessary policy and regulatory reforms;
- improving all aspects of O&M capacity development;
- developing a pragmatic financing mechanisms for enabling the poor to obtain adequate services at affordable costs; and

- developing an environmental action program at the city wide scale.

Investment interventions should integrate various service provisions so that the benefits of an improved service (such as drainage) will not be negated by the absence of improvements in another service (waste collection). Such coordinated interventions will reinforce the outcome of investments and the sustainability of their benefits.

- The design of future housing programs in Nairobi should include:
 - a careful *market analysis*, so that the growing demand for both owner-occupied and (primarily) rental housing can be met in a balanced fashion; and
 - reformation of the *policy framework* (and regulations) for housing development to ensure that financial support is available to low-income groups and to minimize opportunities for land/housing speculation.

The implementation of such programs should ensure that the selection of beneficiaries is stringent so that the owners will occupy the plots awarded to them. One option would be to add a contractual obligation of occupation for a minimum of five years. Furthermore, cooperation with local NGOs experienced in housing the poor should be encouraged to build on their close relationship with low-income populations.

- The *participation* of beneficiaries should be central to any future shelter projects if sustainability is to be reached. To build up participation, assistance should be provided to foster community cohesion, the community's capacity to focus on longer-term objectives of neighborhood management, and employment generation to enable beneficiaries to benefit fully from the program services. Such assistance should be targeted at all gender and poverty groups.

6.5 The June 1995, workshop attended by the NCC and the Bank evaluation team to review the findings of this impact evaluation, endorsed the above conclusions and overall recommendations. The NCC also suggested an action plan for immediate implementation as follows:

- The organizational structure of the NCC should be re-examined paying particular attention to those departments involved in housing.
- The NCC should promote joint ventures with the private sector in the provision of housing and infrastructure.
- Priority should be given to the establishment of a comprehensive planning data bank with the NCC.
- The NCC needs to charge realistic rents for its houses and, in the long term, to consider privatizing its rental housing stock.

- The NCC should control river pollution by containing waste dumping in drains and industrial discharges into rivers.
- The NCC should investigate how water could be made available to low-income consumers at more affordable prices.

The implementation of this action plan should be supported in future investment projects.

ANNEXES

Basic Data Tables

Table 1. Growth rates of real GDP, population, and inflation

<i>Period</i>	<i>Real GDP Growth Rate (percent)</i>	<i>Population Growth Rate (percent)</i>	<i>Inflation (percent)</i>
1974-76	5.2	3.4	13.7
1977-78	10.8	3.7	-0.3
1978-84	3.0	4.6	10.4
1985-90	5.6	3.1	8.1
1991	1.4	2.9	19.6
1992	0.4	2.8	27.3
1993	0.1	2.7	46.0

(estimated)

Sources: IMF, *International Financial Statistics*, various issues; World Bank, *African Development Indicators 1994-95*, and EIU, *Kenya: Country Profile 1992-93*

Table 2. Nairobi: general statistics

	<i>1975</i>	<i>1980</i>	<i>1985</i>	<i>1990</i>	<i>1992</i>
Population (thousand)	699	905	1,162	1,505	1,669
Growth Rate, p.a., percent	5.3 75-80	5.3 80-85	5.3 85-90	5.3 90-92	5.3 75-92
Wage Employment (thousand)	219	274	327	370	376
Growth Rate, p.a., percent	4.6 75-80	3.6 80-85	2.5 85-90	0.8 90-92	3.2 75-92
Tourism, number of visitors (thousand)	132	125	111	153	156
Growth Rate, p.a., percent	-1.1 75-80	-2.4 80-85	6.6 85-90	2.0 90-92	1.0 75-92

Sources: SAR (No.7500-KE) p.14, and Kenyan Government, *Kenya Economic Survey, 1976-1993*.

Table 3. Projects and relevant project reports

Project Name	First Nairobi Water Supply		Nairobi Sites and Services		Second Nairobi Water Supply		Second Urban		Nairobi Third Water Supply Engineering	
L/C No.	L714		C543, L1105		L1520		C791, L1550		C1566	
Dates	Planned	Actual	Planned	Actual	Planned	Actual	Planned	Actual	Planned	Actual
Appraisal		11/1/69		6/1/74	5/1/77	5/1/77		9/1/77	10/1/84	10/1/84
Approval		11/17/70		4/1/75	2/14/78	2/14/78		4/18/78	3/1/85	3/26/85
Effective		3/26/71	8/4/75	9/1/75	6/1/78	12/20/78		10/3/78	7/1/85	8/21/85
Completion	7/1/74	12/1/77	6/1/80	12/1/82	12/31/82	12/31/84		4/1/86	12/1/87	6/1/91
Closing	3/31/75	9/30/76	6/30/80	12/1/82	12/31/82	12/31/83	12/31/83	6/30/86	6/30/88	6/1/91
Costs and Financing	Planned	Actual	Planned	Actual	Planned	Actual	Planned	Actual	Planned	Actual
Costs (\$ mil.)	12.1	20.2	28.5	29.4	78	79.3	69.383	54.528	7.5	8.6
L/C amount (\$ mil.)	8.3	8.3	16	16	30	30	50	46.12	6	7.43
Total Cancellation (\$ mil.)	0	0	0	0	0	0	0	3.88	0	0.06
Reports	Date	Report No.	Date	Report No.	Date	Report No.	Date	Report No.	Date	Report No.
SAR	10/26/70	PU-40a			1/25/76	1686-KE	3/23/78	1869	3/7/85	P-3943-KE
PCR					12/28/92	11521	6/6/90		10/13/93	12398
PAR	7/18/79	2605	6/16/86	6272	6/30/95	14797	6/28/91	9730	6/30/95	14797
OED Ratings										
Outcome	satisfactory		satisfactory		satisfactory		unsatisfactory		satisfactory	
Sustainability	n.a.		uncertain		uncertain		unlikely		likely	
Institutional Development	n.a.		negligible		modest		negligible		modest	

Project Summaries

First Nairobi Water Supply Project (Loan 0714-KE)

Objectives

1. The objective of this project was to expand and improve the water supply and distribution systems in Nairobi in order to satisfy the city's growing demand for water. The project also sought to strengthen the institutional capacity of Nairobi's water supply and sewerage operations by creating a new Water and Sewerage Department (WSD). Engineering and financial functions that had previously been dispersed under various departments in the city government were to be centralized under the WSD.

Components

2. The project consisted of four broad components:

- The construction of a (*Chania*) river intake, raw water pumping station, and ancillary works
- The provision and installation of *raw water pumps, power facilities, and a pumping main*; the construction of treatment works and ancillary buildings at Ngethu; and the provision and installation of treatment plant equipment and instrumentation to provide a plant capacity enough for average flows of at least 8 IMgd
- The provision and installation of a *transmission main* from the treatment works to a terminal reservoir in Nairobi and the construction of the terminal reservoir
- The provision and installation of new *distribution mains* and the purchase of water meters

Outcomes

3. The project was implemented successfully meeting its primary objective to increase the water supply capacity. The creation of the WSD provided an effective institution for centralizing Nairobi's water supply and sewerage operations. It should be noted, however, that the WSD was beset by staffing problems that affected the operational effectiveness of the department and delayed the expansion of its distribution systems. These problems emphasize the importance of examining the labor and personnel requirements of a new institution (particularly in a country with a shortage of qualified personnel), and of initiating appropriate measures for enabling the organization to recruit a sufficient number of required staff. After project appraisal, the distribution component of the project was substantially enlarged, with Bank approval. However the construction of the distribution system was much slower than envisaged by subsequent Bank supervision missions, due primarily to staff shortages.

Achievements

4. Achievements were made in four areas:

- *Physical works.* The project was implemented generally as designed, except for the distribution component, which was substantially enlarged. The project eliminated the water rationing that had prevailed for short periods during the dry season. The enlarged capacity of the system and its distribution system met the water requirements of the city's growing industry, commerce, and population in the ensuing few years. The project enabled the NCC and WSD to participate more actively in water distribution to the urban poor by increasing the number of kiosks that are connected to the city's water supply system and are operated during the daytime by private concessionaires and individuals. The NCC and WSD instituted measures for licensing kiosk operators and regulating their operations, thus reducing the fees charged by kiosk operators to customers by two-thirds.
- *Institutional development.* The creation of the WSD within the NCC helped build an effective water supply and sewerage operation for Nairobi. The newly created WSD brought together the engineering functions undertaken previously by the City Engineering Department and the financial activities (including billing and collection) undertaken previously by the City Treasurer's Department, thus facilitating operational procedures. But, as noted earlier, the operational effectiveness of the WSD was hampered by serious staff shortages.
- *Cost recovery.* The financial performance of the WSD was satisfactory during the project period. It imposed adequate tariff increases, and its revenues from sewerage operations more than covered operating expenses. Accounts receivable improved somewhat during 1974-76, representing about three months' billing, rather than the four months in the early years of the project. The improvement was due primarily to the improved staffing of the commercial section, and in part to a more streamlined billing system that deleted about 17,000 dead accounts that represented arrears then equivalent to one month's billings. It should be noted, however, that arrears from the government and from other departments of NCC amounted to approximately 40 percent of accounts receivable. Moreover, a Government decision to repeal the graduated personal tax, combined with increasingly inefficient revenue collection procedures, reduced NCC's revenue base; NCC attempted to offset some of its cash shortages by making withdrawals from the cash reserves of the WSD.
- *Policy development and reforms.* A report submitted in mid-1974 by consultants appointed under the UNDP-financed sewerage and groundwater study recommended that the institutional capacity to the WSD be strengthened. Among other measures, the report proposed increasing staff salaries and changing the organizational and legal structure of the WSD to make it answerable to a Water and Sewerage Commission that would be established within NCC or to reconstitute the WSD as an independent statutory board separate from the NCC. In response, the NCC set up a Tender Committee to expedite contract bid tendering and awards (although a recent Bank supervision report indicated that it does not function as expeditiously as desirable). The NCC also raised staff salaries, and the Ministry of Local Government (MLG) relinquished its right to approve the appointment and dismissal of local staff, thus improving staffing situations within the WSD. On the financial side, the Bank introduced covenants in its loan agreement for the Second Nairobi Water Supply Project to preserve the liquidity of WSD, ensure the availability of adequate funds for capital expenditures, and prevent the NCC from using WSD's revenue to support its other operations.

- *Monitoring and Evaluation (M&E)*. No mention of M&E was made in the project documents reviewed.

Nairobi Sites And Services Project (Loan 1105-KE & Credit 0543-KE)*Objectives*

5. The goal of the Nairobi Sites and Services Project was to demonstrate the feasibility of providing affordable housing services to low-income groups on a larger scale and at lower costs than under previous projects implemented in the sector by the government and the NCC. The site selected for construction was Dandora, about 10 kilometers from the center of Nairobi. The project also sought to expand trunk sewer infrastructure services to meet the pressing sanitation requirements of the city, and to provide the government with technical assistance to improve its project implementation capabilities and help it formulate future shelter policies and programs. The project's shelter component was to meet 25 percent of Nairobi's housing-unit target under the Third Development Plan of 1974-78. The trunk sewerage infrastructure component responded to the priorities established in the long-term Nairobi Sewerage Program.

Components

6. The project consisted of six broad components:

- The *sites and services* scheme included the preparation and servicing of 6,000 residential lots in the Dandora area, along with related infrastructure— individual water and sewerage connections, access to roads, security lighting, and refuse collection facilities. It also included the construction of three different levels of core housing units with a sanitary core (toilet and washroom), and of demonstration housing units to illustrate acceptable dwellings.
- The sites and services scheme also included the construction of *community facilities*, including six primary schools, two health centers, two multi-purpose community centers with daycare facilities, one sports complex, and 400 market stalls.
- The scheme included the construction of a *trunk road infrastructure* of access roads to the project site.
- The scheme provided *financing for building-material loans* to families to enable them to construct self-help dwellings and expand the core units on their lots.
- The scheme included the construction of *trunk sewerage* to serve the project site and other areas in Nairobi. This component included the construction of a 15-kilometer main sewer trunk that ran from the project site to the treatment works, service trunk sewers from within the project site to the main trunk sewer, a temporary waste stabilization pond, and sewerage treatment works with a capacity of 30,000 cubic meters daily.
- *Technical assistance* included financing the operational costs of a new NCC department to implement the project, studies of NCC's housing operations, the preparation of future squatter upgrading and sites and services projects in Nairobi and other Kenyan towns, municipal financing in Kenya, and project monitoring and evaluation.

Outcome

7. When the loan for the project was closed, on-site and off-site construction works for the sites and services scheme and for the trunk sewer infrastructure were completed. The majority of the community facilities are now fully operational. All sites and services lots were allocated. Construction of housing units by allottees reached an estimated 21,000 rooms in 1983—20 percent above the level of housing consolidation that the SAR anticipated in 1979. The programmed studies under the technical assistance component were undertaken and their recommendations adopted in part. The outcomes of the project coincided with its scope, primarily because the project addressed the pressing needs of Nairobi and reflected the political priorities of both the local authorities and the government. The small scale of the project was appropriate, since it matched the implementation capacity of the NCC.

8. But should be noted that the squatter upgrading component originally envisioned in the project was later abandoned due to inadequate preparation. Two of the six primary schools and one of the two health centers planned for the sites and services scheme were also canceled from the project. Project execution was lengthy, extending over a period of seven and a half years. The delay in project completion was due to changes in the provision of community facilities, as well as to other modifications to the on-site infrastructure standards. And at loan closing, 1,172 lots--19 percent of the total--were still undeveloped at Dandora. By mid-1985 (according to the PAR), about 11 percent of the total number of lots remained unutilized. According to local officials, these remaining undeveloped lots coincided with those that were allotted inappropriately to higher-income individuals--not those targeted by the projects. These persons presumably held the lots for speculation; the claim could not be verified by the PAR.

Achievements

9. Achievements were made in five areas:

- *Physical works.* The trunk sewerage infrastructure, the sites and services scheme, and the shelter components of the project were implemented as envisaged at appraisal. By June 1978, when the first occupants of Dandora Phase I were moving on site, all sewerage works were operational. The completed sites and services scheme also conformed closely to the appraisal design and performed well, with almost full occupancy. However, maintenance problems were encountered, primarily to conflicts among various departments of the NCC, and to opposition to the project by the City Engineer's and Public Health departments over building standards, road maintenance, and refuse collection. Completion of the sites and services component was also delayed by two and half years, due primarily to administrative inefficiency in the NCC. The shelter component of the project was successful, increasing the housing stock in Nairobi beyond the lower appraisal projection. The building-materials loan subcomponent was unsatisfactory, due primarily to administrative inefficiency. Only two-thirds of the allocated amounts of loans (US\$4.2 million) were given to allottees. The (revised) community facilities subcomponent became fully operational, and is being used by both Dandora residents and others from neighboring areas. All technical assistance activities, including the operations of the Housing Development Department (HDD), consultancies for design and engineering, and special studies, were completed at loan closure and met most of the objectives intended at appraisal.

- *Institutional development.* According to the PAR, the project's institutional components were not sufficient to effect NCC's reorganization according to the lines set out at appraisal. The recommended reorganization of the WSD was not implemented. The reorganization of NCC's housing operations also had several limitations. But the project did promote several important institutional improvements, such as the creation of the HDD, a study of municipal finances, the adoption of more appropriate housing-construction standards by the NCC, and the transfer of the housing portfolio to the City Engineer's department, which facilitated coordination and strengthened the technical operations of the sector.
- *Cost recovery.* This subcomponent of the project was unsatisfactory because measures to curb arrears in the repayment of lot charges and building-material loans by allottees were not enforced equitably. Inefficient accounting practices also led to unsatisfactory cost recovery. According to the PCR, 30 percent of all recipients were in arrears of six months or more. If all arrears are included, the percentage rose to 78 percent.
- *Policy development and reforms.* The long project delays were due primarily to the limited capacity of local authorities to carry out large shelter projects. The political climate for privatizing low-income housing was favorable, and private-sector participation should be encouraged in the future. Maintenance activities were also problematic; future projects must address the long-term capability of public-sector institutions to maintain housing areas. The financial viability of local authorities is an important prerequisite for sustainability. Effective cost recovery, depended directly on the level of vigilance shown in collecting arrears. Under the project, the difficulties of collecting arrears were compounded by political pressure not to follow through with evictions, thus affecting HDD's implementing authority. Political support for effective cost recovery is essential.
- *Monitoring and Evaluation (M&E).* The Ministry of Finance was responsible for M&E activities under the project. Local consultants conducted a series of M&E studies and submitted reports routinely from early 1977 to early 1980; thereafter, this subcomponent ran into problems, and the consultants failed to submit subsequent reports. MEDIS reports (presumably M&E reports by these consultants) are mentioned in the project documents reviewed here, but actual M&E data on the project could not be found except for instance; the PCR mentions that, based on "monitoring and evaluation that 95 percent of the project beneficiaries fell within the target group, being below the 50th percentile of the city's income distribution", and it draws some more observations and conclusions about the target group.

Second Nairobi Water Supply Project (Loan 1520-KE)

Objectives

10. The primary objectives of the Second Nairobi Water Supply Project were to increase the water supply capacity to the city, improve and expand the existing distribution network, and provide training and assistance to design and implement improved accounting and management information systems for the WSD.

Components

11. *The project consisted of six broad components:*

- *Modifications to the existing Sasumua dam for use as a river regulating reservoir*
- *The construction of a (Chania) river intake and raw water transmission tunnel and main to the Ngethu water treatment plant*
- *Extension of the capacity of the Ngethu water treatment plant by about 100,000 cubic meters daily*
- *The construction of an additional treated-water transmission main from Ngethu to the terminal reservoir at Gigiri*
- *Extension of the distribution network*
- *Technical assistance to the WSD--financing for engineering and accounting management consultancy services, and training for WSD's commercial and technical staff.*

Outcomes

12. The project met its main objectives to improve the water supply in Nairobi and, to a lesser degree, to improve the ability of the WSD to implement major investment projects. All physical project components were implemented as designed, despite long delays in project start-up and consequent cost increases in local financing. It should be noted, however, that one component of the project not originally envisioned was added to it; unallocated funds from the Saudi Fund for Development were used to finance the extension of the distribution network in the Karen-Langata area of Nairobi. The PCR pointed out that delays in completing the original works made this modification necessary, in order to satisfy increased demands and to increase the revenue base of the WSD. Staffing was a major problem, as it was in the First Nairobi Water Supply Project. And although the WSD generated fairly satisfactory returns on its operations, it experienced serious cash deficiencies after 1981, because the NCC began drawing capital from it to finance its other operations.

