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THE KAPATINA MARKET TOWN  
INFRASTRUCTURE IMPACT STUDY

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## EXECUTIVE SUMMARY

### Background

1. The purpose of the study is to assess the impact of investment in an upgraded market place and bus park, with associated improvements in urban roads, on farmers and traders in Karatina's hinterland and on Karatina's business community, market traders, users of the bus park and households.
2. Karatina is a town with a rapidly growing population of about 8,000 located in a fertile agricultural region in which coffee, tea, maize, fruit, vegetables and fodder crops are cultivated.
3. Under USAID's Small Towns and Community Development Project the existing market was upgraded at the cost of about \$400,000 and a new bus park was constructed at the cost of \$234,000. Both facilities were opened in May 1987.
4. In August 1989, the study team interviewed farmers, traders, business leaders, households, bus drivers, bus passengers, and local officials in and around Karatina.

### Findings

5. The market is financially viable. Revenue is more than required to repay the Housing Guarantee loan and cover operating costs.
6. The bus park is not financially viable. The main reason is that there is widespread evasion of the monthly fees. Revenue was less in 1988-89 than in 1987-88. The bus park is, however, very busy, with much double and triple parking on market days.
7. On the basis of the benefits to the direct users of the market, the economic rates of return for the market ranges from 11 to 18 percent under different cost and revenue growth assumptions. These rates of

return compare with a real cost of capital in the economy as a whole of about 16 percent. There are also substantial indirect benefits to farmers and others.

8. The new mud free market has attracted more traders than the old market and this has encouraged farmers to grow more horticultural crops than in the past. This diversification has partially or wholly offset the effect of falling coffee prices and given almost half the farmers higher incomes. The value of farm land has increased by much more than the rate of inflation.
9. The market itself has evolved from a farmers' market (farmers selling to consumers) to a traders' market (traders buying and selling with other traders), although the market still accommodate hundreds of small farmers on market days. The town is still essentially a transit center with little value added applied to the market produce.
10. The new market is popular with households in Karatina. Most buy more from the new market than they did from the old one; most believe the quality of produce to have risen; and almost no one can identify any problem with the market.
11. The improved market and bus park have helped to generate more business for the town. In the past year new licenses have been granted to 6 hotels and 25 retailers. However, very few businesses have taken on more staff in the past 2 years.
12. Almost all the traders reported that they are pleased with the new market, despite having to pay fees up to five times higher now than in 1986. Half said supplies are more reliable now. Many are drawing supplies and customers from over 50 km away.
13. Bus drivers said that they now carry twice as many passengers as in 1986. The passengers themselves appreciate the shorter waiting times and covered waiting areas.

## Conclusions

14. This study has helped to show that investments in upgrading commercial facilities in market towns can be economically and financially viable, mainly through their impact on improving agricultural marketing systems.
15. Preconditions for such success include the selection of towns in regions that are already showing signs of strong growth; careful siting of the facilities (usually where there is already an informal market); and careful design of the facility, avoiding uneconomically expensive infrastructure.
16. Good financial management on the part of the local authority is important. This is essential for the loan to be repaid and for the facilities to be properly maintained and operated.

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The study team was led by Harry Garnett. Winnie Mitullah managed the formal surveys and Gerald Kingori was responsible for the in-depth surveys. Samir Zaman carried out the computer programming and participated in the analysis. Fred Gale carried out the land value survey.

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## THE KARATINA MARKET TOWN INFRASTRUCTURE IMPACT STUDY

### 1. Introduction

#### 1.1 Karatina and its Hinterland

Karatina is a town with a rapidly growing population of about 8,000 in the heart of a fertile agricultural region. Karatina is on the main road between Nairobi, Maranga and Nyeri. The town has had a market for over 100 years. The main export crops from the region are tea and coffee. More recently French beans and avacados have been grown for export. The generally small farms in the area, with on average about 3 acres of land, also grow fruit, vegetables and fodder crops. The climate and soil are such that in some cases more than one crop can be grown each year.

#### 1.2 The Small Towns Project

The local authority, Karatina Town Council, participated in USAID's Small Towns and Community Development Project. Under the project loans were channeled through the Local Government Loans Authority to the local authorities to invest in a new market place, a new bus park, and urban road improvements. Twenty-five local authorities also participated in the project. Staff of the Town Council also benefited from attendance at USAID sponsored training courses.

The new market has 288 stone stalls, 200 wooden stalls, and space for about 700 sellers on the ground. The market cost Ksh 8.6 million (now equivalent to about \$400,000) to construct. The market was opened in May 1987.

The bus park has space for about 8 buses and 34 matatus (pick-up trucks), with covered waiting areas for passengers. This cost Ksh 4.9 million (about \$234,000). The bus park was also opened in May 1987.

Eight kilometers of urban roads have been improved, at a cost of Ksh 15 million (about \$714,000). The project also financed 36 rental units through the National Housing Corporation.

### 1.3 The Study

The purpose of the study is to assess the impact of these investments on farmers and traders in Karatina's hinterland, and on Karatina's business community, market traders, users of the bus park, and households. The study will examine the financial and economic viability of the investments carried out as part of the Small Towns Project in Karatina. This report will also explore the benefits of these investments, and the accompanying improvements in the management of the town, for farmers, business people and households in the town and its hinterland.

In economic terms, market infrastructure should be justified on a strict cost-benefit calculus and should provide sufficient user-fees to cover capital and maintenance costs. It may also be possible to justify market towns projects on the basis of "externalities", or indirect benefits.

One of the purposes of this study is to examine such assertions. Not only will the study estimate the economic rate of return of the investment in market infrastructure on the basis of the benefits to those who directly use and pay for the infrastructure, but the study will also examine the project's indirect benefits for farms and other businesses in the region.