*Achievements*13. *Achievements were made in four broad areas:*

- *Physical works.* All physical project components were implemented as designed, although late and with substantial cost overruns. The PCR noted that the updated water demand projections indicated that the increased water supply capacity would be able to meet the demand up to 1990–92. The distribution network was extended in the Karen-Langata area of Nairobi, satisfying the increased demand for water and increasing WSD's revenue. The project benefited the urban poor; the number of water kiosks in the extended system increased from about 200 to 350, and after the initial tariff increase in 1978--when the selling rate at kiosks was set at half the rate in the lowest tariff block--the kiosk rate was not increased further in 1982 and 1983. The introduction of the differentiated block tariff system provided cross-subsidies from the high- to the low-income groups, and promoted the conservation of water. It should be noted, however, that water losses in the distribution system increased considerably after the physical works were completed, because pressure zoning remained inadequate and antiquated mains in the existing were not repaired. Much time, effort, and money went into remedying this situation, causing significant revenue losses. The PCR pointed out that this situation should have been foreseen during project design.
- *Institutional development.* The first Nairobi Water Supply Project demonstrated the need for a Project Implementation Unit (PIU); creation of this unit was a condition of effectiveness for the subsequent project loan. The PIU was to be given clear-cut terms of reference and job descriptions, and its staff was not to be diverted unreasonably to other daily matters; its responsibilities were to maintain project records and accounts, deal with payment and disbursement matters, and coordinate project activities. Initially, WSD's operational and financial performance was satisfactory; later, it deteriorated. Low salaries and an embargo on employment imposed on the NCC by the MLG imposed severe staffing difficulties, impeding its institution strengthening. The positions in the PIU could not be filled with experienced staff, and they were forced to deal with daily operational tasks. The low efficiency of the PIU contributed to disbursement and payment problems. Eventually, engineering consultants largely carried out project coordination, administration and reporting. After the embargo on employment was lifted in early 1983, the PIU was reestablished and reasonably staffed, and its performance improved slightly thereafter.
- *Cost recovery.* The Government established the financing arrangement for the project, stipulating that the WSD finance about 25 percent of the total project cost from revenue generated by its water supply and sewerage operations. This stipulation required that the WSD increase its water and sewerage tariffs initially in 1978 (which was a condition of effectiveness) and in 1982 and 1984. The WSD had satisfactory rates of return on its operations, demonstrating that it was operating according to sound financial principles.

But it began to encounter serious cash deficiencies after 1981, primarily because the NCC began drawing down capital from the department to finance its non-water and sewerage services, thus violating the terms of the loan agreement. It should be pointed out, however, that the Nairobi City Council was dismissed and replaced by Nairobi City Commission in 1983, and the newly appointed NCC made concerted efforts to repay the WSD, reducing WSD's liabilities by KSh 50 million.

- *Policy development and reforms.* The Nairobi Third WS Engineering Project (under preparation while the Second Nairobi Water Supply project was being completed) recommended that additional technical assistance and institutional support, including training, be provided to the NCC and WSD, to offset the risks of delay in introducing tariff increases when necessary to prevent the NCC from continuing to use WSD's resources to finance its other operations, and to remedy insufficient staffing at WSD. Water and sewerage tariffs were again raised in 1987-88 (the last increase had been in 1984). The higher tariffs and reduction of water losses and the gradual reduction of NCC's debts to the WSD allowed the department to assume a strong financial position by 1989. Yet, in the Bank's supervision reports and internal correspondence, it had contemplated putting pressure on the Government to remedy the situation as early as 1981, but did not take formal action, and the Government's corrective action was delayed until 1983. The PCR notes that had firm action been taken at the right time, delays in WSD in service provision and cost increases could have been averted.
- *Monitoring and Evaluation (M&E).* The project documents reviewed did not mention M&E.

Second Urban Project (Loan 1550-KE & Cr. 0791-KE)

Objectives

14. Urban II sought to strengthen the institutional capabilities of the Government and municipal authorities to implement and manage urban development. The experience of the first Sites and services Project in Nairobi was to be extended and amplified to the secondary cities of Kisumu and Mombasa. Sites and services programs would be continued in the three cities. However, the main objective of Urban II was to introduce slum upgrading, primarily in low-density peri-urban villages that permitted the purchase, subdivision, and resale of "infill" lots. The project was to accelerate the implementation of low-income housing programs in the three cities, to demonstrate an effective, low-cost delivery system for health, nutrition, and family planning services, and to strengthen institutional capacity and local municipal finance for managing urban development.

Components

15. After appraisal, the project consisted of nine components:
- *Settlement upgrading*, involving the provision of basic infrastructure in five existing unserviced settlements (a total area of 536 hectares.) in three cities
 - Under *sites and services*, the preparation of approximately 11,770 serviced lots in five sites
 - *Settlement lots*, involving the preparation and construction of basic infrastructure for approximately 2,500 surveyed lots in two project areas in Nairobi
 - *Low-cost housing lots for market sale*, involving financing for the construction of about 3,240 serviced lots to be sold at market prices
 - *Housing loans*, to provide access to credit for housing improvement and new house construction in project areas
 - *The construction of community facilities*, including 35 primary schools, 14 health centers, 11 community centers, 9 social halls, and 2 sports centers
 - *Health, nutrition and family planning services*, to improve existing services for 265,000 beneficiaries in project areas
 - *Employment opportunities*, to be provided by 350 kiosks, 1,830 market stalls, and 960 serviced sites for small industries, and from loans for the construction of workshops
 - *Technical assistance*, involving financing for studies, training programs, and consultant services to strengthen institutions, monitoring and evaluation, and future project preparation

Outcomes

16. Upon project completion, more than 15,300 lots (sites and services, upgrades and infills, and market sale lots) were prepared in eight sites. It should be noted that the size of the project was reduced in 1981 and 1983--from the appraisal estimate of 13 sites to 8 sites in 3 cities, entailing a one-third reduction of the number of lots to be provided under the project. Although lots were allocated according to agreed-upon procedures, severe staffing shortages put lot allocations and housing loans well behind schedule. Allocations were also made before civil works had been completed; as such, many lots remained unconsolidated at the end of the project. Off-site infrastructure works were successful: sewerage treatment plants in Nairobi and Mombasa were refurbished, the sewerage system in Mombasa was extended, and a storm drainage system was constructed in Kisumu. Under the community facilities component, 21 primary schools, 7 health centers, 9 markets, and 6 community centers were constructed. However, the health, family planning, and nutrition program had problems in Nairobi and Mombasa, due to the shortage of senior staff. The Mombasa program was discontinued, the Kisumu program consolidated into a model. The project was scaled down and rationalized when several problems were encountered: the selection of consultants by local authorities, land acquisition and reservation, and plan approval were delayed; some consultants performed poorly; institutional coordination was problematic; the time required to complete various tasks and the rate of inflation was underestimated at appraisal; and the availability of counterpart funds from the Government was inadequate.

Achievements

17. Project achievements were made in five areas:

- *Physical works.* The project provided services to 400,000 people in newly serviced and upgraded areas. Of these, about 40 percent were in upgraded areas, where the poorer households were located. Yet this figure fails to indicate a significant poverty impact, since about 20 to 25 percent of the families from upgraded areas were forcibly moved out during project implementation and did not receive sufficient compensation payments. Moreover, the total of 15,373 lots represents a 40 percent reduction from the 25,000 anticipated at appraisal. Upgrading projects have also created new squatter neighborhoods of families who moved out of the original areas for various reasons. Serviced lots apparently produced considerable turnover; many of the original allottees tended to sell out to higher-income families. The sale of market sales lots increased from the appraisal estimate of 15 percent to 30 percent at project completion. However, their demand seems to have declined, given the ready availability of infill and serviced lots. Under the community facilities component 21 schools, 4 fully equipped health centers, 3 subhealth centers, and 6 community centers were constructed. This component has been successful and well maintained, substantially reducing infant mortality and teenage pregnancies. Project developments have also produced a wave of new markets and informal commercial activities that have provided work opportunities for unskilled and unsalaried workers, including women. Such key services as sanitation, drainage, and water supply have

created a healthier physical environment, but not uniformly, as evidenced by the upgrading areas. Maintenance is a problem, as it was in the first urban project. Under the technical assistance component fewer expatriates have staffed the housing departments, but the performance of consultants was not satisfactory overall.

- *Institutional development.* A study by the National Housing Corporation (NHC) called for developing a national housing system based on NHC's financing and coordination of the HDDs. But their recommendations were largely ignored. The Bank has also shifted its focus from housing to municipal development, whereby it will support local government authority over housing loans. Although the municipalities participated more actively in this project, they were ill-prepared to take on the demands of design and implementation, the recovery of investments, and the repayment of internal loans. Municipal management, in general, was worse off after the project, because the creation and maintenance of HDDs imposed additional costs without a corresponding increase in revenue; the maintenance and servicing of project sites, as well as the operation of the schools and clinics, are an added burden to the municipalities, as long as the properties remain unregistered; due to continued growth and economic crisis, demand is outrunning municipal capacity, and the project has left the municipalities with a hefty debt burden.
- *Cost recovery.* Both the municipalities and the Bank missions neglected this component, due to the more immediate problems of implementation. The HDD's record at collecting lot and improvement charges from beneficiaries is only slightly better than NHC's record at recovery from the City Councils, which have recovered nothing. These problems are attributed in part to a severe shortage of staff and very late start-up. The regressive role of the NCC in overturning eviction requests by its own HDDs has compounded the problem. It should be noted that the PCR does not mention cost recovery. According to the PAR, the total outstanding debt has not been calculated, nor has the actual number of individual loans been specified. Consequently, HDD financial divisions are unable to state how many loans are in arrears, or how much debt service is overdue. The NHC has been unable to meet its debt obligation to the government, and the Ministry has amended the Housing Act to enable the NHC to collect dues directly from project beneficiaries when local authorities are in default.
- *Policy development and reforms.* The studies financed under this project have not culminated in policy changes. The continued dialogue through Urban III failed to prompt the Government to adopt such basic concepts as low-cost solutions, secure property titles, cost recovery, or support for the informal sector. This lack of policy impact has disappointed the Bank and discouraged local and national technicians, who had hoped that the project would support the proposed sectoral reforms and now feel that the withdrawal of Bank support has drastically reduced any influence they might have had in the past to effect change.

- *Monitoring and Evaluation.* The Ministry of Urban Development and Housing, which was responsible for the project's M&E, did not carry out this function adequately; it did not administer any surveys, or prepare any reports. The Project Management Unit (PMU) was set up four years behind schedule (in 1982) and was not effective until 1984. After the PMU became effective, project implementation was speeded up considerably, and a system of quarterly Government supervisory missions was instituted. The Bank staff joined one or two of these missions each year to review project progress and resolve problems.

Nairobi Third Water Supply Engineering Project (Cr. 1566-KE)

Objectives

18. The purpose of the Engineering Project was to help prepare a third-phase water supply investment project to meet the rapidly expanding water demands of Nairobi City up to the mid-1990s. The project also sought to strengthen the operations and financial management of the WSD to increase its efficiency and capacity to undertake the third phase, and to prepare recommendations for the long-term institutional development of an entity to manage Nairobi's water supply facilities. In addition, the project sought to review the finances of the non-water and sewerage activities of Nairobi City, and to initiate in-house training to improve financial and operational performance. Another project objective was to help prepare a long-term program for managing Nairobi's water resources on a regional basis.

Components:

19. The ten components of the project can be grouped into two categories:

Preparation for Nairobi Third Water Supply Project

- A feasibility study, detailed engineering, the preparation of tender documents, and an evaluation of bids for major civil works contracts
- Associated studies, covering mapping, site investigations, and soil testing
- The convening of a panel of experts to advise on dam safety aspects
- Strengthening of the management and operations of the WSD, including training and labor development
- Improvements in Nairobi's water distribution system
- The development of a long-term regional water resource management program
- An assessment of Nairobi's sewerage and sanitation needs
- The institutional development for Nairobi's water supply and waste disposal facilities

Technical Assistance for Institutional Development

- Improvements the management and performance of NCC's computerized revenue collection in all areas of operation
- The development and initiation of in-house training for NCC's nonwater operations staff

Outcomes

20. Overall, the project met its primary objectives. On the technical side, the project prepared preinvestment studies and detailed engineering designs for the Nairobi Third Water Supply Project, but the design phase had to be extended in midstream, delaying the actual start-up of the main project. The project also rehabilitated the water supply system. Major leaks were targeted, and unaccounted-for-water (UfW) was reduced to 32 percent from 40 percent within a year.

21. The project partially met its institutional objective--to provide adequate training that would ease WSD's long-lasting staffing problems given the institutional and financial weaknesses of the NCC, which were not addressed adequately in the Engineering Credit, the NCC remained largely dependent on the revenue from water and sewerage operations and, hence, continued to use the Water Fund without authorization. WSD's financial performance was satisfactory during the project period, and it was able to build up sufficient reserves to contribute more than US \$100 million equivalent to the follow-on main investment project. By mid-1986 the NCC reduced its liabilities to the Water Fund to KSh 50 million, and water and sewerage tariffs were increased by an average 40 percent in FY 87/88. But the NCC again had to drain substantial amounts from the Water Fund in FY88/89, and its continued use of this source led to the suspension of disbursements under the main project.

Achievements

Project achievements were made in two areas:

22. *Physical works.* The project gave the WSD a new opportunity to analyze its water resource situation and to prepare new plans for the future. In this exercise it became apparent that the level of UfW was high, at about 40 percent in 1987. Therefore, system rehabilitation was an urgent task, to stretch another capacity and make operations more efficient. By mid-1994, the rehabilitation program had reduced UfW to 25 percent, having a crucial impact on the growth of newly developed industrial and commercial activities in the eastern section of the city.

23. *Institutional development.* The training program was effective; it has enhanced WSD's capacity to handle its responsibilities, significantly improving the implementation of WS III. The project-sponsored training program run by the Industrial Research and Consultancy Unit of the University of Nairobi has provided invaluable feedback, improving operations by soliciting input from trainees. The turnover of trained and qualified staff has been reduced, and quality of staff at all levels has been improved. The staff profile has also improved; the supervisory staff is now more qualified, having received comprehensive internal training. Similarly, the number of lower-level staff has been reduced, because working methods have improved and the system rationalized. The WSD is now much better equipped to run its operations and maintain its facilities. The ratio of staff per thousand connections, an indicator of operational efficiency, is 8.5, which places well among other water utilities throughout Africa.

24. Due primarily to the effective rehabilitation of the system, the production capacity generated under WS II is reasonably adequate. Without it, the water supply situation would have reached a crisis point a few years ago. In addition, the rehabilitation effort has improved system operation monitoring, enhanced the management information system, and shortened response times to system repairs.

Evaluation Methodology and Survey Design

Evaluation Methodology

1. The components of the four projects are diverse, ranging from sites and services, housing, employment opportunities, and community facilities to water supply and sanitation. All sought to improve the standard of living of low-income urban dwellers. The impact evaluation is thus conducted from an integrated perspective, pooling the accomplishments of all components and measuring the institutional, financial, technical, economic, social, and environmental impacts on the urban population.

Methodological Framework

2. The scope of the study extends from the household level—an analysis of socioeconomic and environmental impacts—to the neighborhood and citywide levels—an analysis of institutional, financial, economic, and technical impacts. Each relevant stage of analysis addresses the sustainability of the projects. The direct impacts of the projects are also distinguished from their induced effects. Direct impacts pertain to technical and institutional/financial aspects, socioeconomic aspects (the coverage, reliability, and affordability of and access to project inputs and services), and environmental aspects; the induced impacts pertain to economic aspects (markets, and urban productivity) and behavioral and health changes (table C.1).

3. *Impact evaluation at the household level.* Measures of the direct impacts of the projects on beneficiaries are derived from a field survey undertaken by a local survey team. It focused on conditions before- and after project implementation, capturing the extent to which the welfare of the beneficiaries and other citizens of Nairobi had been affected by the Bank's interventions. The following issues were covered: the coverage, reliability, and affordability of and access to project input and services, public health and hygiene practices, and environmental impacts. The hypotheses formulated in the study design phase (which are listed as questions in annex D) helped narrow down the issues to be investigated, and the operational definition of each variable was used to design the questionnaire.

4. No attempt was made to establish rigorous causal relationship, given the large number of exogenous factors. Instead, the report relies on a sound assessment of the survey data and on extensive information from interviews with key informants and groups.

5. The questionnaire—which also captured gender and ethnic issues—focused on current and previous conditions, and comprised not only structured questions but also open-ended questions that enabled respondents to express their housing, water supply, and sanitation needs, and to provide suggestions about how these services could be improved. The following sites were covered: the three urban project sites (Dandora, Mathare Valley North, and Kayole; the unplanned settlements (Korogocho), for comparison with housing conditions in the project sites, and for assessing the extent to which the projects have improved the access to low-income

groups to housing, water supply, and sanitation facilities; and the middle-income Woodley area and the unplanned settlement Kibera, in West Nairobi, for assessing the social impacts of water supply projects only—that is, in the absence of urban project intervention. All areas covered in the is evaluation are presented in Map IBRD 27005.

Table C.1 Direct and indirect impacts of the projects

<i>At the household level</i>	
Direct impacts of projects	
Socioeconomic (access, coverage, reliability, and affordability of services)	
- Economic impact	(income and expenditures; cost recovery procedures)
	- employment;
	- access to credit;
	- security of property title;
	- sustainability of economic aspects.
- Environmental impact:	improvement in housing quality, reduction/ elimination of water pollution, and development of environmentally acceptable methods in waste disposal;
Induced impacts of projects	
- Social impact:	- improved access to social services;
	- improved health, nutrition, family planning and education;
	- sustainability of social aspects.
<i>At the neighborhood and city levels</i>	
Direct impacts of projects	
Technical impact:	changes in service levels and technology, improved building standards reliability and quality of service and productivity, and durability of technical impact;
Institutional impact:	organizational, management (planning, financial and personnel) and policy improvements, and institutional sustainability;
Financial impact:	reform in tenure and land/housing ownership, improvements in self-financing, development of appropriate and equitable cost recovery systems, reduction of operating costs, and financial sustainability;
Induced impacts of projects	
Economic (markets, urban productivity)	

6. One hundred households in each of the five survey sites were chosen randomly with the exception of 30 households of the 100 in Dandora in which owners were interviewed whenever they could be found. After the first draft of the questionnaire had been piloted in the field, it was discussed at length with the interviewers, and various changes were made. Pretests of 28 questionnaires were administered in Dandora and Kibera, and further amendments were made. Interviewing teams were assigned to each of the survey sites, working in groups of two (a male

and a female). To ensure that household heads who work late from work were not left out, questionnaires were administered in each survey site at least during over the weekend.

7. The survey data were complemented by specific information obtained in key informant and group interviews—with NCC, HDMD, and WSD officials, workers in health centers, community center members, primary school teachers, vendors in market stalls, water kiosk operators, and NGOs. Issues to be discussed in the group interviews were prepared beforehand, and the teams were trained in participatory (for example role playing) to ensure a smooth discussion flow.

8. *Impact evaluation at the neighborhood and city levels.* Measures of the institutional, financial, economic, and technical impacts of the projects are derived from on-site observations of and records on the following elements: physical works; service levels and technology; organizational, management, and capacity building; policy reforms; land tenure and home ownership; credit systems and self-financing mechanisms, cost recovery procedures; and land, housing, and rental markets. The indicators used to measure impacts at the citywide level were based on questions formulated in the design phase of the project investigated (*annex D*).

9. Information to support the impact evaluation at the neighborhood and city levels came from an on-site examination of the physical results of the projects, a review of documents, publications, and data on technical, financial, and institutional issues, and interviews with key informants and groups from the WSD, HDMD, PHD and CED entities of the NCC. The WSD also provided maps and technical tables, and relevant NCC departments provided some of the citywide socioeconomic and environmental data.

10. Local consultants collected and performed a cursory analysis of data on housing and land markets, cost recovery, credit systems, and urban policy. Urban indicators on housing and financial aspects that were developed in the early 1980s by the World Bank were not updated, and thus the main source was the USAID housing finance study.

B. Survey Design: Hypotheses

11. The Bank is committed to fostering effective and sustainable development, and to alleviating poverty. Its success is determined by the benefits that accrue to the beneficiaries of the projects it helps implement. To measure these benefits, impact evaluations attempt to follow the consequences of Bank interventions as far as possible in the direction of the Bank's goals, defined as benefits to people, economic growth, and project sustainability.

12. Since the early 1970s, the Bank has been involved in urban and water supply/sanitation development in Nairobi through the four basic projects discussed throughout this report—Urban I and II, and WSI and II (including a follow-on Engineering project and WS III). Although each project encompassed different components, ranging from sites and services, housing, and employment creation, to the construction of community facilities and the provision of health, nutrition, and family planning services, to water supply and sanitation, they all sought to improve the standard of living among the urban population, especially the urban poor. The impact evaluation assesses the accomplishments of all these components, particularly as they pertain to low-income groups and women.

Hypotheses About Institutional Capacity

13. Beyond improving the standard of living in the urban districts of Nairobi, the projects attempted to improve the capacity of the municipal government and various departments of the NCC to perform their administrative and service functions more effectively. Each set of projects was predicated on hypotheses that linked institutional capacity to the desired impacts of the projects.

Urban projects

- The more efficient the administration of the Ministry of Urban Development and Housing, the better the maintenance of related infrastructure components—water and sewerage connections, roads, street lighting, and refuse collection.
- The better the quality and maintenance of related infrastructure—water and sewerage connections, roads, street lighting and refuse collection—the more positive the impact on the environment and community health.

Water supply projects

- The more efficient the WSD, the greater its cost recovery, and the higher the quality of water supply works and of their maintenance.
- The better the quality of the water supply works and of their maintenance, the lower the UFW, and the better the needs in water of the growing population are met.
- The better the administration and efficiency of water distribution, the more effective the differentiated block tariff system, and the better water conservation will be achieved.
- The better the quality of the water supply works and of their maintenance, the safer the water.

Hypotheses about the Direct Impacts of the Urban Projects on Beneficiaries

14. The first urban project, the Nairobi Sites and Services project, sought to provide housing services to low-income groups in Dandora. It included the servicing of 6,000 residential lots, and the construction of housing units, community facilities (primary schools, health clinics, and sports centers), market stalls, and road and sewerage infrastructure. The objectives of the second urban project were more ambitious, covering several areas of Nairobi, including Dandora. They involved settlement upgrading, sites and services operations, affordable housing for low-income households, housing loans, community facilities, and employment opportunities.

15. The PCRs, PARs, and other documents available on these two projects raised the following issues about the impacts of the components on the targeted beneficiaries:

- The first sites and services project targeted at low-income households, proved to be too expensive for them; as a result, middle-income households were the main beneficiaries. This "gentrification" (see annex F) may have entailed some trickle-down effects to the poorer families since they might have benefited by moving into former dwellings occupied by the middle-income families, or by being exposed to an expanded rental market made possible with construction loans for the additional housing units. The same pattern would likely be found in the sites and services components of Urban II.
- This is also possible that poor households living previously in the project sites may be found today in the nearby slums of Korogocho (Dandora).
- There is some evidence that poor households who lived in the Mathare Valley were forced to settle in slum areas. The sites and services project in Mathare Valley North appears to have spurred the housing development in East and West Mathare Valley, which was taken over by the private sector, stimulated by the expectations of higher real estate values that would be generated by the Bank's project in Mathare Valley North. The private companies did not have the same obligation to respect the rights of existing tenants. And, according to the PAR, in 1988 the majority of the former tenants appear to have moved or to have been moved forcibly to new rental quarters in Korogocho.

16. These issues, along with the classic views on the relationships between access to community facilities and living standards, form the basis of the following sets of hypotheses:

Premise:

The servicing of residential lots with related infrastructure increases the value of land in the project area.

First set of hypotheses—on the access of low-income households to housing:

- Given their limited access to financing, low-income allottees are more likely than higher-income allottees to resell their lots/core units.
- Project intervention increases the availability of low-income housing units in serviced areas, thereby boosting the rental market, and providing more affordable housing opportunities for low-income households.
- The introduction of building material loans is likely to have a direct and positive effect on the rate of housing consolidation.

Second set of hypotheses—on housing, related infrastructure, environment, and health:

- The higher the housing standards (the quality of material, the number of rooms, and so on), the more positive the impact on the environment and health indicators.
- The better the quality and maintenance of related infrastructure, i.e., water and sewerage connections, roads, lighting and refuse collection, the higher the impact on the environment and health indicators.

Third set of hypotheses—on urban projects, education, health, and employment

- Urban project development of community facilities (primary schools, health, nutrition, and family planning clinics and recreation centers) is likely to have a positive impact on education, health, and family planning.
- Housing projects and their related infrastructure works and community facilities are likely to generate wage employment in the formal sector in the short-term, and employment in the informal sector in the short and long term.
- Workers in the formal sector have better access to publicly financed low-income housing than do workers in the informal sector.

Fourth set of hypotheses—on urban projects and investment/urban entrepreneurship

- By promoting notions of home investment and ownership, Bank projects contribute to income generation, a switch from a transitory to a more permanent family home, the weakening of links between migrants and their rural origin area, and a new urban class structure.
- Because notions of home investment and ownership that help confer greater individual independence do not exist in traditional village surroundings, women are more likely than men to seize opportunities of home investment and ownership.
- Women are less likely than men to have access to public housing development.

Hypotheses about the Direct Impacts of the Water Supply Projects on Beneficiaries

17. The objectives of the water supply projects were to meet anticipated water demand until about the mid-1990s, to keep pace with the growing urban population, and to prevent an unsatisfactory water system from adversely affecting public health and tourism.

18. During the implementation of the first project, the NCC and the WSD instituted measures to increase the number of kiosks, license kiosk operators, and regulate their activities. According to the PAR, these measures were likely to reduce water charges by about two-thirds by the year 1979, which would benefit primarily low-income households who relied on kiosks for their water.

19. During the implementation of the second project, water tariffs were increased in 1978, 1982, and 1983. However, the introduction of the differentiated block tariff system provided cross-subsidies from the higher to the low-income groups¹. Water fees from kiosks (whose number rose from 200 to 350) had been set in 1978 at half the rate of the lowest tariff block. The kiosk rate was not increased further in 1982 and 1983. These procedures are likely to benefit low-income households, ensure more equitable water distribution and costs, and promote water conservation.

1. The block tariff structure increases water prices proportionally to the level of water consumption. It was instituted to protect poorer households. However, it may not always have the expected effects. For example, several households who are connected to water pipes may share only one metered connection. Consequently, because their combined consumption is higher, they will pay a higher price per unit than do wealthier families who use one metered connection per household.

First set of hypotheses—on water costs and affordability

- The higher the number of kiosks, the greater the competition among kiosks operators, the lower the water fees paid by consumers, the lower the hardship of fetching water for low-income households, and the more time saved in water fetching and devoted to more productive activities.
- The more frequent the water shortages, the higher the price of water sold at kiosks.
- The price of water sold by kiosk operators is lower when the kiosks are operated by village committees or women groups than by individuals.
- The more effective the differentiated block tariff system, the more affordable water will be for lower-income households that are connected to water ².

Second set of hypotheses—on health impacts and time savings for low-income households

- The greater the access to tap water, the safer the water, and the more positive the impact on health indicators.
- The more affordable tap water is for low-income people, the more their hygiene practices will improve.

2. It is commonly viewed that water costs should not exceed 3.5 percent of household incomes.

Citywide Impacts: Key Questions

A. Institutional and Financial Aspects

WSD Capacity Building:

1. Outcome of the training components of the two water projects?
2. How has the staffing profile changed over the last 10 to 15 years?
3. Capacity to manage new construction and O&M activities?
4. Capacity to handle social issues of water and sanitation services?

HDD Capacity Building:

1. Outcome of the training components of the two urban projects?
2. How has the staffing profile changed over the last 10 to 15 years?
3. Capacity to manage housing programs and their funding?
4. Capacity to handle social and gender issues of housing programs?

Policy Improvements:

1. How have the policies and legal framework covering water supply and sanitation changed over the last 10 to 15 years and the status of their application?
2. How have the policies (legal framework) covering other municipal services changed over the last 10 to 15 years? Status of their application?
3. How have the policies and legal framework covering the provision of housing changed over the last 10 to 15 years? Status of their application?

Cost Recovery Procedures:

1. Changes in water and sanitation tariffs and financial viability of WSD over the last 10 to 15 years?
2. Affordability of service to the poor?
3. Effectiveness of accounting and collection systems?

4. Effectiveness of rates and charges in covering the costs of other municipal services?
5. Pricing of lots and their recovery mechanism?
6. Building material loans and their recovery system?
7. Effectiveness of accounting and collection systems?

Credit Systems:

1. HDD's role in funding low-income housing?
2. Other funding mechanisms in Nairobi for low-income housing?
3. Terms and conditions applicable under various credit systems?
4. History of repayments under various credit systems?

B. Technical Aspects

Infrastructure Services:

1. Quality and reliability of water and sanitation services, roads, and solid waste collection and disposal?
2. Service levels/standards of water supply, sanitation, solid waste, and roads?
3. Effectiveness of services and their maintenance?

Housing Standards:

1. Quality and availability of construction materials?
2. Living space per dwelling unit?
3. House maintenance practices?

Social Services:

1. Quality and availability/reliability of health services, schools, community facilities, and shops?
2. Level of social services?

C. Economic Aspects

Land and Housing Markets:

1. To what extent are land value increases due to the projects?

2. How do they compare with land values/increases in other comparable areas in Nairobi?
3. Does the supply of dwellings meet the demand?
4. How well are the land registration and titling systems functioning?
5. Is the institutional capacity to administer the systems adequate?
6. Efficiency of housing market; (i) house price-to-income ratio, and (ii) rent-to-income ratio?

Rental Markets:

1. How do rental prices in the project areas compare to rent in other areas?
2. Have the projects contributed to improvements in the rental market; unit availability, affordability, etc.?

Urban Productivity:

1. Changes in commercial and industrial activities that can be attributed to the projects?
2. Employment generation; direct under the projects, indirect due to improved water supply, sanitation, other services, and housing?
3. General improvements to the functioning of the city due to the projects?

December 19, 1994

Findings of the Socioeconomic Survey

Demographic and Socioeconomic Characteristics of Respondents

1. In all sites, more than 70 percent of the household heads interviewed are male.³ Age structures are quite similar, at around 30 to 35; in Dandora and Korogocho, a higher percentage of households belong to the 40-year-old and older age groups. Household sizes range from 1 to 11 persons, with the mean of 3.3 in projects areas and 4.3 in unplanned areas.
2. More than 70 percent of male household heads are married (72 percent in project sites and 87 percent in unplanned areas); less than 25 percent of female household heads are married—the rest are single, divorced, or widowed. In both types of settlements, the majority of married heads of household live with their spouses.
3. A substantial percentage of families—ranging from 20 percent to 50 percent in unplanned settlements—have left their children behind in rural areas. This finding might be explained in part by their low incomes, which makes it difficult to care for their children in the city.
4. Educational levels in unplanned settlements are lower than those in projects areas, where most of respondents have reached secondary or postsecondary level. Female respondents in unplanned areas have the lowest educational level.
5. The ethnic composition varies more widely in unplanned settlements than in sites and services areas. Kikuyus, the largest ethnic group in Kenya and whose area of origin is close to Nairobi, have the highest representation in all sites. The second largest ethnic group is the Luos, who live largely in Mathare North.⁴ Other ethnic groups with substantial representation include the Luhya and Kambas. Patterns of lot ownership differ among ethnic groups. For example, ownership in projects areas is highest among the Kikuyus (at 19 percent), followed by the Kambas (10 percent), the Luhya (8 percent), and Luos (6 percent).
6. About 40 percent of respondents in unplanned settlements are self-employed, and belong to the informal sector. A quite high proportion of casual workers (up to 22 percent) also come from

3. Male heads of households comprise 75 percent of respondents in Dandora, 80 percent in Kayole, 81 percent in Mathare Valley North, 73 percent in Korogocho, and 82 percent in Kibera. The mean percentage of female heads is lower than the norm for Nairobi, which is of 28 percent. High rents in Mathare Valley North and Kayole may account for the low percentage of female heads of household, who have lower incomes on average than do their male counterparts.

4. The Kikuyus comprise 57 percent of respondents in Kayole, 50 percent in Dandora, and 35 percent in Mathare Valley North. The Luos comprise 27 percent of respondents in Mathare Valley North, 12 percent in Kayole, and 10 percent in Dandora.

these settlements, suggesting that the settlements are an easier entry point for most people seeking urban employment. In sites and services settlement, the labor force structure is the opposite; wage workers comprise the majority of respondents.

7. In Dandora, mean monthly personal incomes is KSh 3,380; in Mathare North, it is KSh 3,520, and in Kayole KSh 3,500. It should be mentioned that incomes in surveys are usually underestimated. On average, incomes are much higher in the sites and services areas than in unplanned settlements. In the sites and services areas, the mean monthly income of women (KSh 3,536) is as high as that of their male counterparts (KSh. 3,439). Female respondents in the unplanned settlements have the lowest incomes (at KSh 2,145).

8. Most respondents have strong rural-urban ties; a significant number own either rural land or a house,⁵ or send money to homes in rural areas. More than two-thirds of men have property in rural areas, compared with less than one-fourth of women (tables E.1, E.2, E.3, and E.4).

9. Strong rural-urban ties are also demonstrated by the substantial amount of remittances sent to rural areas.⁶ Although their incomes are low, respondents seem to invest in rural areas despite the fact that they spend most of their adult lives in Nairobi.

5. In all cases, the number of respondents with a house in a rural area is higher than those with land. This disparity can be explained by the fact that respondents have built on land they do not own.

6. The proportion of the respondents who send remittances to relatives living in rural areas ranges from 62 to 86 percent; the percentages are higher in Mathare North (86 percent) and Kayole (81 percent).

Table E.1 Ownership of rural land by respondents in unplanned settlements

	<i>Own</i>		<i>Don't Own</i>		<i>Total</i>	
	<i>Freq.</i>	<i>percent</i>	<i>Freq.</i>	<i>percent</i>	<i>Freq.</i>	<i>percent</i>
Male	76	51	38	25	114	76
Female	9	6	27	18	36	24
Total	85	57	65	43	150	100

Table E.2 Ownership of a rural home by respondents in unplanned settlements

	<i>Own</i>		<i>Don't Own</i>		<i>Total</i>	
	<i>Freq.</i>	<i>percent</i>	<i>Freq.</i>	<i>percent</i>	<i>Freq.</i>	<i>percent</i>
Male	84	56	30	20	114	76
Female	6	4	30	20	36	24
Total	90	60	60	40	150	100

Table E.3 Ownership of rural land by respondents in sites and services Areas

	<i>Own</i>		<i>Don't Own</i>		<i>Total</i>	
	<i>Freq.</i>	<i>percent</i>	<i>Freq.</i>	<i>percent</i>	<i>Freq.</i>	<i>percent</i>
Male	132	44	104	34	236	78
Female	20	7	44	15	64	22
Total	152	51	148	49	300	100

Table E.4 Ownership of a rural home by respondents in sites and services areas

	<i>Own</i>		<i>Don't Own</i>		<i>Total</i>	
	<i>Freq.</i>	<i>percent</i>	<i>Freq.</i>	<i>percent</i>	<i>Freq.</i>	<i>percent</i>
Male	169	56	67	23	236	79
Female	21	7	43	14	64	21
Total	190	63	110	37	300	100

10. The percentage of female respondents who spend money to rural areas is much lower than men in unplanned areas (42 percent, compared with 74 percent), but almost as high as men in sites and services settlements (77 percent, compared with 81 percent). The fact that in the two groups in the sites and services settlements have similar incomes could account in part for these findings.

11. Significant differences in ownership of rural land were identified among different ethnic groups in unplanned settlements. In all settlements, rural land and home ownership is highest among Luos and lowest among Kikuyus.⁷ Thus, Kikuyus tend to favor ownership in Nairobi at the expense of property in rural areas, and Luos tend to favor the opposite.

12. Rural-urban linkages are also reflected by the intentions of more than 50 percent of respondents in all sites to retire to their rural area of origin.⁸ Data disaggregated by gender, show that a higher proportion of female respondents in all sites planned to stay in Nairobi after retirement (tables I.5 and I.6). This stronger urban bond among female respondents can be attributed to the fact that relatively fewer women own rural land to which they can retire.

Table E.5. Retirement plans of respondents in unplanned settlements

	<i>Stay in Nairobi</i>		<i>Return to Rural Areas</i>		<i>Don't Know</i>		<i>Total</i>	
	<i>Freq.</i>	<i>percent</i>	<i>Freq.</i>	<i>percent</i>	<i>Freq.</i>	<i>percent</i>	<i>Freq.</i>	<i>percent</i>
Male	15	13	90	79	9	8	114	100
Female	20	56	11	30	5	14	36	100

Table E.6 Retirement loans of respondents in sites and services areas

	<i>Stay in Nairobi</i>		<i>Return to Rural Areas</i>		<i>Don't Know and Other</i>		<i>Total</i>	
	<i>Freq.</i>	<i>percent</i>	<i>Freq.</i>	<i>percent</i>	<i>Freq.</i>	<i>percent</i>	<i>Freq.</i>	<i>percent</i>
Male	41	18	147	62	48	20	236	100
Female	16	25	28	44	20	31	64	100

13. The percentage of household heads planning to stay in Nairobi after retirement varies among ethnic groups in a way that is consistent with preferences toward urban or rural property: Kikuyus favor retirement in Nairobi, while Luos favor retirement in their rural area of origin.⁹

7. The difference between the percentage of Luos and Kikuyus who own rural land and homes varies between 50 percent in unplanned areas and 23 percent in sites and services settlements.

8. The proportion of respondents planning to return to the rural area after retirement is highest in Kibera (80 percent), followed by Mathare North (66 percent), Korogocho (61 percent), Kayole (58 percent), and Dandora (51 percent).

9. In the sites and services areas, 30 percent of Kikuyus plan to retire in Nairobi, compared with 44 percent of those in unplanned settlements. In the sites and services areas, 82 percent of Luos plan to retire to in their rural area of origin, compared with 85 percent

14. All in all, despite considerable differences among ethnic groups, these figures indicate strong rural-urban linkages and thus a greater need for rental accommodations. The demand for additional rental housing is further demonstrated by the reason given by most respondents for moving to these sites: cheap rent. This is the main reason among 43 percent of respondents in Kayole, 48 percent in Korogocho, 36 percent in Kibera, 36 percent in Kayole, and 27 percent in Dandora. Other reasons for moving are ranked in the following order: work/employment, joining relatives, and owning a home.