We should make it clear at the outset that this study did not set out to provide a final and conclusive economic justification for market towns projects. This study is a step in that direction. Full rigor would have required the calculation of consumers' or producers' surpluses for all potential beneficiaries and that in turn would have required larger, more detailed surveys in a number of locations, some with and others without investments. Careful statistical controls would have had to be introduced to account for exogenous factors, such as falling coffee prices, and changing agricultural policies.

In this study, we will concentrate on the new market, since we now have about 3 years of data on the direct and indirect benefits of that investment. It would be difficult to measure the economic viability of the bus park since charges are clearly not collected from many beneficiaries and time did not permit a carefully designed willingness to pay study. The Council anticipates that the cost of the roads will be recovered from a property tax revaluation, but that revaluation has not yet taken place.

Two types of surveys were carried out. The focus of each type of survey was on the impact of the new marketplace and bus park, and the improved urban roads on the lives of the respondents.

In the first survey, key informants in the town's business community, agricultural marketing, farming, and local administration were interviewed by the Team Leader and the team's Kenyan Social Scientist. The interviews were informal and lasted from 30 minutes to 2 hours. Some of the most useful of these interviews were with the traders who operate in and through Karatina market. Many were formerly, or still are, farmers. They tend to specialize in particular commodities and locations. They are the main link between much of the farming community and consumers, retailers, and other traders in Karatina's and other towns' markets. The characteristics of their trades will be described in section 4.

A series of formal interviews was carried out by a team of students from Nairobi University, all of whom live in or around Karatina. This team was managed by a Senior Survey Manager from the University's Survey Research Centre. Short questionnaires were prepared for 30 market traders, 30 households in Karatina, 20 businesses in Karatina, 30 bus operators in the new bus park, and 30 of their passengers. These questionnaires were fully structured, although the interviewers did invite respondents to discuss informally the importance of the new market and bus park. The interviews took from 10 to 20 minutes. Respondents were selected randomly by the interviewers, with equal proportions at four specified distances from the center of the town in the cases of the household and business surveys. These interviews took about 3 days to complete; one of those days was a market day.

A much longer questionnaire was prepared for farmers. Farms were selected randomly by the interviewers in two distance belts (around 5 km and around 10 km from the center of Karatina) and four directions from the town (north, south, east and west). A total of 79 questionnaires out of 80 were completed. The interviews took from 40 minutes to 1 1/2 hours. This set of interviews took 4 days to complete.

We originally planned to collect from the farmers detailed information on cropped acreages, costs and prices, now and in 1986 (before the new marketplace was opened). We were advised that farmers would have difficulty

in supplying these data and that the interviews would take too long. The farmers' questionnaire was therefore limited to simple-to-answer better/worse, higher/lower, more/less, and so on comparisons of the situation in 1986 and now.

All formal interviews were in the Kikuyu language. No interviewee resistance was encountered; people were eager to share their experiences. The team of interviewers was half female and half male. Interviewers travelled in pairs and sometimes interviewed in pairs; that decision was left to the discretion of the interviewers. The data were coded and the coded data entered into computer files (using the software "Norton Editor") in the field. The interviews took place from August 19 to 24 (the Population Census began on the evening of the 24th). The coded data were analyzed with the statistical package SAS.

## 2. Financial Viability

In recent years financial viability has become more important than it used to be in the appraisal of development projects. This is partly because financial sector reform is now regarded as a major development objective in its own right. Financial viability is important because it leads to sustainable projects. If user-fees are sufficient to cover operation and maintenance, then the facility concerned will not deteriorate to the point that is of no value to its potential users. If user-fees are also sufficient to cover capital costs then the investment can be replicated. To have user-fees sufficient to cover all costs will also lead to an efficient allocation of national resources, be they in the private or public sector. A final compelling reason to aim for financial viability in the public sector is simply that the public sector is so short of financial resources in most countries, particularly those with large foreign and domestic debt servicing obligations and those undergoing structural adjustment.

We will discuss the revenue raised to pay for the new infrastructure and facilities, operating costs, and then the overall viability.

## 2.1 Revenue

TABLE 1  
KARATINA MARKET AND BUS PARK  
CHANGING SOURCES OF REVENUE  
Thousand Ksh (current values)

	1986-87	1987-88	1988-8
<b>Market</b>			
Market fees	1,007	1,035	1,191
Produce cess	124	172	181
Stone stalls	67	282	311
Wooden stalls	44	214	261
Old shops	46	148	109
New shops	-	21	18
Subtotal	<u>1,288</u>	<u>1,874</u>	<u>2,071</u>
<b>Bus Park</b>			
Bus park fees	157	559	491
Bus park kiosks	69	80	89
Subtotal	<u>226</u>	<u>639</u>	<u>580</u>
<b>TOTAL</b>	<u>1,514</u>	<u>2,513</u>	<u>2,651</u>

The "fees" refer to payments made to the Town Council for entering the market (with produce) or bus park. Other sources of revenue are rents paid to the Council

Changing sources of revenue are shown in Table 1. The marketplace provides a buoyant source of revenue for the local authority. Its revenue has almost doubled in the past 2½ years. The sources of market revenue are changing. As shown in Table 1 market fees now provide 57 percent of the market revenue, compared with 78 percent of the total in 1986-87. More is now being paid by those renting stalls and shops. These are probably the richer members of the market community. Total revenue from market fees is now only slightly higher than in 1986-87 (much lower in real terms, if inflation is taken into account).