Housing Development

15. Renting is the predominant form of tenure, accounting for 90 percent or more of respondents in Kayole, Mathare North, and Kibera. This finding is consistent with 1993 data which indicated that owners represent only 7 percent of the Nairobi population, down from 15.8 percent in 1989 and from 29 percent in 1983.¹⁰ The hypothesis that Bank projects promoted notions of home ownership and thus a change from a transitory to a more permanent family home is not supported (Annex D).

16. The proportion of owners in unplanned areas is higher than in sites and services areas. (The figures for Dandora have been disregarded because that sample was stratified by ownership.) In Kibera 10 percent of the respondents consider themselves owners, despite the fact that they have no property title, and thus no security of tenure. The highest proportion is found in Korogocho (22 percent), where ownership is quasi-legal with temporary occupation licenses. Still, owners in Korogocho and Kibera, unlike those in Dandora, feel that their tenure is legally insecure. Nearly half of Korogocho owners attribute the motivation to invest in their dwellings largely to the desire to build and let.

17. In all sites the number of female owners among all women is more than twice the number of male owners among all men,¹¹ which is consistent with the hypothesis that, because home/land ownership in rural areas is constrained by tradition, women in urban settings are more likely than men to seize opportunities to invest in and own homes.

18. Almost half of female owners and half of male owners acquired their lots before 1980, meaning that almost half of each group are original allottees.

19. Subletting is common among owners: of the 30 interviewed in Dandora and the 22 in Korogocho, 28 and 15, respectively, reported subletting part of their unit. In Korogocho, owners sublet primarily one or two rooms; in Dandora, they sublet an average of three to four rooms.

20. Subletting also proceeds an important source of income. In Dandora, the monthly income from this source ranges from KSh 750 to 5,600, with a mean of about KSh 2,700; in Korogocho the

of those in unplanned settlements. Correspondingly, the proportion of all Kikuyus who plan to retire to rural areas is lowest among all groups - - 46 percent in sites and services areas, and 44 percent in unplanned settlements.

10. The 1993 data are derived from the 1983 Urban Housing Survey, the 1989 Metropolitan Household Survey, and the 1993 Welfare Monitoring Survey.

11. In Dandora, 52 percent of female respondents are owners compared with only 23 percent of males. In the sites and services areas as a whole, 23 percent of all female respondents are owners, compared with 11 percent of males. Similarly, in unplanned settlements, 42 percent of female respondents are owners, compared with 11 percent of males.

range is from KSh 150 to 1,750, with a mean of KSh 820, or about 30 percent of the mean for Dandora. These figures reflect the smaller number of rooms sublet and the lower rents in Korogocho than in Dandora.¹²

21. Before they moved, most respondents lived in permanent dwellings—76 percent in Dandora, 92 percent in Kayole, and 78 percent in Mathare North. A change from a temporary to a permanent dwelling, is somewhat more frequent among respondents in Dandora and Mathare North, raising an issue about whether targeted beneficiaries were being reached: if most respondents in Kayole already lived in permanent dwelling, then their move to the sites and services areas did not improve their standard of living noticeably.

22. Data from Dandora indicate that owners tend to consume more housing than tenants: only 23 percent of owners occupy one room, compared with 81 percent of those who rent; 43 percent of owners occupy two to three rooms, compared with 17 percent of those who rent. These figures indicate that owner-occupiers benefit from their better housing conditions.

23. More people live in one single room today than before the project; in Kayole and Mathare North, the number increased from 48 percent to 74 percent, and from 67 percent to 81 percent, respectively. The differences is less pronounced in Dandora (60 to 64 percent), where more owners were interviewed, and where owners consume more housing than tenants, as discussed in the preceding paragraph. All in all, the majority of respondents in all sites and services areas live in one room.

24. If over the years the number of household members may have declined somewhat, only 8 percent, 28 percent, and 31 percent, respectively, of all Kayole, Mathare North, and Dandora households that live in a single room comprise one member only. Density is thus high; for example, in Kayole and Mathare North, 50 percent and 42 percent of two- and three-member households, respectively, live in one single room, as do 25 percent and 17 percent of four- and five-member households, respectively. In Dandora and Mathare North, 11 percent and 12 percent of six-member households, respectively, live in a single room. The degree of overcrowding is higher today in Dandora than it was in the respondents' preproject accommodation: before the project, only one-member households would occupy one room; today, single rooms are occupied by 34 percent of two-to three- member households, 23 percent of four- to five-member households, and 11 percent of six-member households. Results are mixed in Kayole and Mathare North: the proportion of one-member households that live in one room has increased from 14 percent to 22 percent and from 19 percent to 28 percent, respectively.

25. With the exception of Mathare North, the use of dwellings both as a residence and a workplace was less pronounced in sites and services areas than in unplanned settlements.¹³

26. In the unplanned settlements, of Korogocho, the mean number of rooms occupied ten years ago and today by respondents has remained unchanged, at about 1.4. Among Kibera respondents, the mean number of rooms has declined from 2.0 to 1.3. Not surprisingly, therefore, the proportion of those who believe that the number of rooms they occupy is adequate is higher in Korogocho (46

12. Income under reporting was noticed in a cross-tabulation of rental income with personal income for Dandora owners.

13. In Dandora, Kayole, and Mathare North, 10, 11, and 15 percent of respondents, respectively, use their dwelling as both a residence and work place. In Kibera and Korogocho, the respective proportions are 16 percent and 20 percent.

percent) than in Kibera (38 percent). The decline in Kibera might be due to the dramatic population expansion mentioned earlier, as well as to rising rents and lower real income.

27. In Dandora, Kayole, and Mathare North, 69 percent, 77 percent, and 73 percent, respectively lived in Nairobi immediately before settling in the project sites, and 21, 17 and 15 percent, respectively, had moved from rural areas. Before they moved, most respondents lived in permanent dwellings: 76 percent in Dandora, 92 percent in Kayole, and 78 percent in Mathare North. The change from temporary to permanent dwellings has thus been more marked among respondents in Dandora and Mathare North.

28. In the sites and services areas, the mean rent before and after the project (adjusted for inflation) declined from KSh 1,257 to KSh 1,044. In unplanned settlements, the mean rent ten years ago was KSh 770, compared with KSh 350 today. In both types of settlements, but particularly in informal settlements, the mean rent has fallen in real terms.

Respondents' Perceptions

29. Among tenants in the sites and services areas, 39 percent of respondents in Dandora, 47 percent in Kayole, but only 6 percent in Mathare North believed that the projects had provided cheap shelter. Among other advantages, security was cited by 4 percent of respondents in Dandora and 11 percent in Mathare North. Increased water supply was also cited as project benefit by 9 percent of respondents in Dandora, 10 percent in Korogocho, and 23 percent in Mathare North.

30. In Mathare North, 73 percent of respondents believe that the number of rooms they occupy is inadequate, compared with 60 percent in Dandora and 49 percent in Kayole. Most of those respondents also believe that the rooms are too small (56 percent, 47 percent and 62 percent in Dandora, Kayole, and Mathare North, respectively). Moreover, in Mathare North, many believe that the rooms are not large enough to be used as workplaces.

31. More respondents in Dandora than in either Kayole or Mathare North believe that housing units/rooms are too small (49 percent, 19 percent, and 23 percent, respectively), and that the rent is too high (49 percent, 26 percent and 33 percent, respectively).

32. Some respondents in the project areas believe that lot planning and housing designs are inadequate (15 percent in Dandora, and 10 percent in the other sites). A few also complained about poor maintenance by landlords (7 percent in Dandora, 6 percent in Kayole, and 10 percent in Mathare North).

33. Among owners, 15 percent in Dandora and 4 percent in Mathare North believe that more funds at lower interest rates should have been made available to make the projects more responsive to the people's needs; many mentioned that surveillance of the officials who issued loans should have been strengthened to prevent corruption. In addition, 6 percent of respondents in Dandora, 3 percent in Kayole, and 11 percent in Mathare North believe that strict regulations should have been applied to compel people to comply with initial building plans, and they also suggested that more uniform housing designs may have made the site more attractive.

34. *Survey findings on Owners in Dandora (compared when relevant to owners in Korogocho).* In Dandora, the NCC had allotted lots to 84 percent of the owners; 13 percent had bought their lots from others and the remaining 3 percent had inherited their lots. They had acquired their lots

between 1976 and 1983. In Korogocho, the majority of owners had been allotted a lot by the chief (67 percent), while those who had either bought their lots or inherited them accounted for 14 percent of respondents in each case.

35. In Dandora, almost 70 percent of owners possess a letter from the local authority; 31 percent have a 50-year lease agreement. In contrast, 17 of the 22 "owners" in Korogocho do not have ownership documents, 3 have a letter from the city council, and 1 has a temporary occupation license; 62 percent believe that their tenure was legally insecure. About 44 percent of Korogocho respondents attribute the motivation to invest in their dwellings largely to the desire to build and let.

36. According to HDMD officials, a significant number of the original allottees are believed to have transferred their lots to others.¹⁴ In all sites, 971 lots have officially been transferred—693 assignments, 174 via a power of attorney, and 104 through inheritance (table E.7).

Table E.7. Number of lots transferred officially in Dandora, Kayole, and Mathare North between 1976 and mid-1993

<i>Site</i>	<i>Mode of Transfer</i>			<i>Total</i>	<i>As a percentage Total lots in the Site</i>
	<i>Assignment</i>	<i>Power of Attorney</i>	<i>Inheritance</i>		
Dandora	440	73	76	589	10
Kayole	190	78	16	284	5
Mathare North	63	23	12	98	7
Total	693	174	104	971	7

Source. Nairobi City Council minutes, 1976-1993.

Note. It is estimated that about 10 percent of the lots have been transferred more than once. For this reason, the figures slightly overestimate the number of lots officially transferred by the original allottees.

37. According to HDD officials, about 95 percent of lots in Dandora Phase 1 and about 85 percent in Dandora Phase 2 are fully developed. In Mathare North and in Kayole, 71 percent and 26 percent, respectively are fully developed (table E.8). It is also interesting to note that of 1,588 fully developed structures in Kayole, 572 (or 36 percent) have two- or three-story structures, while 445 of 1,060 fully developed structures in Mathare North (42 percent) are multi-story structures. A large majority of owners in Dandora 83 percent report that dwelling construction was incremental.

14. Residents have three main official modes of transfer. The first occurs when an allottee who has redeemed his loan assigns his interests to another party; the new lot "owner" or lessee is then entitled to an agreement of lease with the NCC. The second mode of transfer applies to an outstanding loan, in which case a lot owner transfers his interests to another party via power of attorney—the new "owner" assumes the rights and obligations of the vendor. The third mode is inheritance upon the death of the previous allottee.

Table E.8. Extent of lot Development in Kayole and Mathare North

<i>Level of Development</i>	<i>Number of Lots</i>
Undeveloped	3,255
Foundations	540
Walling	381
Roofing	349
Fully developed structures	
single story	1,016
two story	403
three story	169
Total	6,113
 Mathare North	
Undeveloped	180
Under construction	260
Two rooms complete	320
Fully developed structures	
single story	295
multi-story	445
Total	1,500

Source: Housing Development and Management Department of the NCC.

38. The mean construction period in Dandora was about seven months, much lower than the five years cited in Malombe (1990). Malombe's estimate is probably more accurate, since it is based on responses from a much larger sample of 150 owners.

39. Only 3 of the 30 owners interviewed had been members of a building group. Answers to open-ended Question 31 strongly suggest that building groups are not popular—in particular, because respondents perceive that the "free riders" in the groups were exploiting other members.

40. In Dandora, the major sources of finance for lot ownership were savings (43 percent), loans from cooperatives (27 percent), and loans for building materials (23 percent). In Mathare North, six of the nine owners interviewed reported that building-material loans were their major source. About one-third of the owners said that their main financial difficulty was their scant accumulation of savings, because their incomes were low; and another one-third reported that the material loans

were too small and had not been disbursed on a timely basis; the remainder did not have financial difficulties.

Community Participation

41. Beneficiaries participated little in either urban project. The only tangible form of participation was found in the building groups, which were organized by the Community Development Division (CDD) of the project department (which became the HDMD). Building groups had between 8 and 15 members, and sometimes comprised women only. Their chief objective was to promote efficiency and cost-sharing, overlooking key dimensions of participation, such as empowerment and building capacity.

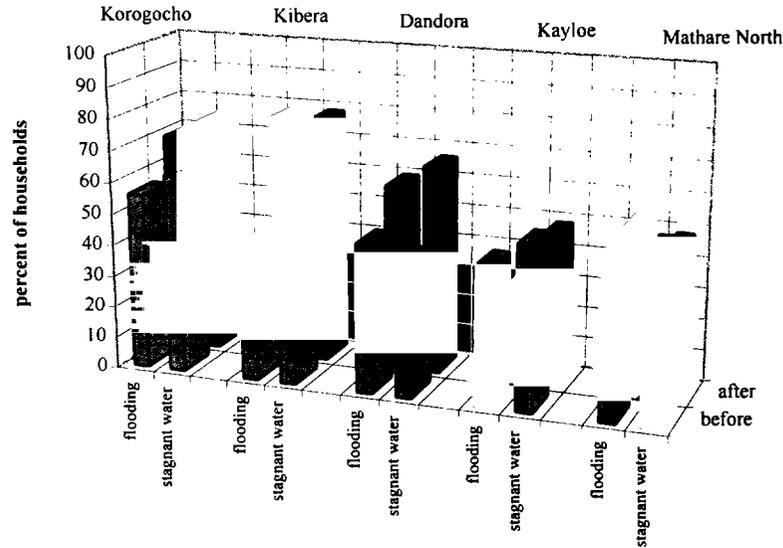
42. Participation in building groups was more pronounced in Phase I than in Phase II, and more in Dandora as a whole than in Urban II. In Phase I of Urban I, village committees comprising allottees and assisted by the CDD formed strong social organizations, which managed the villages' activities, settled disputes, and reported to chiefs. The project's size was manageable, and CDD's assistance adequate. The main reason for the tapering-off of building group activities in subsequent phases was the increasing ratio of allottees to HDMD staff members, and the resulting difficulty in sustaining the tempo of technical assistance. Further reasons were offered for the failure of building groups: there was little social cohesion among the members; key positions were held by the "better-educated people", who sometimes used their positions to favor construction work on their own lots; record keeping and financial management were often poor; and some members withdrew as soon as their own rooms were completed.

Environmental Sanitation

43. All but a few respondents in Mathare North (who have not yet developed their lots) use water-borne toilets, indicating an improvement in their environment; before the project, 74 percent in Dandora, 88 percent in Kayole, and 69 percent in Mathare North used water-borne toilets. Conversely, pit latrines are the main form of toilet facilities in unplanned settlements, while the percentage of those with water-borne toilets declined significantly in the past ten years. The percentage of private facilities (as opposed to shared toilets) declined significantly in over the last ten years in both unplanned areas and project areas (figure 5.2); in middle-income sites such as Ayany and Woodley, 100 percent of respondents have private facilities.

44. Although project areas have sewers for disposal, flooding and stagnant water have increased in Dandora, and flooding has increased somewhat in Mathare North; improvements were noted in Kayole. In unplanned areas, flooding and stagnant water have increased substantially in the past few years. In Dandora, flooding and stagnant water problems increased from 47 percent to 59 percent, and from 43 percent to 66 percent, respectively. In Korogocho, flooding problems increased from 56 percent to 69 percent and stagnant water from 62 percent to 75 percent. In Kibera, flooding problems increased from 43 percent to 78 percent and stagnant water from 47 percent to 78 percent.

Figure E.1 Flooding and stagnant water before and after project implementation (in percent)



45. In contrast to compounds in unplanned settlements, the compounds of respondents in the project areas, are relatively clean, and most respondents reported covering their stored water supply. Drinking water is not commonly boiled in Nairobi, which is probably attributable to the public's perception that the quality of NCC water has traditionally been good. This perception is reflected in the survey data by the less than 10 percent of respondents in all survey areas who reported boiling water before drinking it.

46. Most respondents in Dandora and Mathare North believe that they now have more water for household cleaning, personal bathing, and the bathing of their children than before the project. In Kayole, however, these percentages have gone down somewhat after the project. In unplanned settlements, a slight decrease was noted in Kibera.

47. Less than eight percent of respondents in project areas report problems linked to liquid waste disposal; a large proportion of respondents in unplanned settlements have seen a substantial increase in insect breeding bad odor. All three project sites are sewered. Consequently, liquid waste from kitchens, bathrooms, and washing places is disposed of through the sewer system. Prior to moving to the project areas, most respondents lived in areas that had sewer connections. However, the currently greater number of sewer connections has substantially reduced the incidence of dumping liquid waste in open drains.

48. In unplanned areas, liquid waste is disposed of in open drains (81 percent in Korogocho and 86 percent in Kibera), where the water tends to stagnate. Yet respondents do not seem to believe that this practice is a health hazard, presumably because they do not have alternative methods of disposal. Liquid waste dumping creates a health problem, especially for children, and the drains provide a conducive environment for bacteria and other disease vectors. While

mosquitoes are found in all sites, in more than 30 percent of respondents in unplanned settlements report having rats in their surroundings, as compared with less than 7 percent in the other survey areas. The prevalence of vectors in unplanned areas was ranked as follows: mosquitoes, flies, cockroaches, and rats.

49. Crude dumping has become the primary method of solid waste disposal, since solid waste management has deteriorated over time. Regular garbage collection service accounts for less than 2 percent of solid waste disposal, compared with more than the 23 percent before the projects. Crude dumping currently exceeds 50 percent in unplanned settlements and project areas. Respondents in all areas report that the main problem associated with solid waste management is the lack of garbage collection by authorities, followed by the lack of storage facilities and by scavenging.

50. The main problems associated with sanitation in general are the poor design and maintenance of the drainage system, creating blockages and overflowing sewers; the lack of garbage collection by the NCC; and, in Kayole, the lack of water for toilets and bathrooms.

Respondents' Suggestions

51. The people's recommendations on how to improve environmental sanitation in projects areas are as the follows:

- The NCC should provide regular garbage collection service, with participation by the communities.
- The NCC should provide of garbage storage facilities (dust bins, and so on), with involvement by the communities.
- The entire drainage/sewer system should be reconstructed, sewers should be widened, and (in Dandora and Mathare North) drains should be covered.
- Water pipes should be maintained regularly to avoid blockages.
- Landlords should employ people to clean communal facilities, or have tenants assume this responsibility in a cooperative effort.

In unplanned areas, respondents recommend that toilets be provided on all lots and that pit latrines be maintained and cleaned more regularly. They also mentioned that conventional sewer systems should be installed or improved, and that open drains be covered. Regular garbage collection was only their third priority.

Access to Social and Health Facilities and Other Services

52. The projects marginally improved access to *electricity* among Dandora respondents, from 56 to 59 percent; in Kayole and Mathare North, it fell from 77 percent to 72 percent, and from 60 percent to 44 percent, respectively. Unplanned areas also experienced a decline in their access to electricity: in Kibera, 16 percent of respondents currently have electricity, compared with 27 percent ten years ago; in Korogocho, 4 percent have electricity today, compared with 22 percent ten years ago.