Market revenue should continue to rise, even in real terms. Despite the complaints from the stall holders about their rental fees, there were many more applications for the stalls than there were stalls available. Market Fee revenue should increase over time as the region and town become more populous. Not all the on-the-ground market space is filled on all market days (the market is most busy on the first market day of the week). Filling up

that space should add to revenue. There is clearly a price deterrent for some of the poorer market women, since many continue to operate on the fringes and outside the main market, on a muddy surface. In 1984 the fee for a full load was Ksh 3; it is now Ksh 6. Nevertheless the council reports that there is demand for another market; and it has earmarked a piece of land opposite the town hall for a new market.

Bus park fees, after increasing threefold in 1987-88, actually fell in 1988-89. Both the local authority and the bus operators themselves admit that this is not because the level of business fell but that there were, and continue to be, "administrative" problems in the collection of the fees. Unlike the market, where fees are collected on a per entry basis, and therefore fairly difficult to evade, the bus park fees are (supposed to be) paid monthly. There is widespread evasion. The team observed the bus park for a number of hours and noticed that askaris rarely checked on the payment of the monthly fees. For a period there was no askari there at all. Vehicles were supposed to display a sticker. The very few that did display the sticker had no expiry date on that sticker. According to the local authority, stickers are no longer issued because of problems with the glue.

The local authority appreciates the case for introducing a system under which fees are charged for each entry to the bus park. That was proposed in the feasibility study that preceded the granting of the loan. The bus park was actually constructed to have a single point of entry and even an (empty) tollbooth.

Given the frequent congestion in the bus park, indicating that it is being utilized fully and bringing substantial benefits to its users, it should be possible to increase greatly the revenue raised from that facility.

Fees of all kinds were increased to pay for the new facilities and have been increased since they were opened. For example, in 1984 Ksh 3 was charged for a full load carried into the market; the charge is now Ksh 6; Ksh 1 for a bunch of bananas in 1984 and Ksh 2 now; storage cost Ksh 1 for a load per night in 1984 and costs Ksh 2 now; produce cesses have approximately doubled. Bus park fees have been increased too. The annual fee for a large bus was Ksh 600 in 1984; it is now Ksh 400 per month. For smaller vehicles the annual rental was Ksh 250 in 1984 compared with a monthly fee of Ksh 250 now.

The Council has proposed that many of its fees and charges be increased in 1989. However the market has generally been exempted from these increases. Increases elsewhere are very high: 1000 percent increase for licenses for hotels, 2800 percent for night clubs, 150 percent for hair salons, 450 percent for groceries, 500 percent for curio shops, and so on. The Council's policy is to keep down the fees for the agriculture related activities in the town, which are in a way the town's basic activities (slaughterhouse fees have been increased only by a few percent), and increase the revenue from the businesses that benefit indirectly from these basic activities. The Council has made the judgement that some kinds of businesses will be prepared to pay much higher license fees and either pass those fees on to their customers or absorb the fees in lower profits, without undue adverse impact on their demand or profitability. The directly market-related activities are thought not to be in this category.

## **2.2 Operating Costs**

Operating costs for the bus park and the market in 1987-88 and 1988-89 are shown in Table 2. Bus park costs rose by 7 percent and market costs by 23 percent. Salaries and allowances are by far the most important component of costs: 85 percent of the total cost for the bus park and 82 percent for the market.

## **2.3 Overall Viability**

Market revenue for 1988-89, Ksh 2.1 million, was almost twice 1987-88 revenue and is much more than enough to cover the loan repayments of Ksh 1.3 million and operating cost of about Ksh 477,000. The market is not only financially viable but it returns a surplus that helps to cover other Town Council costs.

The bus park's 1988 revenue was Ksh 580,000, which is less than the loan repayment of Ksh 700,000. Revenue fell between 1987 and 1988. The main reason for the low and falling revenue is the widespread evasion of the

TABLE 2  
KARATINA MARKET AND BUS PARK  
OPERATING COSTS  
Thousand Ksh (current value)

	Bus Park		Market	
	1987/88	1988/89	1987/88	1988/89
Salaries, allowances	51.3	61.6	298.8	389.8
Uniform, soap, etc.	4.2	4.5	18.0	24.0
Stationery	3.5	3.5	52.0	48.5
Repairs, maintenance	9.0	3.5	11.5	15.5
Water, electricity	<u>.5</u>	<u>.3</u>	<u>7.5</u>	<u>9.5</u>
Total	68.6	73.4	387.8	477.3

monthly fees. The original plan had been to charge on a per entry basis, but this was thought to be administratively too expensive. Per entry fee collection is practiced in other bus parks, and car parks, in Kenya. Such a practice could and should be applied in Karatina; a collection turnstile is located right next to the park's single entrance. The bus park should be financially viable since it is full of matatus and buses most of the time. In fact it is overcrowded much of the time, with up to 50 vehicles occupying the spaces designed for 30. "Touts" operate a black market for the limited space.

It is difficult to comment on the financial viability of the road upgrading. The Ksh 15 million upgrading project was completed last year. The Town council believes that it will be able to recover the costs of the road improvements from increased property taxes. The last revaluation took place in 1983 and the next one is planned for this year. The revaluation has been approved by the Ministry of Local Government and awaits action by the Commissioner of Lands. As shown in our land value survey (see Annex 1), property values are rising rapidly. Dramatic increases are reported around the bus park and market. Examples include a 4,000 sq.ft. plot bought for Ksh 80,000 in 1984 which is now valued at Ksh 200,000. There is also a building which cost Ksh 240,000 in 1980 which is now worth about Ksh 655,000. Under

this study, information was collected on the rents paid for 20 properties in 1984 and 1989. Monthly rents on all kinds of properties have generally doubled.<sup>1</sup> Business people have said to the Council that they would be prepared to pay higher property taxes to have more roads improved. (See Annex 1 for the results of the land and property value survey).

### 3. Economic Viability of the Market

The economic analysis focuses on the use of real rather than financial resources, valuing inputs to a project at their opportunity cost, or best alternative use. In most cases, as in this one, it is more difficult to measure the benefits than the costs. The analysis will be carried out under a number of different assumptions.

Three cases will be explored. In each the benefits will be measured by the fees that direct users of the facility are paying: the rents for the stalls and the entry fees in the case of the new market. Alternative cost and revenue growth assumptions will be made. In the next section we will then examine potential "downstream" benefits: mainly the role of the market and the bus park in promoting more productive agriculture and higher farm incomes, but also the benefits for households and businesses in the town itself.

The results of the economic analysis are summarized in Table 3. In each case the capital cost of the market is assumed to be the cost of construction (Ksh 10.4 million) plus the cost of the land (Ksh 2 million in Case 1A and sh 4 million in Case 1B). The land cost is based upon the a survey of land value changes over the past few years, which is reported in Annex 1. All values are in Ksh 1989.

We make a very pessimistic assumption in Case 1A that revenue will not rise in real terms after this year. Even so, the economic rate of return (ERR) is 14.1 percent. In Case 2A, we assume that revenue will rise by 5 percent per annum, in real terms (after inflation), from 1989 onwards. This is a realistic assumption since collections can probably be improved and

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<sup>1</sup> According to Government estimates, the rates of inflation over this period have been: 1986, 5.7 percent; 1987, 7.1 percent; and 1988, 10.7 percent. USAID has estimated the 1989 rate of inflation to be 11.7 percent.

market space, which is highly utilized now, will increasingly be at a premium as business improves in Karatina and its hinterland (When the market opened many more retailers made bids for the stalls than there were stalls). In Case 2A, the ERR is 17.8 percent.

Since, despite the survey of land values, it is difficult to value the 2 acres of land occupied by the market, we have doubled the opportunity cost of the land in Cases 1B and 2B. Otherwise data are as in Cases 1A and 2A. The ERRs fall to 11.2 and 15.3 respectively.

TABLE 3  
NEW KARATINA MARKET  
ECONOMIC VIABILITY  
(in 1989 Ksh)

	<u>Capital Cost of Market</u>	<u>Land Cost of Market</u>	<u>Operating Cost of Market</u>	<u>Benefit</u>	<u>Economic Rate of Return (%)</u>
Case 1A No Real Growth in Revenue	10,447,636	2,000,000	477,000	Yr. 0: 1,557,270 Yr. 1: 2,060,300 Yr. 2-20: 2,060,300	14.1
Case 2A Revenue Grows by 5 percent per annum	10,447,636	2,000,000	477,000	Yr. 0: 1,557,270 Yr. 1: 2,060,300 Yr. 2-20: 5% annual growth	17.8
Case 1B Double Land Cost Rest as Case 1	10,477,636	4,000,000	477,000	Yr. 0: 1,557,270 Yr. 1: 2,060,300 Yr. 2-20: 2,060,300	11.2
Case 2B Double Land Cost Rest as Case 2	10,447,636	4,000,000	477,000	Yr. 0: 1,557,270 Yr. 1: 2,060,300 Yr. 2-20: 5% annual growth	15.3
Case 3A Incremental Revenue Incremental Cost	10,447,636	0	227,000	Yr. 0: 667,270 Yr. 1: 1,170,300 Yr. 2-20: 5% annual growth	14.2
Case 3B As Case 3A 2 Million Land Cost	10,447,636	2,000,000	227,000	Yr. 0: 667,270 Yr. 1: 1,170,300 Yr. 2-20: 5% annual growth	13.1

An incremental approach is adopted in Case 3. The benefits of the project are taken to be the real rise in revenue since the market opened; it was Ksh 890,000 in 1986. The capital cost is as in Cases 1 and 2 above, since it was clearly incremental. The operating cost are taken to be the difference between the operating costs now and in 1986.

The main purpose of this case is to compare the new market with the old market in terms of the additional real costs incurred and the additional benefits (market revenue). Some costs are common to the old market, if it were still operating, and the new market. The real land cost would have been the same if the old market continued to operate on the site now occupied by the new market. Therefore, since the land cost is common to both, it has been given a value of zero in Case 3A. However, since some would argue that the Council has the option to sell the land, it has been given a value of Ksh 2 million in another "incremental" Case 3B. (As an aside, not only does the Council give land to its own projects at no cost, but it also give land to the private sector on the same basis. One of the international banks is now building a new branch on a site close to the market which is owned by the Council and for which the bank will pay a very small "ground rent" of Ksh 10,000).

In Cases 3A and 3B, the incremental benefits are assumed to grow as in Case 2. On this incremental basis the ERR is 14.2 percent in 3A and 13.1 percent in 3B.

From this range of cases, the effect of varying assumptions still further can be gauged. If revenue grew more rapidly, which it might, the ERRs would be higher. And so on.

This range of ERRs is quite healthy, given that the real cost of capital is about 16 percent and that there may be additional indirect benefits. These very indirect benefits will be discussed in the following sections.

We are not at this stage able to comment on the economic viability of the road improvements, except to report that almost every single person interviewed asked that even more road improvements be made. This applied to

more urban roads, the main road through the town (the responsibility of central government), and, most of all, roads leading from farming areas to the town.

So we can conclude that on a strict cost-benefit calculus the market can be justified economically, and that the project there does provide sufficient user-fees to cover capital and maintenance costs.

The indirect benefits of the improvements in the market town infrastructure will be discussed in the following sections.

#### 4. Benefits to Farmers in Karatina

Almost all the 79 farmers interviewed own their farms. The average size of the farms visited was 3.4 acres. Almost all of these owned the same farm in 1986, i.e. before the new marketplace was opened. This has helped to make before and after comparisons. The results of the surveys are detailed in Annex 4.