53. Eleven primary schools were built under the urban projects. Access to *primary schools* in the sites and services areas improved, although only marginally in Dandora from 41 percent to 43 percent; the respective figures are 44 percent and 55 percent for Kayole, and 31 percent and 41 percent for Mathare North. In unplanned settlements, changes in access varied by site: in

Korogocho, access has improved in the past ten years, from 28 to 52 percent but has declined in Kibera. The improvement in Korogocho is probably due to the building of primary schools in nearby Dandora and Kariobangi South.

54. Several features are worth highlighting. First, the enrollment rate for girls and boys is equivalent all schools. Moreover, the enrollment of girls does not decline over time, as shown by the 1994 percentage of girls in standard 8—the final primary school grade. On the contrary, the proportion of girls in the final year is higher than the average for all classes in seven of the schools. Second, the majority of students in Dandora live within the settlement, demonstrating that the underlying educational benefits accrue primarily to residents. In contrast, Kayole and Mathare North schools, with the exception of one school in Kayole, draw the majority of their pupils from settlements farther afield. This feature is particularly pronounced for the Mathare North school, which draws only 16 percent of its pupils from within the settlement. The majority of its pupils live in surrounding informal settlements. Third, all the schools in Dandora and Mathare North believe that their water supply is reliable (information for the one school in Dandora is not available). In contrast, three of the five schools in Kayole believe that their water supply is unreliable, an outcome consistent with the earlier discussion of water reliability at that site. Fourth, with the exception of the one school in Dandora for which information is unavailable, schools in Dandora and Mathare North are connected to electricity; in Kayole, three schools do not have electric service. Electricity is particularly important to pupils in schools in low-income areas, because home-based night study is often ruled out by the lack of adequate lighting and space. Fifth, practically all schools reported that the NCC does not provide regular garbage collection.

55. Two health centers were built in Dandora, one in Mathare North and one in Kayole, which is not yet operational. Access to *health centers* among respondents in both Dandora and Mathare North has improved; it has declined in Kayole. The following are the before and after percentages of respondents with a health center in their settlement: Dandora, 35 percent and 40 percent; Mathare North, 35 percent and 41 percent; and Kayole, 45 percent and 39 percent. The figures for Kayole are consistent with the fact that the health center is not operational.

56. Sparse data at the level of the health centers are provided for Dandora and Mathare North for the following services: curative services, immunization, family planning and water-related diseases. Curative services have fallen substantially since 1990, with a sharp drop in the citywide caseload. According to a NCC key informant, the shortage of drugs and the introduction of cost-sharing system have caused the decline. The drop was most pronounced in Dandora, suggesting that these factors have a greater impact on low-income groups. It is worth pointing out that more women than men in Dandora take advantage of these services, and almost as many women as men in Mathare North. In Dandora, the use of family planning services has declined somewhat since 1986; but in Mathare North it has increased somewhat. Finally, it is difficult to assess the impact of health centers on water-related diseases, since consultations vary widely from one year to another. It is also difficult to compare any trends in curative services in the two sites with citywide data for all Nairobi health centers, since these data are available only for 1986 to 1990.

57. Tables I.9 to I.17 summarize the caseload data for two project health centers, one in Dandora and the other in Mathare North.¹⁵ (Data for 1984 and 1985 were unavailable for Dandora; data for 1991 and 1992 were unavailable for Mathare North.)

15. In all, two health centers were built in Dandora, one in Kayole (not yet operational), and one in Mathare North.

Table E.9. Dandora Health Center: Curative Services

Year	<i>New Cases</i>			<i>Sub Total</i>	<i>Old Cases</i>			<i>Sub Total</i>	<i>Total:</i>
	<i>Males</i>	<i>Females</i>	<i>Children</i>		<i>Males</i>	<i>Females</i>	<i>Children</i>		
1982	11,061	13,771	21,418	46,250	10,300	16,739	33,447	60,486	106,736
1983	11,047	15,301	22,800	49,148	16,916	23,682	36,587	77,185	126,333
1984									
1985									
1986	17,131	20,784	34,927	72,842	28,627	36,295	52,398	117,320	190,162
1987	16,566	19,302	30,756	66,624	25,542	30,822	45,975	102,339	168,963
1988	18,420	37,048	32,018	87,486	26,849	31,901	44,807	103,557	191,043
1989	20,508	2,3312	26,575	70,395	23,348	25,923	30,741	80,012	150,407
1990	462	548	631	1,641	264	382	667	1,313	2,954
1991	6,154	8,048	6,426	20,628	5,103	6,577	5,435	17,115	37,743
1992	6,326	6,784	4,178	17,288	2,826	3,885	2,074	8,785	26,073
1993	4,339	4,386	1,744	10,469	2,804	2,814	928	6,546	17,015
1994	4,163	4,855	848	9,866	1,179	1,314	205	2,698	12,564

Table E.10. Mathare North Health Center: curative services

Year	New Cases				Old Case				Total
	Males	Females	Children	Sub Total	Males	Females	Children	Sub-Total	
1989	12,520	15,254	28,074	55,848	11,483	15,472	27,713	54,668	110,516
1990	5,506	6,988	7,534	20,028	2,393	3,028	4,773	10,194	30,228
1991									
1992									
1993	3,736	3,473	2,395	9,604	1,257	1,019	848	13,318	22,922
1994	2,442	2,307	2,519	7,268	550	483	820	1,853	9,121

Table E.11. Dandora Health Center: family planning

Year	New Cases	Old Cases	Total Acceptor	IUCDs	Injectables
1983	1,312	4,231	5,543	18	-
1984					
1985					
1986	1,547	5,691	7,238	260	271
1987	698	4,272	4,970	75	384
1988	423	3,410	3,833	19	411
1989	789	3,952	4,741	176	579
1990	607	4,011	4,618	211	526
1991	657	3,726	4,383	277	405
1992	415	2,693	3,108	132	331
1993	491	2,056	2,547	143	395
1994	422	1,769	2,191	166	396

Table E.12. Mathare North Health Center: family planning

Year	New Case	Old Cases	Total Acceptors	IUCDs	Injectables
1989	426	1463	1889	6	142
1990	359	1737	2096	8	218
1991					
1992					
1993	642	2229	2871	0	570
1994	686	2501	3187	8	595

Table E.13. Dandora Health Center: immunization

<i>Year</i>	<i>DPT</i>	<i>Polio</i>	<i>BCG</i>	<i>Measles</i>	<i>Tetanus</i>	<i>Total</i>
1982	4,510	4,720	907	1,005	3,773	14,915
1983	6,383	5,636	1,458	1,671	4,710	19,849
1984						
1985						
1986	10,948	13662	2,239	2,364	7,826	37,039
1987	6,739	7,161	1,035	1,596	5,662	22,193
1988	5,384	6,291	856	1336	4,473	18,340
1989	4,849	5,217	614	1345	3,558	15,583
1990	3,210	3,513	364	953	1,427	9,467
1991	3,473	3,884	562	937	2,669	11,525
1992	2,331	2,625	446	919	2,082	8,353
1993	2,610	2,656	369	918	2,164	8,717
1994	3,032	3,691	386	974	2,238	10,421

Table E.14. Mathare North Health Center: immunization

<i>Year</i>	<i>DPT</i>	<i>Polio</i>	<i>BCG</i>	<i>Measles</i>	<i>Tetanus</i>	<i>Total</i>
1988						
1989	3,657	3,954	575	816	2,511	11,513
1990	3,470	4,335	702	861	2,793	12,181
1991						
1992						
1993	3,038	3,477	478	852	2,574	10,419
1994	2,232	3,068	499	806	1,655	8,260

Table E.15. Dandora Health Center: water-related diseases (cases)

<i>Year</i>	<i>Scabies</i>	<i>Ringworm</i>	<i>Total</i>
1982	1	-	1
1983	-	-	-
1984			
1985			
1986	57	86	153
1987	86	122	208
1988	506	153	659
1989	120	78	198
1990	175	166	341
1991	549	297	846
1992	617	281	898
1993	246	188	434
1994	167	221	388

Table E.16. Mathare North Health Center: water-related diseases

<i>Year</i>	<i>Scabies</i>	<i>Ringworms</i>	<i>Total</i>
1989	363	147	510
1990	46	35	81
1991			
1992			
1993	80	61	141
1994	56	41	97
TOTAL	545	284	829

58. Citywide caseload data were not readily available ruling out an overall perspective on the contribution to health services by Dandora and Mathare North health centers. However, the following table sets out caseload data on curative services for Dandora (one health center) and Mathare North, on the one hand, and all city council health centers, on the other.

Table E.17. Curative Services: the relative share in Nairobi of Dandora and Mathare North health centers

(1)	(2)	(3)	(4)	(5)	(6)
	<i>All NCC Health Centers</i>	<i>Dandora (Number)</i>	<i>Dandora as a percentage of col. 2</i>	<i>Mathare North (Number)</i>	<i>Mathare North as a percentage of col. 2</i>
1986	1,478,246	190,162	13	-	-
1987	2,346,253	168,963	7	-	-
1988	1,200,758	191,043	16	-	-
1989	1,256,253	150,407	12	110,516	9
1990	595,428	2,954	0.5	30,228	5

Source: NCC Records, Tables 8.6 to 8.14.

Note: Mathare North Health Center not operational before 1989.

59. All *market stalls* in Dandora, Kayole, and Mathare North have water supply and clean toilet facilities. The water supply is reportedly reliable, while the toilets appear to be clean, apparently due more to underuse than to proper cleaning. Opening hours are generally 7 AM to 6:30 PM. Because roadside vendors stay open long after 6:30 PM, they are often able to seize some of the market share of the stalls. The refuse collection service is poor, as it is everywhere else, and heaps of rotting garbage in the surrounding compounds are a nuisance.

Respondents' Perceptions

60. Most stall operators voiced concern about high rents (up to KSh 1,000 per stall in Dandora, and between KSh 1,000 and 1,200 in Mathare North), as well as unequal competition from kiosks operating near the markets; these kiosks pay lower rents, have flexible working hours, and often enjoy more strategic and marketable locations. In Kayole, vendors were allocated lots on which they constructed their own stall (the strategy of asking allottees to build their stalls brings about uneven development, because allottees have different abilities to do so), or they bought them from original allottees. Their major difficulty was obtaining the initial capital for constructing their stalls starting their business. Competition from hawkers is fierce even within the markets because they often sell similar merchandise. Security is often inadequate, most likely due to the high number of unemployed people within the estates. Lack of access to credit facilities, and business counseling services and the poor location of markets were cited as the major constraints-facing market stall operators. Most of them consider their business a full-time occupation. A few have other sources of income while many of them engage part-time employees. In future developments, a central location would be more strategic for market stalls, giving them greater access to more customers.

61. Finally, in Dandora and Mathare North, many of the market stalls do not have electricity, and the cost of individual electricity connection is prohibitive (more than KSh 10,000 per stall). In Mathare North, sellers of electrical appliances claim that their business volume is low because most lots in Mathare North do not have electricity. Moreover, the lack of electricity compels tailors to use charcoal iron boxes. The market also lacks telephone services, making contact with suppliers difficult. In Dandora, the parking spaces that were provided when the market stalls were built have been taken over by kiosks and other roadside stalls.

62. *Roadside(outside the market) vendors* keep their sites clean to attract customers. The constant fear of eviction and the lack of credit facilities (because the businesses do not have collateral) are cited as serious constraints. They all lack access to basic services, such as water, toilets, and refuse collection, and they do not have access to business counseling services. In Kayole and Mathare North, distance makes the transportation of goods expensive. In Korogocho, they have access to water from kiosks; in Kibera, they do not.

63. *Ordinary kiosk operators* are dominant in all areas, because they offer a variety of goods and services, and their working hours are flexible (kiosks are open until 10 PM). The problems they highlight are similar to those facing roadside vendors, ranging from the unavailability of credit to the lack of water, toilets, refuse collection, and business counseling. In Kayole, operators report paying the NCC for the spaces they occupy, but they do not have documents to support their claim and are under constant threat of eviction. In Korogocho, they have access to water from water kiosks, but they complain bitterly of the high water rates, which adversely affect their businesses, especially the food and laundry kiosks. In Kibera, they do not have access to water.

64. Finally, respondents from all the business categories complain that the transportation of goods is very expensive and is one of the main constraints to operating their businesses effectively.

65. All survey respondents reported improved access to shopping facilities, particularly in Dandora. The percentage of respondents with shopping facilities within their settlements rose from 79 to 89 percent in Dandora, from 94 to 95 percent in Kayole, and from 87 to 99 percent in Mathare North. About 94 percent of Korogocho respondents have shopping facilities within their settlements; the proportion ten years ago was only 78 percent. The percentages for Kibera are 96 and 87 percent. It should be noted that the number of kiosks increased rapidly during this period, thus expanding access to shopping services within informal settlements.

Water Supply

66. In unplanned settlements, kiosks are the dominant water supply source. In the sites and services areas, many households have water supply connections in their homes.

Water Supply in Unplanned Settlements

67. Under the projects, the NCC and WSD instituted measures to increase the number of kiosks, to license kiosk operators, and to regulate their activities. The number of kiosks rose considerably (from 6 to 142) during the two water supply projects, and kiosk operators were required to obtain a license. The number of households served by each kiosk is higher in Kibera than in Korogocho; in Korogocho, 17 percent of kiosks serve more than 40 households, while in Kibera, 37 percent of kiosks serve more than 50 households.

68. While the WSD steadily increased the price of water for in-house connections based on a block tariff system, water prices charged at kiosks are kept low (even when compared with the lowest level of the block tariff system) so as to protect poor households in unplanned areas. It is also worth noting that kiosk operators believe that water is reliable, although occasional shortages are reported (especially in Kibera, where water is sometimes diverted for irrigation). Leakage is rare. Water is provided every day from morning to evening, and pilferage at night occurs in most places. Water meters are read regularly.

69. At the consumer level, however, the effort made by the WSD to keep prices low for the low-income groups did not translate into benefits for these groups. Although competition among kiosks became more acute as their number increased, kiosk operators aligned their prices at the top level and reaped all the benefits at the expense of the targeted beneficiaries. And, ironically, the low-income beneficiaries pay the highest fee for water—an average of 50 Kshs. per 1,000 liters, twice the price of the highest tariff paid by those who have in-house connections. Of the 90 kiosks surveyed in Kibera, 4 are operated by village committees, 10 by self-help groups, 4 by religious sects, 3 by women's groups, and 79 by individuals. Of the 68 in Korogocho, 4 are operated by self-help groups, 3 by religious groups, 1 by an NGO, and 60 by individuals. Thus, 88 percent of kiosks are operated by individuals.

70. *Respondents' Perceptions.* Data on access to and the reliability of water in unplanned areas must be considered in light of the dramatic urban population growth that took place in the past ten years. At independence in 1963, Nairobi had 350,000 inhabitants; since then, the number has increased at a rate of 7 to 9 percent annually, reaching 835,000 people by 1979, 1.2 million in 1985, and a projected 2.3 million in 1995. The current growth rate is estimated to be between 5 and 7 percent, and Nairobi's population could exceed 4.0 million by 2010. Population growth in unplanned settlements seems to be even more expansive; in Kibera, the population grew from 60,000 in 1980 people to about 250,000 in 1993. The population growth in the past ten years is reflected in changes in the accessibility, reliability, affordability, and consumption of water in Korogocho and Kibera.

71. *Access*

- The proportion of individual water connections and on-lot taps declined substantially, since the projects were implemented, while the proportion of people depending on water kiosks for their supply increased significantly. In Korogocho and Kibera, the proportion of individual water connections or on-lot taps has decreased by 20 and 46 percent, respectively; while the proportion of people depending on water kiosks for their supply increased by 42 and 57 percent respectively.
- The increase in kiosks has shortened distances to water sources in unplanned areas. In Korogocho, 41 percent now have their water source within their compounds or settlement, compared with 29.3 percent before the project; in Kibera, the respective figures are 47 and 27 percent.
- Water is still carried on the backs or heads of women or by hand among men. A large proportion of women and children fetch water; one of the reasons is queuing, which is more of a problem during mornings, evenings and weekends than during the daytime. In Korogocho, almost 50 percent of those who collect water are women; the figure in Kibera is almost 70 percent. In Korogocho, 11 of water carriers are children; in Kibera, the percentage of children who cart water has dropped from 20 percent before the project to 4 percent today.
- Although queuing has declined, it is still a major problem for 31 percent of the respondents in Korogocho and for 41 percent in Kibera. In Korogocho, 55 percent reported that queuing was a major problem before the project compared with 31 percent today; in Kibera, the respective figures are 80 and 41 percent.

72. *Reliability*

- More than 71 percent of respondents in Korogocho and only 60 percent in Kibera believe that water is reliable; these proportions are lower than they were about ten years ago. These findings, however, should be weighted by the facts that there were about 20 percent fewer answers on before-project conditions than on current conditions, that the respondents may have lived in areas where water was more abundant, and that population growth in Kibera was considerable, and the water pipe serving this area (the pipe from the Sasumua dam via the Kabete scheme) is heavily overcommitted.
- Irregular water supply and frequent water shortages are still major problems for 27 percent in Korogocho and 56 percent in Kibera, outnumbering the percentage of those who see water prices as their major problem.
- Water is accessible for less than an average of four days each week, although this finding is not significant because there were too few observations.

73. *Affordability*

- A vast majority of respondents expressed dissatisfaction with water prices; in fact, more than half of the respondents spend 5 percent or more of their income on water, and more than 25 percent between 5 and 10 percent of their income on water.
- Whereas all households reported paying for water today, only about half of them paid for water about ten years ago.
- About 79 percent of respondents in Korogocho and 81 percent in Kibera expressed dissatisfaction with water prices, compared with 59 percent to 57 percent ten years ago. In a 1993 survey conducted in Kibera (Macharia, 1992), 71 percent expressed dissatisfaction with water pricing. In contrast, the results from a 1990 socioeconomic survey note that 26 percent of households in unplanned areas found water expensive, despite the fact that they paid about three times the official water rates at the time of the survey, which was 1988.

74. *Consumption*

- Per capita daily consumption is 16 liters in Korogocho and 21 liters in Kibera, regardless of income.
- In Korogocho, about 86 percent report having previously had enough water for household cleaning and bathing, compared with 90 percent today; in Kibera, water consumption for these purposes declined from 90 percent before the projects to 80 percent after.

75. *Respondents' Suggestions.* The beneficiaries' main suggestions reflect the specific concerns in each of the unplanned areas (Table E.18).

Table E.18. Priorities in beneficiaries' demands about water supply

<i>Korogocho</i>		<i>Kibera</i>	
1.	Provide individual or on-lot connections	1.	Increase water supply
2.	Provide free water, or reduce water tariffs	2.	Makes the NCC ensure a regular water supply
3.	Make the NCC ensure a regular water supply	3.	Provide individual or on-lot connections
4.	Provide additional water points	4.	Control water charges
5.	Provide storage tanks	5.	Provide a new piping system on the estate
6.	Ensure better pipe maintenance by the NCC	6.	Construct a storage tank on the estate
7.	Construct storage tanks on the estate		

Sites and services Areas

76. *Tariffs.* Differentiated tariffs were set according to four categories of consumption. These categories were changed as consumption increased, and water tariffs increased substantially since 1978. Answers on water tariffs were obtained primarily from owners, because water charges for most tenants are included in their rent.