As shown in Table 4, more farmers had increased the acreages under all types of crops than had decreased those acreages. The proportion marketed has also increased, except for coffee.<sup>1</sup> A major reason for changes in proportion marketed was the price received by the farmer: it has fallen for coffee but risen for all other crops. The price received by the farmer is a function of the general market demand conditions and the farmer's access to the market (which would be improved by a new market and bus park, and better roads).

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We decided to design a simple questionnaire which asked respondents to make comparisons, rather than give quantities (such as acres under crop and prices), in order to shorten the interviews and therefore enable the survey team to interview more farmers in the week allocated for the survey. It was also reported that farmers would have had difficulty in giving quantitative information for 1986 and 1989.

TABLE 4  
 CHANGING CROPPING, MARKETING, AND PRICE PATTERNS AND TRENDS  
 (Figures in Numbers of Farmers)

	Area Cultivated			Amount Marketed			Farmgate Price		
	Less	Same	More	Less	Same	More	Less	Same	More
Coffee	3	42	14	19	18	16	19	6	1
Tea	0	1	1	0	0	2	0	0	2
Maize	10	45	15	5	10	9	0	5	22
Beans	5	34	3	4	4	4	0	1	22
Tomatoes	5	10	10	5	5	10	3	4	15
Other Veg.	6	29	17	5	11	19	2	4	27
Fruit	1	6	7	1	6	4	1	1	8
Others	12	60	24	6	13	21	4	6	35

Source: Farmers' Survey

Percentages of farmers using more of the following inputs since 1986, when the new market opened are as follows:

Fertilizer	49
Manure	66
Pesticides	58
Irrigation	14 (67 percent do not have irrigation)
Improved seeds	57

This increased input use has taken place at the same time as input costs have risen, according to the survey. Few of these inputs are actually purchased in the market but many are obtained through cooperatives and other distributors in the town of Karatina.

About one quarter of the farmers have their main cash crops picked up by traders, the balance taking them to market themselves. Almost all the traders are private. In 40 percent of the cases the traders bear the marketing costs. Three quarters of the farmers take some produce to market themselves.

Two thirds of the farmers visited sell in the new market. Only 16 percent sell in other markets. Almost all do all of their family's shopping in Karatina. About 60 percent visit Karatina more often now than before the new market was constructed. One third travel much more often to Karatina. About 18 percent have businesses in Karatina, the same proportion as in 1986.

In general three quarters thought that the new market was very beneficial to their families; the proportion was the same for the bus park.

Surprisingly, perhaps, although almost half had higher farm incomes over the past year than in 1986, about 40 percent had suffered a reduction in their incomes. We found that the farmers who had suffered a reduction in their income tended to be coffee farmers; those who did not grow coffee at all have invariably benefited from rising incomes. This is shown in Table 5.

TABLE 5  
FARM INCOME AND PRINCIPAL CROPS

	<u>Coffee Growers</u>	<u>Non-Coffee Growers</u>
Income Higher	22	13
Income Down	28	

However the farmers do seem to have benefited from the value of their land having risen considerably: on average land was estimated to be worth Ksh 55,000 per acre in 1986 compared with Ksh 96,000 now. If the value of land had increased only by the rate of inflation, it would be worth Ksh 69,000 now.

We attempted to collect information on the changing farm budget, but farmers found this a difficult question to answer. However we did find out the following: About 20 percent of farm income is spent on food, 12 percent on clothing and 37 percent on education. The farm families save about 8 percent of their income (now and in 1986).

The farmers certainly believe that the market, bus park and upgraded roads are beneficial: the survey returns show this to be the case. However the real question to ask is: has the project improved farming in the region and increased incomes.

The answer to both questions is yes. We were repeatedly told by the traders who buy produce from the farmers to sell in the market that horticultural production has increased greatly since the new market was opened: increases of 50 and 100 percent were often quoted. Visits to the

farms themselves confirmed that farmers now grow more vegetables and fruit than before and that they identify the opening of the new "mud free" market as a major incentive.

However, there are many forces at work here. Karatina is a very prosperous and fast growing town in a prosperous and fast growing region. Even without the new market, the town would have represented a growing market for horticultural produce. Poor coffee prices have provided another incentive for farmers to switch to vegetables. We met farmers who had actually, and illegally, torn up coffee bushes to plant vegetables and cattle fodder. There is a difficult attribution issue here, which could only be resolved with a larger survey of more farmers in different locational situations.

Nevertheless, the new market and the bus park have clearly helped farmers. We were told that the new facilities are now attracting many more traders from distant towns. More produce than ever before is being bought in the Karatina market to be sold in Nairobi, Mombasa, Eldoret, Meru and Embu, for example. We met farmers who had grouped together to benefit from this growing demand and market women who had grouped together to buy from the farms. Many farmers said that horticultural crops were less risky than coffee or tea, or any export crops (Some had been encouraged to grow avacados for export, only to see the market vanish this year. Their avacados are now for sale in the Karatina market.) The response to the depressed coffee prices seems to be first to allocate more land to vegetables for the farmers own use and then to extend the acreage to grow fruit and vegetables for sale in Karatina market.

The market even provides a useful function for farmers who do not even sell any produce there but rely entirely on coffee or tea for their cash income. These farmers have in part been encouraged to move out of subsistence farming because they know that they can meet their families' food needs from the market in Karatina.<sup>1</sup>

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<sup>1</sup> The issue of cash versus food crops in terms of the risk to farmers is examined in a recent IFPRI report for USAID by von Braun, Kennedy and Bouis.