77. *Access.* In Dandora and Mathare Valley North, about one quarter of the respondents moved from kiosk/well/river sources of water supply to individual connections. The difference is less striking in Kayole and Ayany; in Woodley, no change in water source was noted.

78. *Reliability.* Compared with ten years ago, fewer respondents believe that water is reliable today, except for Mathare Valley North; furthermore, perceptions that water is reliable declined in the middle-income area of Woodley, since it has an outdated water reticulation system. But only Kayole notes a decline in the average number of days a week of water availability, from 3.3 to 2.9 days a week.¹⁶ As in unplanned areas however, the number of observations is insufficient to draw any significant conclusions.

79. *Affordability.* Whereas all households report paying for water today, only about half of them paid for water about ten years ago. A large majority believe that the price of water is too high (60.7 percent in Avani, 85.0 percent in Woodley, 97.1 percent in Dandora, 77.8 percent in Kayole, and 66.7 percent in Mathare Valley North report that water tariffs are too high). These findings are quite different from the results derived from a 1990 socioeconomic survey, which found that the majority of the residents spend less than Kshs 200 monthly on water, despite the fact that they consume more than 20 liters per capita daily.

16. In Kayole, it should be mentioned that, although illegal, allottees and owners of lots have built additional stories to let, and water pressure at the higher level is now very low; most lots have also been attributed without the basic infrastructure.

80. *Hygiene practices.* In all areas surveyed, most respondents report having enough water for cleaning and bathing; more than 90 percent of respondents are satisfied with water availability for cleaning and bathing. As in unplanned areas, consumption does not increase with income, although the findings here refer primarily to owners.

81. The main problems are related to frequent water shortages due to rationing, burst pipes, low pressure, and disconnections by the NCC. Problems of reliability appear to be more serious in Mathare Valley North and Kayole, which have many multi-story buildings; the development of these buildings, whose upper floors cannot be served effectively unless water pressures are relatively high, was not anticipated by the NCC.

82. Respondents' suggestions all pertain to increasing the bulk of water supply, improving maintenance, and constructing storage tanks. It is still important to mention, however, that, except for Woodley, more than 40 percent in all these areas had no water problem to declare, while only 22 percent and 16 percent in Korogocho and Kibera had no problem regarding water supply.

Rapid Appraisal: Owners In Dandora

83. A 10 percent random sample survey was conducted between January 12 and 19, 1995. Five community development assistants at the HDMD were asked to administer a one-page questionnaire for the purposes of estimating the number of absentee landlords and counting the number of rooms built on each lot surveyed. The five CDAs were assigned to the five areas in Dandora and asked to interview one person every 10th lot without discriminating between tenants and owner occupiers; in other words, they were to interview the first willing person encountered on each lot. In all there were 584 valid questionnaires, excluded nine cases where the landlord was reported as deceased and the current landlord was not known. The survey revealed that 70 percent of lot owners were absentee owners. However, because 21 percent of these landlords were reportedly living outside Nairobi, the extent of total subletting for speculative purposes is lower.

84. Lot numbers were recorded for each lot where an interview was held, thus allowing the identification of the postal addresses of absentee landlords from HDMD files. In some cases the respondent was able to give the postal address of the landlord. About 200 letters, signed by the HDD, were then mailed to those absentee landlords reportedly living in Nairobi, asking them to come for an interview at the HDMD on a day of their choice between February 13 and 16. Only 31 landlords reported for the interview; interviews were based on a short questionnaire, and were conducted by four university-level research assistants, two of whom had taken part in the 1994 field survey.

Table E.20. Absentee Landlords in Dandora

<i>Area</i>	<i>Sample</i>	<i>Absentee Landlords</i>		<i>Absentee Landlords Resident Outside Nairobi</i>	
		<i>Number</i>	<i>Number as a Percentage of Sample Size</i>	<i>Number</i>	<i>Number as a Percentage of Sample Size</i>
1	106	61	58	21	20
2	127	84	66	26	20
3	103	83	81	24	23
4	205	152	74	43	21
5	43	29	67	9	21
Total	584	409	70	123	21

Source: Rapid Survey, 1995.

85. An interview with some of the absentee landlords gave interesting insights into their socio-economic characteristics, although the number surveyed (31) was too small to be statistically significant.

86. Several indicators suggest that absentee landlords belong to a lower socioeconomic stratum than the typical tenant or owner-occupier. First, a large percentage (39 percent) had no education, in sharp contrast to the relatively high levels in education among residents in Dandora, Kayole, and Mathare North. Second, the proportion of self-employed among absentee owners is higher (at 50 percent) than in Dandora (30 percent), Kayole (32 percent), and Mathare North (26 percent). Third, their mean income is somewhat lower than the mean for tenants and owner-occupiers. Fourth, they are older, with an average age of 54 years, which is much higher than the average age in Mathare North (32), Dandora (37), and Kayole (30).

87. Absentee owners have other interesting attributes. Twenty-one (68 percent) were original allottees, but the other 10 had either bought or inherited their lot. Nearly 40 percent have never lived in Dandora but 70 percent intend to live there in the future. Those who had lived there gave various reasons for leaving: two reported preferring to live nearer their places of work; another two had been provided with housing by their employers; yet another two did not find it fitting to live with their tenants. Three respondents reported that they had migrated to rural areas, one upon retirement and the other two to take up farming.

88. With regard to their present accommodations, 8 said that they lived in temporary dwellings and another 13 in houses of permanent construction. Twelve had main water, 5 depended on kiosks, and another 3 relied on other sources of water.

Review of Previous Studies and Surveys

1. Three studies are used throughout the report as supplementary information for the impact evaluation. They focus largely on social-related issues that surfaced as the Bank projects were implemented within the context of the prevailing cultural and economic climate of Nairobi.

On Housing Development

2. The Dandora sites and services project (Urban I) has been the topic of several studies focusing primarily on its impact on the originally targeted group. The most comprehensive of these studies, conducted by MacInnes (1987), is based on socio/anthropological research that captures the very nature of the dynamics created by the first urban project. Urban I was implemented in two phases--Phase 1, covering areas 1, and Phase 2, covering areas 2 through 5.

Urban I: Phase 1 and Phase 2 Dichotomy

3. In the research, the author adopts on the socioeconomic perspective that Nairobi consists of two cities (Westernized/conventional and African/self-help), two economies (formal and informal), and two types of household finance (capital-intensive and labor-intensive); the conclusion is that the project reached its objectives in Phase 1 for 90 percent of the participants, but failed in Phase 2 for more than 35 percent. For example, in 1986, an estimated 54.5 percent of lots in Phase II were operated by absentee landlords. A substantial number of the original lottery winners had given up or clandestinely sold out before the end of their five-year tenants' agreement with the NCC. In Phase 1, the allottees had been insulated from outside interference and benefited from local income-generating opportunities; in Phase 2, allottees were "outcompeted" for the more lucrative local income-generating opportunities. It should also be mentioned that, at appraisal, the allottees were thought to benefit from the proximity of the industrial park for employment, but, ultimately, only 17.3 percent of the owners had found employment in or around the estate.

4. According to MacInnes, the failure to provide the urban benefits to the Phase II original allottees is attributed to two major causes:

- The escalating expenses attributable to inflation and to the rising costs of building materials.
- The 1982 policy decision of the NCC to sell or reallocate up to 1,000 lots to higher-income purchasers and developers (that is, to 20 percent of the total).¹⁷ Consequently, most original allottees had to give up their lots, paving the way to a process of *gentrification*, whereby people belonging to a higher-income bracket than the original allottees became lot owners.

17. Based on interviews, it turned out that a balance of 250 allotted lots had not been claimed by the allottees in addition to the 1,000 lots sold to higher-income purchasers. Rather than being offered to the next households on the waiting list, these 250 lots were allocated to NCC's "own people"—political supporters, relatives and so on—regardless of their income.

5. The sale of about 1,000 lots to higher-income purchasers was the most important determinant of gentrification, since it created a socioeconomic stratification in which the lower-income stratum had to compete with the middle-income stratum, also could operating with hired labor and capital intensive procedures. The rationale for this decision was to offset some of the financial burden from improved public amenities, and to promote a "mixed income and more heterogeneous group of home owners who might better be able to facilitate social change and economic development" (MacInnes, 1987).
6. Rather than leading to a smooth integration of higher- and lower-income groups in Phase 2 and achieving a "satisfactory mix," the two-tiered stratification induced unequal competition since higher-income owners were to consolidate their new lots in a single stage and quickly begin exploiting attractive new rental and commercial opportunities. Two economies developed side by side--a formal-sector economy oriented toward a capital-intensive economy of scale based on Westernized/conventional business practices, and informal sector economy consisting of petty trade, petty commodity production, and petty landlordism.
7. Given that most original allottees earned between KSh 280 and 450 a month, and relied on the informal sector for a living, it was unlikely that they could actively compete for a secure job in the still distant urban labor market, especially while they were constructing or supervising the construction of the first rooms of their new homes. And this was especially hard on female allottees. The premature incursion of higher-income outsiders pursuing their own interest and advantage within the same ecological niche ruined the chances of Phase II allottees to regenerate their income from the informal sector in their new environment.
8. The low-income beneficiaries of the project also had access to financial assistance--a total of US\$ 4.2 million (15 percent of the total project cost); this money was allocated to loans for building materials, which were lent at affordable terms. But the PAR reports that only two-thirds of that amount were actually disbursed to the allottees. The failure to disburse in Phase II is attributed to the inability to meet the expanded demand under the conditions established for managing the loans.
9. Some low-income allottees soon realized however, though that they could take immediate (if clandestine) profits on their property, since Phase 2 was no longer insulated from the free market. From the subsidized price of a KSh 600 down payment with low monthly mortgage installments over 25 years in 1978, lots began selling for KSh. 20,000 to 24,000 in 1983, rising to KSh 30,000 by 1985. Several estate operations of the kind enabled them to draw large (although illegal) profits, and, in Kayole, there are examples where new settlers were offered KSh 18,000 for an empty lot within days often moving on site! The local administration lacked both the time and the personnel to follow-up on these clandestine sales. Paralegal documents, signed in the presence of a lawyer, were presented four or five years later as an accomplished fact when such transfers had become legal.
10. Since the allocation process had been subverted, and new purchasers could benefit from low down payments and be eligible for material loans, Dandora lured a considerable number of investors for large profits. By 1985, the National Housing Corporation recognized that the highest returns on a real estate investment over the short run were being earned in Phase 2 of Dandora. Phase 2 had become "a dormitory suburb dominated by absentee landlords catering to the needs of a mushrooming population of working class renters" (MacInnes, 1987).

11. But in Phase 1, a myriad of businesses flourished, consolidated by the original allottees, comprising rental accommodations, kiosks, cafés, bars, butcheries, and laundries, as well as workshops for carpenters, tailors, shoemakers, hairdressers, and so on. Capital-intensive commercial enterprises, multistoried buildings, and large boarding or lodging houses are few. MacInnes (1987) noted that "the residents of Phase I have successfully transferred an economic culture of self-help, mutual help and the consolidation of incomes and housing in stages from their previous accommodations to their new ones."

12. This "rosy" picture of a wholly successful Phase 1 was somewhat tarnished by the findings of a survey conducted three years later (Malombe, 1990). The survey disclosed that among all the owners interviewed, only 26 percent of households had moved from squatter settlements directly into Dandora. Given that the project objectives were to provide shelter to that particular group, little was achieved on this issue.

13. The process of gentrification experienced in Phase 2 of the Urban I project spread to the second urban project at a much more rapid pace. The same patterns found in Phase 2 emerged in the second urban project, whereby subsidized lots primarily benefited landlords who bought out original lot-owners and did not pass such subsidies on to their tenants. The reasons for gentrification are the same as for Phase 2 of Urban I: the disregard of the allocation and selection processes, and the presence of market forces that led to an upward redistribution of wealth and land.

On the Gender Issue

14. The same study also indicated the difficulties encountered by female allottees with housing construction and consolidation. Because they did not have the relevant skills, because construction standards were comparatively high, and because many women were unable to build their dwelling, take care of their children, and earn a living simultaneously, the self-help construction model did not work for them. They hired skilled or semi-skilled labor, forcing them to exceed their materials loans and incur heavy debts.

15. Subsequently, some discrimination was practiced in the allotment process of Phase 1 in Dandora. Female allottees turned out "to have higher income, better type of employment, and in general better standards of living than the average Nairobi women" (Malombe, 1990).

16. Among all households interviewed in Malombe's survey, 44 percent were headed by women who were 45 years of age on average, with a mean of 5.9 children and who had lived 23 years in Nairobi on average. All but two were married. About 10 percent of these women were owners before they came to Dandora, 20 percent had moved from NCC housing, 29 percent had lived in privately rented houses, and only 36 percent had lived in unplanned settlements.

17. The survey also indicated that 58 percent of the married women lived with their husbands, and (surprisingly) that 38 percent had spouses in rural areas. According to Malombe, it is unlikely that women would be living in Nairobi which leaving behind their husbands in rural areas. She explains that because allottees were required to live together, the women would never have benefited from the project had they acknowledged that they were divorced.¹⁸ And to underline the discrimination

18. Key informant interviews revealed that applications from husbands and wives were made separately in ballots, meaning that they could receive two lots; the administration could not readily prove that they were married. In polygamous marriages, all spouses applied for a lot. However, there was a limit: not more than four lots would be allocated in polygamous cases.

nature of the Sites and Services schemes against single-headed households. The author provided the following employment and income data: 30 percent of the female heads of households were employed in the formal sector, and 74 percent earned more than KSh 2,000. Thus, the level of income among female allottees in Dandora was much higher than the typical level of income among women living in low-income settlements.

On Squatter Evictions

18. The Mazingira Institute (1993) provides a summary of demolitions carried out by local authorities in Kenya from "file search evictions record":

1. *October 13, 1977.* NCC bulldozers cleared shanties and informal business activities over a two-mile area, from Race Course Road to Kirinyaga Road. The residents and businessmen in the area complained that the council had given no notice about the clean-up.
2. *December 8, 1977.* NCC demolition team of bulldozers and *askaris*, reinforced by police, cleared shanties and open-air workshops in the Gikomba area below Race Course Road. The residents and the businessmen in the area had been warned about the clean-up and were asked to leave by November 30th.
3. *December 29, 1977.* More shanties were cleared in a one-mile area of the Gikomba, from City Country Bus Station to the Kamukunji open-air market. The residents had previously been told to move from the area.
4. *January 17, 1978.* *Shambas* (food farms) along the Nairobi River were leveled by bulldozers, which uprooted maize, cassava, bean and banana plants. Some farmers managed to harvest part of their crops before the bulldozer arrived, but most lost everything they had planted.
5. *January 19, 1978.* The demolition squad removed shanties and kiosks in the Kijabe Street and Kipande Road section of the Nairobi River. The residents had not been given any notice to move.
6. *March 7, 1978.* Shanty dwellers and kiosk owners along Quarry Road and Lumbwa Street were given a few days, notice to quit the area before the demolition squad moved in and cleared shanties and kiosks.
7. People evicted from the Racecourse Road and Kirinyaga Road area on October 13 were taken by the Council to a site near Huruma Estate in the eastern suburbs of the city. The council officials screened the squatters and identified 135 families believed to be genuinely affected by the Nairobi clean-up operation. These families were then allowed to build temporary shelters in this unserviced site.
8. The council allocated 83 light industrial lots at Gigomba to tinsmiths and timber dealers who had been evicted during the clean-up operation.
9. *October 18th, 1990.* About 2,000 people were evicted from Nairobi's Muoroto Village by the NCC *askaris*. The residents had resisted eviction earlier in the year. On December 15th of the same year, NCC *askaris* raided a temporary camp established by former Muoroto slum dwellers, destroying their makeshift dwellings. Only 200 people from those evicted were resettled by the Government.

10. *November 20th, 1990.* About 300 residents of Kangemi Valley in Nairobi were left homeless after a demolition squad flattened their shanties. No one was resettled by the Government, and a notice of eviction was never given.

11. Also during November 1990 350 dwellers were evicted at Gigiri Shanty village on Limuru-Nakuru Road. The area was said to be planned for real estate development. In addition, 150 families of Kyambio village in Eastleigh (Nairobi) were rendered homeless when a combined team of NCC *askaris* and armed administration police pulled down their houses.

12. *February 18th, 1990.* About 300 residents of the Kangemi fly-over slums were evicted without a notice.

13. *November 20th, 1990.* More than 5,000 families were evicted from Kibagare village, which housed more than 30,000 people. Those evicted were not given an alternative place to stay.

14. There have been evictions elsewhere without resettlements:

Shauri Yako (Homa Bay town), May 13th, 1991

Lanet (Nakuru), January 22nd, 1993

Mombasa Road (Nairobi), February 26th, 1991.

Policy Agenda: Chronology of Activities Proposed and Undertaken, 1970-1994

Incremental Housing Model

Key Dates	Activities and Events
1970-88	<p>The five early National Development Plans (1970-74 to 1984-88) placed primary emphasis on the sites and services approach, reflecting the Government's Sessional Paper no. 5 of 1966/67 on housing policy. Planned expenditures on sites and services as a percentage of the Government's housing loans to the National Housing Corporation were as follows: 33 percent in 1970-1974, 93 percent in 1974-1978; 79 percent in 1979-83, and 73 percent in 1984-1988. But actual expenditures on sites and services were much lower: 4 percent in 1970-74, 31 percent in 1974-78, 55 percent in 1979-83, and 19 percent in 1984-88. This wide divergence between plans and outcomes is explained by several factors: unlike conventional projects, sites and services schemes, proved to be complex undertakings, especially their organization and financing; NHC management did not appear to be fully committed to the sites and services approach; and there was political opposition to the concept, on the grounds that standards in sites and services projects were too low (Werline 1974).</p> <p>Later development plans advocated settlement upgrading, in addition to sites and services, but not much progress was achieved in terms of policy implementation.</p>
1979	<p>A rent survey by the Central Bureau of Statistics (1981), showed that about 75 percent of urban households rented their accommodation; these results were supported by a subsequent survey in 1983 (Department of Housing et al in 1983). But policy continued to support ownership, especially with the offer of finance.</p> <p>NHC's poor performance in policy implementation was noted by a Coopers and Lybrand (1981) study of NHC operations.</p>
1983	<p>The Secondary Towns Project (Cr. 1390-KE) began enlisting the participation of the private sector in low-income housing development; in particular, the project supported the development of low-income housing on private land. Outcomes were mixed, and the strategies used do not appear to have been replicated.</p>
1985	<p>NHC shifted away from sites and services schemes towards conventional housing.</p>
Currently	<p>The Government lacks on up-to-date national housing policy statement. Moreover, Nairobi and the other municipalities do not have their own internal housing policies.</p> <p>The NHC, which has traditionally granted housing loans to local authorities, currently advocates conventional projects, but its operations are severely limited by poor loan recovery and sharply declining subsidies from the Government. Although settlement upgrade is officially endorsed, it has received little practical support outside Bank-funded projects. Infractions of covenants barring demolition have continued (see the Mazingira report in annex F).</p>

Cost Recovery

Key Dates	Activities and Events
1977	The Government asked local authorities to charge break-even rents, not market rents; it justified this policy on the grounds of its social responsibility towards housing the low-income group (Ministry of Housing and Social Services 1977).
1982	The report of the Working Party on Government Expenditures recommended that cost recovery be introduced and enforced for beneficiaries of public services, including urban services (Government of Kenya 1982). ¹⁹
1984	Beneficiary local authorities and Government agencies, including the NHC, formulated and agreed to cost recovery proposals in for Urban II.
1986	Sessional Paper no. 1 of 1986 (Economic Management for Renewed Growth) emphasized the importance of cost recovery, and stressed that subsidies for housing-related services and land be avoided. Urban I PAR reported that cost recovery objectives had not been achieved.
1987	The Program Management Unit convenes a workshop on cost recovery for Urban II and Urban III local authorities; the workshop examined cost recovery calculations and administrative procedures.
1989	An early evaluation of Umoja II, a USAID-sponsored low-income housing project in Nairobi, reported poor cost recovery (Hock-Smit 1989). ²⁰
1991	The Urban II PAR observed that cost recovery was poor but that accurate data on the subject were unavailable. The PAR also noted that NHC cost recovery on other housing projects implemented through local authorities was equally poor.
1993	A GTZ-sponsored study on cost recovery performance and strategies documented poor cost recovery performance in Urban II and III; in contrast, the study showed that cost recovery had been effective in NGO sponsored projects was effective (Macharia and Mutero 1993). But because the NGO projects were much smaller in scale, straightforward comparisons could not be made.