## 5. Market Organization

To understand fully the changing role of Karatina's market in the economic life of the town and the farms around the town, it is necessary to review the activities that take place in and around the new marketplace. The most significant development is that there is now much more trader-to-trading selling, rather than farmer or even trader-to-consumer, than in the past. Some of this trading takes place as follows. There are three entrances to the market, with limited parking space beside each. Small pickup trucks arrive with loads of cabbages, maize, peppers, onions, carrots, potatoes, and so on often on the day before the market (there are three market days, although the market does operate partially on each day of the week). These intermediate traders, who have either picked up their produce from farmers or bought the produce at another market, sell to the marketwomen (who retail the produce to final consumers) or to other traders (who may in turn sell to marketwomen or take the produce to another market). Some of the produce does not therefore enter the market. However askaris are standing by to collect fees from these "outside the market" transactions. Fees are the same as if the produce were actually taken into the market. These traders and the marketwomen who buy sacks of produce from them sometimes use the market as an overnight storage place in readiness for market day. Fees are collected for storage too.

These traders are attracted to Karatina, according to our interviews, by the fact that there are good access roads to the marketplace and a "mud-free" area to park adjacent to the market. Consumers are attracted by the same improved access, including the new bus park, and a "mud-free" area from which to buy produce. ("Mud-free" is the term frequently used by the people of Karatina to describe their new marketplace, bus park and upgraded town roads. During the wet seasons, the new surfaces seem very muddy to the outsider, which only serves to illustrate how difficult it must have been to trade there in the past).

The role played by Karatina's "mud-free market" can be illustrated from the in-depth interviews with traders.

We spoke to a farmer-turned-trader who specializes in green peppers. He brings a bullock cart load of peppers from 15 km away to Karatina market. The farmers are paid about Ksh 200 to 300 and he sells to wholesalers in the

market for Ksh 300 to 400 per bag. A market entry fee of Ksh 5 has to be paid and the transportation cost is about Ksh 6 per bag. The wholesalers take the peppers to Nairobi and Mombasa. Some of the peppers are exported.

We also talked to a trader from Meru who brought in beans and pigeon peas to sell to wholesalers in Karatina who apparently then took the produce to Muranga, Nyaharuru, Nanyuki and Nairobi. Initially in the marketing process, the Meru area farmers bring in single bags of their produce to local markets. Local traders then ship the produce to Meru market to be bought by this trader. The local traders pay the farmers about Ksh 480 per bag for the beans and the wholesalers in Karatina buy from the trader we talked to for about Ksh 600. The beans retail for about Ksh 800 in Karatina and up to Ksh 1,000 in the other towns.

We identified another group of Karatina market women who specialize in the Meru trade. They too buy beans from Meru market (hence represent competition for the above trader), enough to fill a lorry. Their costs include payment along the way to the police since it is illegal to move this produce without a license. Some of the beans are sold to wholesalers and some retailed by the women themselves in the market.

The truck driver for this group of market women worked for another group of women on the way back to Meru, carrying bananas, oranges and other fruit purchased in Karatina's market.

A group of women based in the market purchase potatoes, maize and beans from small farmers located within the Division, Mathira. They buy directly from the farmers during the harvest periods and from bigger wholesalers at other times. They fill large "debes" (baskets) with produce in the field. The women use the same debes, pressed inwards at the sides to sell in the market. They retail most of the produce in the market but also sell to wholesalers when they have managed to collect more produce than they can sell themselves. They transport the produce to market in small pickups or matatus at a cost of about Ksh 10-20 per bag. The prices these women reported were as follows, in Ksh per bag:

	<b>Farmgate</b>	<b>Wholesale</b>	<b>Retail</b>
<b>Potatoes</b>	120	180	240
<b>Maize</b>	270	300	320
<b>Beans</b>	580	640	760

The market fees are clearly a small proportion of the farmgate to retail markup, although after transport charges, the margins leave little for this group of women, particularly in the case of maize.

We talked to a male trader inside the market who buys pigeon peas, green grams, sorghum and millet in Machakos and Kitui, which are many hours from Karatina, beyond Nairobi. He hires a pickup to bring the produce to Karatina at a cost of Ksh 50-60 per bag. Two thirds of his produce is sold to wholesalers, the balance to retailers. The trader buys from small stores in Kitui and Machakos and sells in Karatina at the following prices, in Ksh per bag:

	<b>Purchase</b>	<b>Wholesale</b>	<b>Retail</b>
<b>Pigeon peas</b>	700	800	1,000
<b>Green grams</b>	500	640	1,000
<b>Sorghum</b>	250	320	480
<b>Millet</b>	500	600	800

Another group of women comes to Karatina from Nyahururu, 2 hours to the northwest of Karatina, for the most important of the market days, Tuesday. They then purchase various products from wholesalers in Karatina and transport them to retail in Nyahururu. They pay fees to transport the produce out of Karatina: for example, Ksh 2 for a bunch of bananas, Ksh 4 for a load of potatoes, and Ksh 5 for a crate of tomatoes. Similar fees are paid on crossing the Nyahururu County Council boundary, and on entering the market in Nyahururu. The women generally retail their own produce. The group of Nyahururu trader organize common transportation to Karatina. The buying prices in Karatina and selling prices in Nyahururu are as follows:

	Buy	Sell	Transport
Tomatoes, crate	100	150	10
Bananas, bunch	60	100	5
Sweet potatoes, debe	50	80	5
Arrowroot, debe	60	100	5

On the evening before a market day, we spoke to a trader who was bringing in a pickup load of cabbages. He had purchased the cabbages from farmers located between 10 and 15 km from Karatina for about Ksh 80 per bag. The pickup cost Ksh 120 to hire and it held 10 bags. He hoped to sell the bags of cabbages to retailers and wholesalers, both inside the market, for about Ksh 120, leaving him with a margin of Ksh 28 per bag. Out of that he said that he had to pay fee of Ksh 5 to the council (the council officials, women in "plain clothes", were sitting right beside his pickup). He expected that some of the wholesalers would take the bags to other markets.

Although traders are becoming more important for the market, the market does not discriminate against small farmers in its pricing. As well as a Ksh 5 and 6 levy for a sack load of produce, there are also Ksh 4, 3, 2 and 1 levies for smaller consignments which allow very small scale sellers to participate. On any of the three market days, hundred of people take into the market a few kilos of potatoes or tomatoes or bunch or two of bananas.

However, farmers may find it more profitable than used to be the case not to go to the market but to sell to the traders. The number of traders using the market is reported to have increased greatly since the new market opened. Many of these traders are farmers themselves or represent a group of farmers. Most of those who now occupy the market space are middlemen, or more precisely middlewomen.

This evolution of the agricultural marketing system is probably to the benefit of the farmers and the economy as a whole. Few Western farmers sell directly to the public.

In fact the whole produce marketing and distribution system based on the new market has become more complex and specialized. Karatina is becoming a market increasingly dominated by traders who specialize by product and region of origin and sales.

The roles of markets and market towns change over time. Markets start as "farmers' markets," where farmers sell to final consumers (sometimes other farmers), and evolve into wholesale markets, where traders buy from and sell to other traders. Some market towns are merely transit centers, where produce passes through without processing or even much packaging. More advanced market towns provide some value added to the produce, by processing tomatoes, canning maize, converting cassava to gari, and so on. Karatina is not, yet, a processing center.

The relationship of one market or market town to another also changes over time. As the case material shows, Kutus is more of a collection center for Karatina than used to be the case. Karatina is now serving more consumers in Nairobi and Mombasa than in the past. As markets are upgraded, they tend to specialize and trade more with each other. This very increase in trade is a benefit to the economy as a whole.

Market development is not a "zero sum game" in which one market gains (or farmers around one market gain) and another loses. There is an overall gain derived from increasing specialization and a larger proportion of crops being marketed. Of course, if one market is upgraded and another not, then those in the hinterland of the former will gain and the other lose--until they persuade their local council (or a group of private sector entrepreneurs) to upgrade their market too. Competition among market places brings its own economic efficiency benefits, just as in any other form of competition. Investments should be made to upgrade markets until the rate of return on the marginal market falls to less than the real cost of capital. The same principal applies to any other link in the marketing chain.

## **6. Benefits to Households in Karatina**

All the households interviewed in Karatina regularly use the new market. Sixty percent use the new market more often than they used the old one. Percentages of households buying the following goods in the new market is as follows:

Fruit	80 percent
Greens	40 percent
Maize	58 percent
Beans	53 percent
Clothes	3 percent
Others	50 percent

Two thirds buy more now from the new market than they did from the old market in 1986. The same proportion believes the quality of produce to be better. Almost ninety percent said that there were no problems with the market.

Some experts have claimed that the market has reduced competition and therefore may have harmed consumers. The new market was built on exactly the same area as the old market. Since a number of covered stall were built for the sale of non-farm goods and the stone and wooden stalls occupy more space than a seller on the ground would occupy, there is less farm produce sales space. The Council admits that fewer people can now sell in the market than used to be the case.

Fewer sellers does not necessarily mean less competition. To have 40 cabbage sellers instead of 50 does not mean that prices will be higher or consumer choices fewer. Sellers of a particular vegetable or fruit, say potatoes or bananas, sell in the same area of the market making it easy for consumers to compare price and quality. And, even if there are fewer sellers than previously, there are still about 1,000 on each market day.

In any case, competition is best measured in terms of level of sales (turnover) as well as numbers of sellers. We were not able to find data on sales now and sales before the new market was built, but everyone we questioned in and around the market, and on the farms, said that the volume of sales was much higher now than in the past. Far more farmers are now sending or taking produce to the market and far more traders and final consumers are coming to the market. The rising market fee revenue is evidence of higher turnover since fees are levied on the amount of produce brought into the market.

## 7. Benefits to Businesses in Karatina

The market is the most important economic activity in the town. Businesses have responded to the market's growth, to the larger numbers of final consumers and other buyers coming to the market, and to the increasing incomes of farmers and traders. In the past year new licenses have been granted to 6 hotels and 25 retailers, and to many other new businesses. All banks report rapidly growing business, with many of the new accounts being market traders, matatu and bus operators and, of course, farmers. The town and its market are even tourist attractions. Every morning and afternoon tour buses stop at the Tourist Lodge for refreshments and a visit to the market.

The market people surveyed were evenly divided between covered and uncovered stallholders and those that traded on the ground. The sample covered traders in fruit, vegetables, maize, beans, clothing and other goods. Twelve of the twenty interviewed traded elsewhere in Karatina in 1986.

One third sell more now than they did in 1986. Two thirds paid same market fees in 1986. For almost two thirds, more than half of their customers came from out of town. One third reported that most of their supplies came from more than 50 km away. About half thought that supplies were more reliable now than in 1986, although in general transport costs had risen. About 90 percent said that they were very happy with the new market....that despite the fact that they reported they were paying fees five times higher now than in 1986.

The other types of businesses contacted included retail, wholesale, repair, petrol, small scale manufacturing and processing, and other businesses. Twenty percent had started new businesses since 1986. Only two said that they had started their business mainly because of the opening on the new market and bus park. One quarter had taken on more staff over the past two years. Seventy percent now have higher revenues than in 1987, a quarter by more than 25 percent. Two thirds are planning to expand their businesses. Over one half reported that their business had improved significantly since the bus park and market were opened. Forty four percent of their employees used the bus park.