19. Government of Kenya (1982) "Report and Recommendations of the Working Party on Government Expenditures".

20. Hoek-Smit, M. C. (1989) "Evaluation of Umoja II: An Experimental Housing Project in Nairobi". A Report to USAID. Abt Associates Inc., Washington D.C.

Building Code

Key Dates	Activities and Events
1980	A building by-laws study by Saad Yahya and Associates was financed under Urban II. The study formed the basis for the proposed revision of the existing building code.
1985	The Government prepared its Kenya Low-Income Housing By-Laws Review as a guide for developers of low-income housing. Umoja II, a USAID-sponsored low-income housing project in Nairobi, was designed and approved on basis of that document.
1990	A seminar was convened to discussed the recommendations of the 1985 document, culminating in an action plan for their implementation, referred to as the "Milimani Resolution." The seminar also proposed that a task force be established to work out implementation modalities.
1991	The task force was established, reporting to an Interministerial Technical Steering Committee.
1992	The task force prepared a draft report on "Building By-Laws and Planning Regulation's"
1993	A broad-based workshop, representing local authorities, NGOs, developers, researchers, and policymakers, reviewed and adopted the draft report thus consolidating support for the report's recommendations. A final report was prepared after the workshop, containing the following substantive chapters: "Code 92"-Amendments to Clauses 215-232 (of the existing building code); Drainage and Latrine Rules Amendments (1992); Infrastructure Standards; Planning Standards; Dissemination Strategy; Deemed to Satisfy Solutions; and Building Review Board. (Ministry of Lands and Housing, no date)
1994 to date	Draft legislative amendments to the Local Government Act have been made, including a legal instrument to establish a By-Laws Review Board. The draft bill is due for consideration by Parliament in its current session.

Nairobi City Council: Zoning Regulations (Residential Areas) and Standards

Key Dates	Activities and Events
1979	The Nairobi City Council made major revisions to its zoning regulations (see attachment 1). The two main changes are that areas zoned for agricultural/residential use are to be converted into residential areas (examples of the areas affected are Dagoretti and Kahawa/Kasarani), and that new minimum lot sizes and maximum lot coverages and lot ratios are to be introduced.
1988	Based on the implementation of Urban II, the NCC conducted a major review of planning, housing, and engineering standards for low-income housing by the private sector (see attachment 2). This project component had an important impact of the projects on standards.
1990	NCC raises permitted residential densities in the city.

Capacity Building

Housing Operations Study of the NCC

Key Dates	Activities and Events
1972	UNDP supported efforts to prepare a long-term plan for Nairobi city development, culminating in the Nairobi Metropolitan Growth Strategy Report. Although not adhered to in many respects, the report provided a broad basis for city planning in the years that followed. The study also led to the Bank-financed Urban I, one components of which was the Housing Operations Study of the NCC.
1975	Urban I, or the Dandora Community Development Project, was initiated; its management structure combined technical, finance, and community development personnel.
1976	Coopers and Lybrand undertook a study of NCC housing operations (Coopers and Lybrand et al. 1976). The study recommended establishing a Corporate Planning Team and a Housing Development Agency that combined all housing functions. The Corporate Planning Team did not become operational, but the Dandora Community Development Project unit was transformed into the Housing Development Department (HDD) headed at the chief officer level as with other NCC departments. Still, estate management remained the responsibility of the Department of Housing and Social Services.
1978	Replication of HDDs in Mombasa and Kisumu municipal councils was initiated under Urban II.
1982	The mandate of HDDs was expanded to include the management of the USAID-sponsored Umoja I and II, the other major low-income housing projects.
1983	The Urban III Appraisal Report noted that "the establishment of separate project departments within each municipality, while desirable from the standpoint of long-term institutional development, created internal conflicts and staffing problems which took longer than expected to be resolved."
Currently	HDDs in Nairobi, Mombasa, and Kisumu have been unable to pursue undertake forward planning or to mobilize resources for additional housing development (see Urban II PAR). They do not seem to be suitable models for replication in other towns.

Study of the National Housing Corporation

Key Dates	Activities and Events
1981	A study of NHC operations by Coopers and Lybrand was financed under Urban II. The report issued two main recommendations: that the NHC should surrender responsibility for identifying and preparing projects to the housing ministry, and that a subsidiary be established to develop middle and higher-income housing. Both recommendations were considered unrealistic and were not accepted.
1983	Urban III assigned only a modest role to the NHC--essentially to serve as a disbursing agent for project funds, and as designer and supervisor of project components only in one of five towns.
1985	NHC's housing program shifted away from sites and services to conventional middle-income housing.
Currently	Sharply declining Government loans and on inability to mobilize financial resources continue to threaten the integrity of the NHC. Although the NHC's future status is unclear, it is classified as a strategic parastatal--and thus not slated for divestiture--in the ongoing privatization program.

Restructuring of Ministry of Local Government (MLG)

Key Dates	Activities and Events
1983	A Central Planning Unit was established in the MLG, consisting of economists and planners.
1987	The Government established an urban development function within the MLG.
1989	The Interagency Consultative Committee Report on the MLG organizational structure of the MLG formed the basis for establishing an Urban Development Department.
1991	MLG's consultative meetings with local authorities suggested that technical assistance capacity should be installed in the MLG.
1992	
1993	A workshop funded by the GTZ led to the staffing and consolidation of the Urban Development Department.
1994	A <u>H</u> uman Resource Development function was funded by the KFW.
	A Finance Department rationalization workshop was financed by the GTZ.
1994	A proposal for the organizational rationalization of the MLG and local authorities was made to the UNDP by the Civil Service reform secretariat and by the MLG.
Ongoing	The Municipal Reform Program (IDA) and Small Towns Project (GTZ) are supporting the consolidation of MLG organization and extending this support into a management study of local authorities.

Municipal Finance

Key Dates	Activities and Events
1973	The Government's Nyaga Commission on local government examined options for self-financing local authorities.
1976	An IMF study of municipal financing in Kenya established the role of municipal finance in the economy and made a case for grants to local government as a basis for sound service delivery.
1978	Technical assistance was provided under Urban II in financial management and audits. An audit system and cost recovery mechanisms were established in project towns. An audit system prepared for Nairobi by Githongo and Company was considered a model for replication in other towns.
1982	The Secondary Towns Project provided additional technical assistance in financial management and audits to five councils and the Local Government Loans Authority (LGLA). Consultants updated accounts and prepared audits. Paul Smoke's study of local government finance in Kenya was undertaken for USAID.
1985	Sessional Paper no. 1 of 1986 discussed urban development financing and institutional reforms in the local government sector.
1986	Financial management training and on-the-job-support to councils were sponsored by USAID's Small Towns Project.
1987/88	Financial base studies of small towns and on-the-job support were provided by the GTZ.
1989	A local government finance study by the World Bank formed the basis of a reform program for the sector.
1990	The Kenya Municipal Finance Project was prepared.
1993	The ongoing Kenya Municipal Reform Program was implemented.

Proposed Reform of LGLA

Key Dates	Activities and Events
1976	The IMF sponsored a study of municipal finance; it was the first major study to focus on local government financing, institutional framework, and sectoral performance.
1982	A technical assistance component of Urban III was fielded to review the LGLA as the key institution for municipal finance in the country.
1985	A study of the LGLA was commissioned to Price Waterhouse.
1986	Sessional Paper no. 1 of 1986 made the first explicit policy statement on the transformation of the LGLA into a municipal banking institution.
1988	Proposals for transforming the LGLA into a Municipal Finance Corporation (MFC) were reviewed.
1989	A draft cabinet memorandum on the MFC was drafted.
1990	A World Bank sectoral study on local government finance suggested focusing on local government debt as a major issue.
1993	The Municipal Finance Project (MFP) was implemented to address of debt issues among other policy constraints in the sector.
Ongoing	The Municipal Reform Program (MRP) is ongoing after the MFP was redesigned in 1994; the resolution of mutual debt and the design of future urban infrastructure financing are part of the MRP mandate.

Housing Policy Framework

1. At its independence, Kenya was predominantly rural and did not have a well-framed urban policy. Although it soon adopted measures to deal with its pressing urban housing problem, it did not address other dimensions of urban development until many years later. Early housing policy was shaped by a United Nations mission report that recognized the scale of the shelter problem and the prevailing resource constraints, and then recommended that minimum building standards be adopted to make housing affordable to the majority. Also made proposals for institutional change. The Government, in Sessional Paper No. 5 of 1966/67, accepted many of the UN policy recommendations and endorsed the sites and services concept as a practical strategy for redressing the housing problems of the urban poor. The government paper was also instrumental in establishing the National Housing Corporation, the Housing Finance Company of Kenya, and the Housing Research and Development Unit (now the Housing and Building Research Institute) at the University of Nairobi.
2. Despite of these accomplishments on the institutional front, housing policy remained unrealistic in three important respects. Home ownership, even among low-income groups, was considered central to housing policy, although public rental housing was also considered important. Housing provided by local authorities, consisting largely of rental units, continued to be subsidized heavily; implicit interest rates were low, and not all direct costs, such as design and interest cost during construction, were charged to projects (Coopers and Lybrand et al., 1976). Little effort went towards applying building and planning standards geared to what the majority could afford. And the prevailing belief was that informal settlements could and should be contained through demolition.
3. Early policy also recognized the important role of local authorities in service delivery, although an expanding urban population and a deteriorating revenue base undermined the effectiveness of local government. Following the enactment of the Transfer of Functions Act of 1969, local authorities (with the exception of seven of the largest municipalities) surrendered to the Government their responsibility for several important services, such as primary education and health (World Bank, 1992). This transfer of functions was accompanied by the abolition of the graduated personal tax (GPT) between 1969 and 1974, which was the primary revenue source at the local level. Financial autonomy was further curtailed. Nairobi and the other major municipalities retained their service functions and received compensatory grants (in lieu of the GPT) from the Government until 1978, when this financial source was in turn abolished. Although the Government then introduced various grants, these were also stopped in 1984-85, with the exception of grants to meet teacher salaries.
4. To help define its growth options and strategies for coping with the growing demand for services, Nairobi received assistance from the UNDP in the early 1970s. It culminated in 1973 with the publication of the Nairobi Metropolitan Growth Strategy, a report form the basis for identifying and preparing Urban I. City authorities also engaged actively in dialogue with donor agencies (IBRD, USAID, the European Economic Commission, and the Community

Development Corporation) with a view toward securing the funds necessary to meet the demand for housing and infrastructure.

Policy Objectives of the Urban Projects

5. Although the urban projects targeted a broad range of policy objectives, the broad aim was to demonstrate that an *incremental housing model*—implemented as part of either sites and services projects or upgrading projects—was the preferred strategy for expanding access to home ownership among low-income groups. If poor households were granted the security of land tenure, basic infrastructure services and core houses, loans for building materials, and technical assistance, they would expand their dwellings over time. An important feature of the model was that the historically high public housing subsidies would be unnecessary, thus enhancing the sustainability of the model. Although planners recognized that allottees would sublet part of their dwellings in order to augment their income and their ability to meet loan repayments, a key assumption was that owner-occupation would be the predominant form of tenure. This assumption proved incorrect.

6. The incremental housing model rests on four assumptions: that low-income beneficiaries prefer to own than to rent; that cost recovery can be enforced; that settlement upgrading is a feasible alternative to the demolition of informal settlements; and that local authorities will adopt minimum building and planning standards. These assumptions were not borne out.

Tenure Preferences

7. Various investigations have shown that the majority of lots in the Nairobi urban projects are now owned by absentee landlords, many of whom are from higher-income strata (see, for instance, Macinnes, 1987, "whose results are discussed more fully in annex F). Total subletting began early. Barely two years after the allocation of lots under Urban I, a small number of allottees were reported to be absentee landlords (World Bank supervisory reports). By the time that Urban I was audited, lot ownership by absentee landlords had reached 50 percent. The current proportion is about 70 percent.

8. The assumption that lower-income groups would prefer to own has not been vindicated in Nairobi. This outcome is explained by the investment behavior of low-income households, which is heavily skewed toward rural areas (Hoek-Smit, 1989; also see chapter 5 and annex I). These households prefer renting to owning in urban areas, a preference further reinforced by the lack of access to housing finance and pressures by upper-income groups to sell (confirmed by the survey results in chapter 5).

Cost Recovery

9. Cost recovery has been disappointing. In summary, the two urban projects and the other sites and services schemes in the country have not been able to demonstrate their sustainability. The NCC, other local authorities, the National Housing Corporation and now face in a policy dilemma. Should they promote similar projects, or should they revert to conventional methods of housing delivery? The National Housing Corporation seems to have opted for conventional methods.

Settlement Upgrading

10. The notion that settlement upgrading would be an attractive alternative to the demolition of informal housing was contradicted when the Nairobi upgrading component in Urban II failed to materialize. The proposed upgrading of Mathare Valley, the largest informal settlement in the 1970s, was undermined when NCC rejected the use of basic standards in another site that would have accommodated the displacement of households during upgrading. In other sites (Baba Dogo and Riruta), upgrading did not proceed because land issues could not be resolved (the PCR of Urban II). Although upgrading components proceeded in Mombasa and Kisumu, the other project towns, they have been severely undercut by poor cost recovery (in both towns) and intractable land problems (in Kisumu). The urban projects were thus unable to demonstrate that settlement upgrading is a sustainable method for addressing the housing problems of low-income groups.

Building and Planning Standards

11. The necessity of formulating standards affordable to the urban poor came to light when the NCC rejected the use of Urban I (phase 1) standards in other phases, arguing that they were too low. To meet this challenge, Urban II supported a review and revision of the building code. It was completed successfully in 1980, and its main thrust was that "performance" or "deemed-to-satisfy" standards be adopted in lieu of the "prescriptive" standards in the building code in force. Despite the thoroughness with which existing building regulations and related legislation were reviewed, a revised code has not yet been adopted, fifteen years after the initial work was completed. This lack of outcome reflects poorly on the innovative capacity of public agencies, given that the unrevised building code contains relaxations that accommodate the use of standards affordable to lower-income groups.²¹

12. Although local authorities have generally been reluctant to apply relaxed building regulations in low-income areas, flexible approach has its precedents. In 1990, for instance, the NCC bowed to political pressure by approving subdivision plans by land-buying companies which did not meet its traditional criteria for approval. As a result, 30,000 lots were regularized in fewer than 15 months, rather than the five years it would have taken under normal circumstances (Government of Kenya, no date).

Capacity Building

13. The main capacity building component in Urban I was the Housing Operations Study of NCC, which sought to rationalize housing functions within the council. Indirect components were the preparation of Urban II and monitoring and evaluation, both of which were coordinated by ministries. Urban II had a more ambitious agenda. One component that targeted the NCC directly was the establishment of a transportation planning unit. Other components had a more national focus: the establishment of a valuation unit within a restructured Ministry of Local Government, to strengthen its advisory and service role in supporting local authorities; and a study of the National Housing Corporation and of NCC's housing operations.

21. These relaxations are cited under what are referred to as Scheduled Special Areas (Sections 215 to 227) of the Grade 1 by-laws. To have the relaxed regulations cited apply to a given area, a local authority must declare the area a Scheduled Special Area. Conversely, the urban fringe, more extensive relaxations are available under Grade 2 by-laws.

14. The NCC study examined the merits of unified housing agency within the council. At the time, housing operations were fragmented: the project unit at Dandora was responsible for implementing Urban I; the City Engineer was in charge of designing and implementing other housing projects; and the Department of Social Services and Housing was responsible for estate management. The main recommendation was to establish a Corporate Planning Team and a Housing Development Agency to be responsible for project preparation and implementation. Although these recommendations were accepted in principle, only the Dandora project unit was accorded departmental status in 1978, thus becoming NCC's Housing Development Department.

15. Although the study spurred the consolidation of most of NCC's housing operations, its long-term impact is doubtful. First, the NCC does not have a coherent housing policy and thus lacks an informed basis for setting objectives and priorities for the sector. Second, because the Housing Development and Management Department of the NCC does not seem able either to plan for or to mobilize financial resources for additional housing development, it is difficult to justify NCC's overhead, especially in a council saddled with financial difficulties.

16. The NCC study proposed two unrealistic recommendations. The first required that the National Housing Corporation surrender to the Housing Ministry its responsibility for identifying and preparing projects, a proposal conflicting with the Government's intent to decentralize its activities. Moreover, the Housing Ministry's competence lay in formulating policy, and not in managing technical stages of the project cycle. The study also proposed that a subsidiary be established to finance middle- and upper-income housing. Since there was no shortage of private developers in this segment of the housing market, this recommendation was not implemented.

17. The financial position of the National Housing Corporation remains precarious as government subsidies continue to decline and as excessive arrears on loans made to local authorities continue to mount. Due largely to its social mandate, the corporation found it difficult to assume a more commercial orientation in its operations. Recent plans to launch a financial subsidiary appear ill-conceived, because the administrative framework that governs parastatals would undermine such a venture, especially in a liberalized financial sector. Furthermore, the corporation does not have the commercial experience necessary to manage such an undertaking.

18. The other capacity-building components have had various outcomes. The proposal to establish a valuation unit within the Ministry of Local Government never materialized, having been resisted by the Ministry of Lands (PCR of Urban II). The Transportation Planning Unit created within the NCC did not realize its full potential after the postponement of a transportation project. The restructuring of the Ministry of Local Government has only recently begun to gather momentum.

Municipal Finance

19. Both urban projects attempted to improve the financial autonomy of local authorities, which had been undercut with the abolition of the GPT. During the implementation of Urban I, the IMF conducted a study of local authority finances (IMF, 1976). Although the report did not receive official endorsement, many of its recommendations were implemented, some fully, some only partially (World Bank, 1983). In 1989, a service charge was introduced, which has some of the characteristics of the abolished GPT. It is a payroll levy for those in wage employment and a

flat annual payment for firms and the self-employed. The service charge has reportedly improved the revenue position of local authorities significantly.

20. An important component of Urban II, was the review of the Local Government Loans Authority, with a view toward setting out "options for reforming the existing system of financing local infrastructure" (World Bank, 1992). The consultant's recommendation to create a new entity, the Municipal Finance Corporation of Kenya, was not endorsed. It would have been a limited-liability company, insulated from parliamentary oversight, but subject to supervision and regulation by the Central Bank. It was argued that the creation of a new institution to solve an intractable problem was a dubious strategy. It appeared doubtful, then, that infrastructure could serve as marketable collateral, which could pose borrowing difficulties.

Conclusions

21. The policy agenda fostered by the urban projects had differential outcomes. Overall, the beneficial policy impacts were rather limited. The incremental housing model that was the core underpinned the projects proved to be flawed and thus did not introduce a sustainable approach to low-income housing. The capacity building and municipal finance were marginal components whose impacts were rather limited.

22. In hindsight, several opportunities were missed. One was the failure to involve communities, especially in upgrading areas, at all stages of the project cycle. Another was the neglect of the housing finance sector, with the result that Kenya has not yet developed sustainable and effective mechanisms for lending to lower-income groups. Another is that capacity building should have played a central role rather than being subordinated to the attainment of physical objectives.

Statistical Tables

Table 1. Rent-to-income ratios (Incomes and rents in Ksh per month: current prices)

	1982	1987 ^f	1993 ^g
Nairobi		n.a	n.a
Mean income ^a	3600 ^d		
Mean rent	1100 ^e		
Rent/income	0.31		
Dandora	n.a		
Mean income ^a		2,412	5,127
Mean rent		307	662
Rent/income		0.13	0.13
Kayole	n.a	n.a.	
Mean income ^a			5,589
Mean rent			861
Rent/income			0.15
Mathare North	n.a.	n.a.	
Mean income ^a			5,645
Mean rent			856
Rent/income			0.15
Umoja I^b	n.a.		n.a.
Mean income ^a		5,018	
Mean rent		1,150	
Rent/income		0.23	
Kibera			
Mean income			2,979
Mean rent			418
Rent/income			0.14
Other^c	n.a.		
Mean income ^a		1,380	2,624
Mean rent		370	241
Rent/income		0.27	0.09

- a. Household income. Because the income data from the field survey was grouped, the mean could not be computed directly. Rather, the mean was calculated on the assumption that the mid-point of each income class, with the exception of the lowest and highest classes; in each case, the upper bound of the lower class and the lower bound of the highest class were assumed to represent the mean.
- b. USAID-sponsored lower-income housing project.
- c. Dagoretti, Kawangware, and Korogocho for 1987; Korogocho for 1993
- d. Lee (1983).
- e. Extrapolated from Republic of Kenya (1984). The 1980 mean monthly rent for private dwellings (Ksh908) is inflated at the rate of 10 percent a year.
- f. Figures in this column based on Holin (1987).²²
- g. Figures in this column based on the Final Field Survey Report.
- n.a. Not available.

22 Holin, M. (1987) "A Report on a Survey of Rents in Nairobi Neighborhoods" RHUDI/USAID.

Table 2: Arrears on Loan Repayments for Urban I

<i>Year</i>	<i>Annual Amount Due</i>	<i>Amount Received</i>	<i>Arrears</i>	<i>Arrears as a Percentage of Amount Due</i>
1977	1,192	1,042	150	13
1978	1,544	1,287	256	16
1979	2,002	1,712	290	15
1980	1,158	286	872	75
1981	2,135	701	1,434	67
1982	5,764	1,220	4,544	79
1983	11,873	3,883	7,990	67
1984	16,658	5,808	10,850	65

Source: PAR. PAR considers the decline to be an error due to HDD accounts.

Table 3. Arrears under Urban I as of June 30, 1994, by area (in thousand Ksh)

	<i>Annual Amount Due</i>	<i>Arrears</i>	<i>Arrears as a Percentage of Amount Due in FY94</i>
Area 1	3,070	966	31
Area 2	4,794	2,261	47
Area 3	2,644	1,952	74
Area 4	4,011	3,167	79
Area 5	1,632	897	55
Total	16,151	9,243	57

Source: NCC minutes of October 27, 1994.

Table 4. Arrears under Urban II as of June 30, 1994 (in thousand Ksh)

	<i>Annual Amount Due</i>	<i>Arrears</i>	<i>Arrears as a Percentage of Amount Due in FY94</i>
Kayole	7,633	12,280	160
Mathare North	5,853	2,865	49
Total	13,486	15,145	112

Source: NCC minutes of October 22, 1994.

Table 5. Staff Profile: City Engineer's Department

<i>Grade</i>	<i>Establishment</i>	<i>Current Strength</i>
1 - 4	6	2
5 - 7	46	10
8 - 10	98	63
11 and up	4476	3240
Total	4626	3315

Table 6. Staff Profile: Public Health Department

<i>Grade</i>	<i>Establishment</i>	<i>Current Strength</i>
1 - 4	1	1
5 - 7	17	4
8 - 10	63	63
11 and up	3,214	2,735
Total	3,295	2,803

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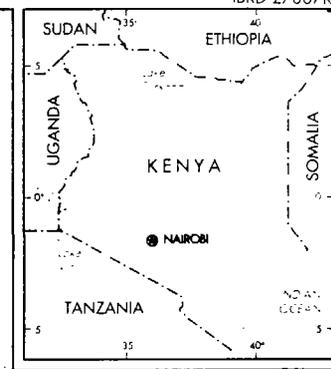
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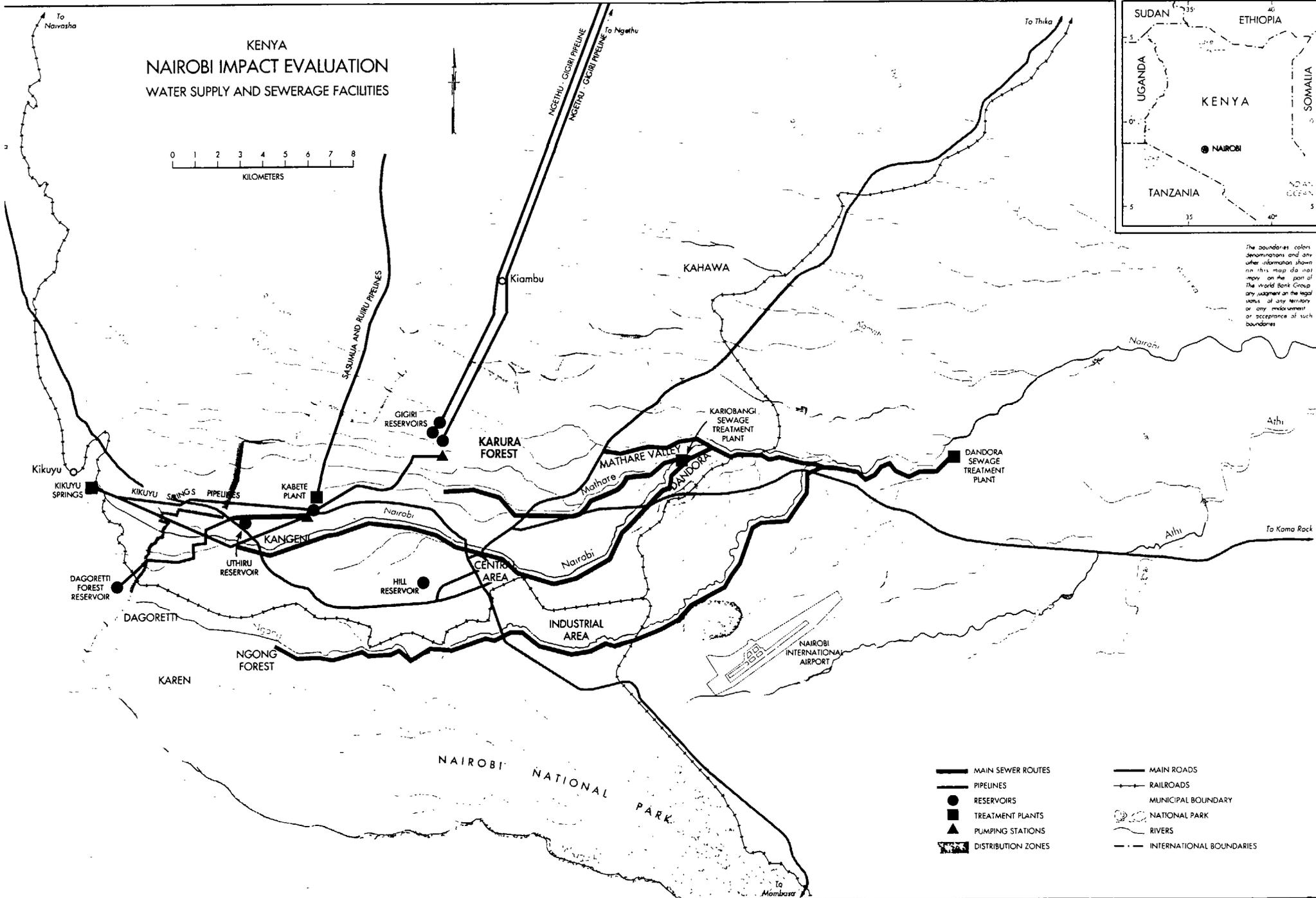
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MAP SECTION

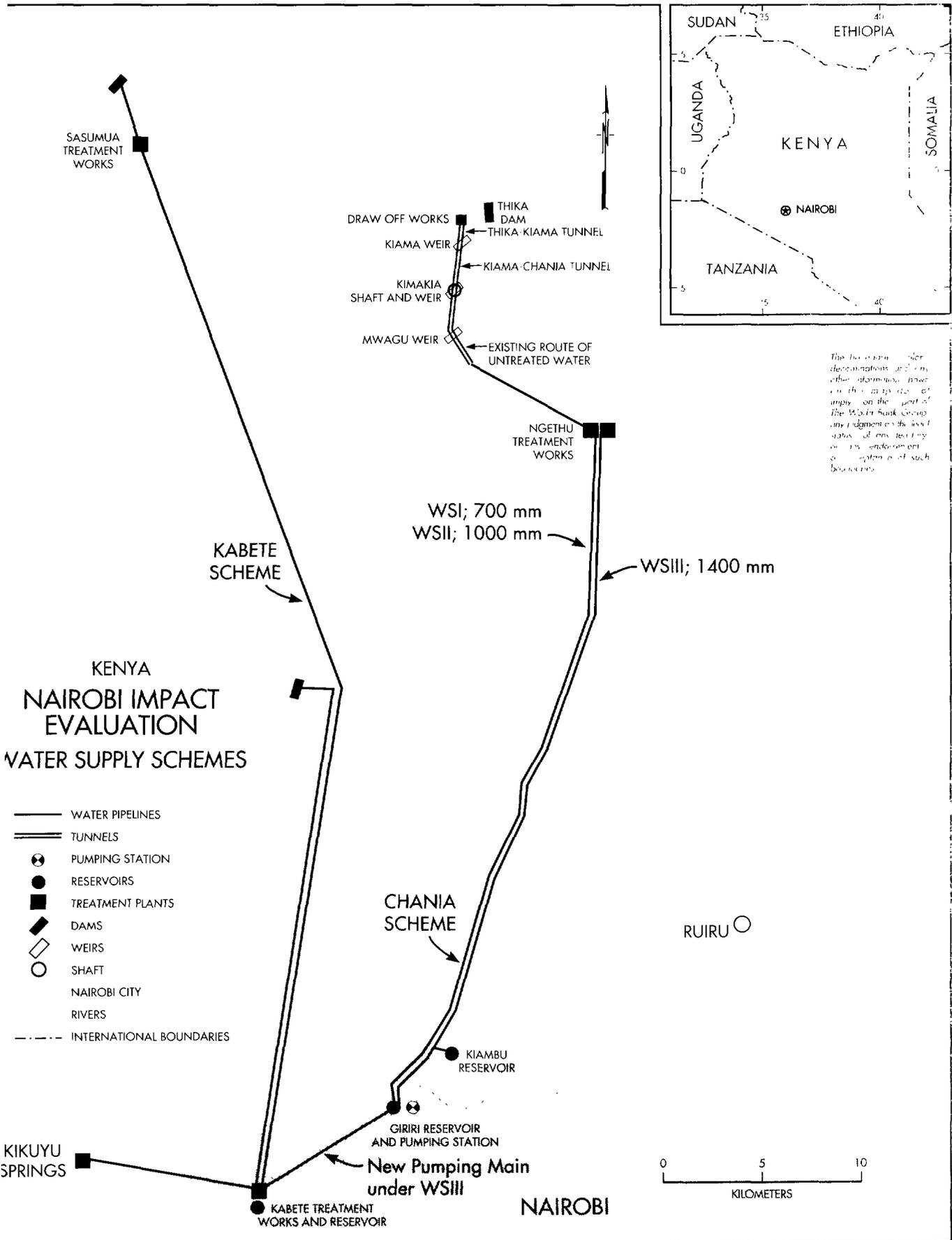
KENYA NAIROBI IMPACT EVALUATION WATER SUPPLY AND SEWERAGE FACILITIES



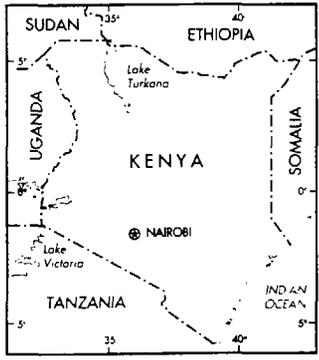
The boundaries, colors, denominations and any other information shown on this map do not imply on the part of the World Bank Group any judgment on the legal status of any territory or any endorsement or acceptance of such boundaries.



- MAIN SEWER ROUTES
- PIPELINES
- RESERVOIRS
- TREATMENT PLANTS
- PUMPING STATIONS
- DISTRIBUTION ZONES
- MAIN ROADS
- RAILROADS
- MUNICIPAL BOUNDARY
- NATIONAL PARK
- RIVERS
- INTERNATIONAL BOUNDARIES



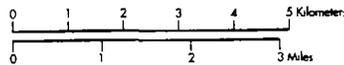
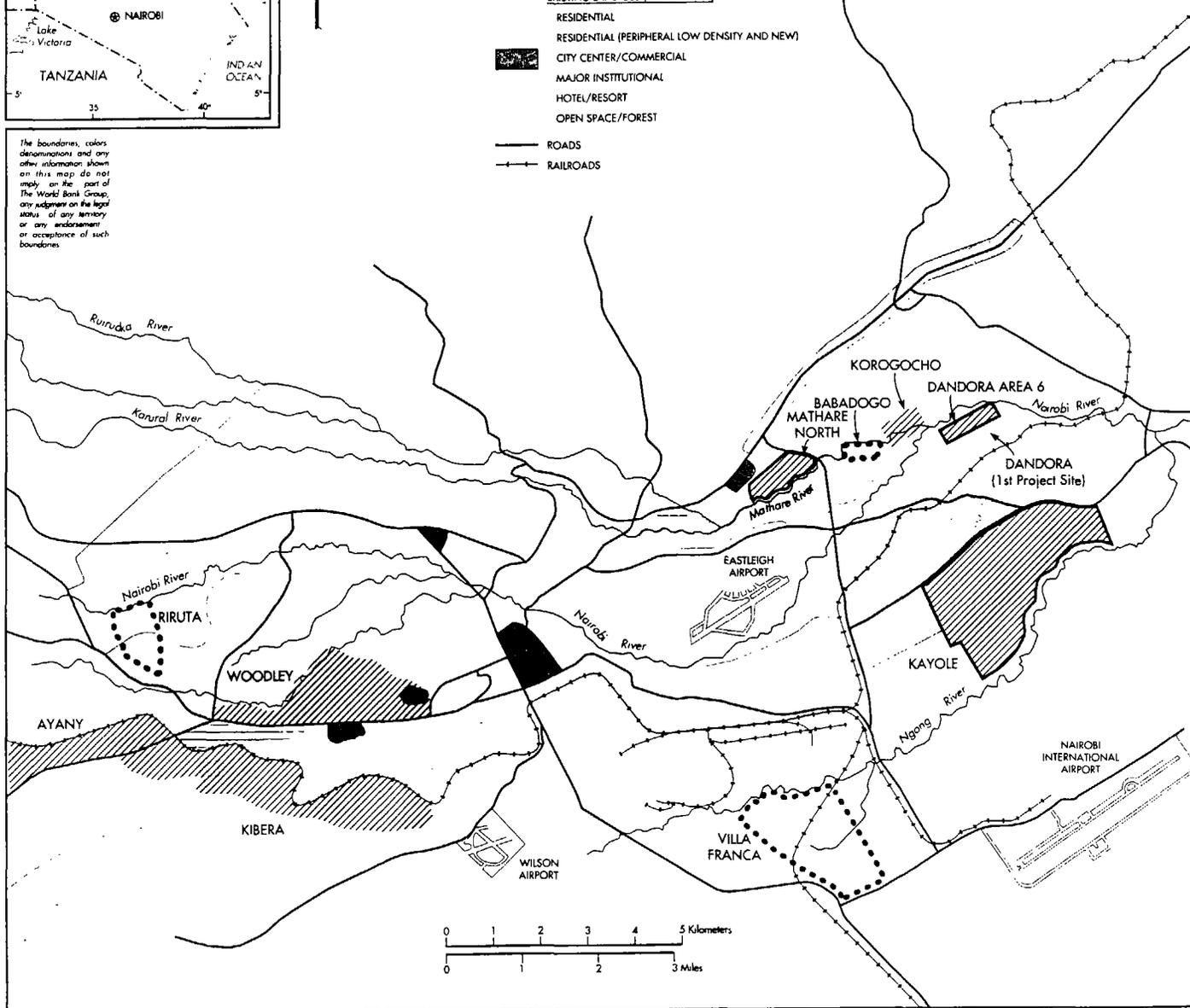
The borrower under the arrangements of the other arrangements have on their part of the World Bank Group any judgment on the level of any liability or the endorsement of any system of such borrowers.



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KENYA NAIROBI IMPACT EVALUATION LOCATION OF AREAS

-  PROJECT SURVEY AREAS
-  SURVEY AREAS
-  PROJECT SITES DROPPED
- EXISTING LAND USE (GENERALIZED):
-  RESIDENTIAL
-  RESIDENTIAL (PERIPHERAL LOW DENSITY AND NEW)
-  CITY CENTER/COMMERCIAL
-  MAJOR INSTITUTIONAL
-  HOTEL/RESORT
-  OPEN SPACE/FOREST
-  ROADS
-  RAILROADS



IMAGING

Report No: 15586 KE
Type: IER