## 8. Benefits to Travellers

Twenty one bus drivers were interviewed, Most owned their vehicles, most of them a single small bus, but one owned 6 large buses. All but six operated only locally. The average trip length was 65 km and the average number of trips per day was three. One quarter did not operate from Karatina in 1986. All but one were very pleased with the new bus park. The average number of passengers per day had doubled since the new bus park had opened.

Three quarters of the passengers questioned reported that they now waited for less time than in 1986. Sixty five percent said that the new bus park had "added tremendously to their convenience".

## 9. Conclusions: Karatina as a Model

Karatina is unique. It is at the heart of a very prosperous agricultural region and its town council has outstanding management.

Nevertheless, Karatina does provide a very good model. The outcomes of the project do show that for market town infrastructure investments to be successful they should be made in regions with good development potential, best of all, regions that are already showing signs of strong growth. In addition it is vital that the town be well managed. Karatina had good leadership even before USAID began the Small Towns Project, but even that management had to be trained to carry out feasibility studies and to understand the importance of fiscal responsibility and fully recovering costs. Karatina's treasurer has carefully set aside part of the revenue from the market to repay the Local Government Loans Authority loan.

Not all the participants in the Small Towns Project have exhibited such planning skills and fiscal responsibility. Some have made poor siting and design decisions and have made no arrangements to account separately for revenue from and costs attributable to their infrastructure investment projects.<sup>1</sup>

To summarize our findings, Karatina's market upgrading project has met the criteria set for such projects: the market has a good economic and

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<sup>1</sup> See Matrix Development Consultants, 1988 and Abt Associates, 1988 for evaluations of the Small Towns Shelter and Community Development Project.

financial rates of return. In addition, the bus park could be viable once the administrative problems associated with revenue collection have been overcome; the cost of the roads' improvements should be recoverable from increased property tax revenue; and there have been many "externalities", particularly since horticultural farming in the region has become much more productive. The new market has encouraged greater horticultural production and in so doing increased farm incomes. By providing an alternative to coffee or tea production, an increased reliance on horticultural production has broadened the agricultural base of the region and to a certain extent protected farmers from the cyclical swings of coffee and tea. The interviews with the traders show that the "mud free" market in Karatina, the adjacent bus park, and the upgraded roads are integral components of evolving agricultural marketing systems covering a wide area.

**ANNEX 1**

**LAND VALUE SURVEY**

RENTS FOR COMMERCIAL AND RESIDENTIAL ESTABLISHMENTS

Plot #	Type of Unit	Size of Unit	Rent/Month 1984 before Roads Paved (Ksh)	Rent/Month Presently (Ksh)
269	Duka (Shop)	20 x 40	00	1200
149	Duka	20 x 30	000	2000
		20 x 30	000	2000
151	Duka	20 x 30	00	2000
			00	2000
151	1 Room Residential Behind Duka 6 Units in Total	10 x 11 x 6	50	300
137	Duka	15 x 35	850	2250
127	Duka	25 x 45	750	2100
The average rent on Block 151 is 2000 - 2500 Khs per month for a Duka. The rent for same Duka before road was paved was 700 - 800 Khs per month.				
245	Duka unpaved road	20 x 30	N/A	1200
The average for Duka on unpaved road is 1000 Khs - 1500 Khs as compared to 2000 - 2500 Khs on paved road.				
241	Duka	16 x 20	N/A (built in 1987)	2500
241	Restaurant	16 x 20	N/A	2500
423	Warehouse	30 x 15 (footage may be wrong as it has been approximated by landlord)	2500	3200
233	Duka	15 x 20	1500	1500 (but is worth 3000 Khs/month, tenant is friend of landlord)
Rent for Duka on this street is 2000 - 4000 Khs/month according to landlord of #233.				
179	Standard Bank	20 x 30	7000	8500
Some tenants are charged by according to what they can pay. At Plot 180 next door for example:				

(continued)

RENTS FOR COMMERCIAL AND RESIDENTIAL ESTABLISHMENTS (continued)

Plot #	Type of Unit	Size of Unit	Rent/Month 1984 before Roads Paved (Ksh)	Rent/Month Presently (Ksh)
180	Duka	20 x 30	1500	3500
	Area #75 is tenant purchase scheme. Pay rent towards purchase. Tenant pays rent to Town Council acting as Agents for National Housing Corp.			
137	2 Bedrooms, residential	N/A	850	1100
140-141	2 Bedrooms, residential	N/A		1800 (Some people pay more for same size house as in #137)
363	Duka	15 x 30	1000	3000
	In this area which is across the main tarmac from market, Duka's rent for 800 Khs/month.			
	Area #545 Sight and Service Area. Council gives land, owner builds home.			
545	Residential 2 Bedroom 1 Sitting Room (This is standard apartment) Kitchen	N/A	600	800
	Majority of units in this area are single room units 120 - 200 Khs = 1989; 60 - 80 Khs = 1985.			
113	Clinic	15 x 12	600	2000
	Hotel	10 x 12	200	1500
256	Clinic	50 x 40	3500	6000

LAND VALUE AND BUILDING COSTS

Plot #	Year	Size	# of Stories	Land Cost	Structure (Ksh)	Present Market Value (Ksh)
150	1980	80 x 40	1	40,000 Khs	200,000	650,000 (including land)
149	1968	80 x 40	1	Land donated by Town Council	60,000	650,000 (including land)
151	1960	80 x 40	1	Land donated by Town	30,000	650,000 (including land)
269	1984	40 x 100		80,000		150,000-200,000 just for land
241	1987	40 x 110	3	70,000	3,500,000	4,500,000
233	1969	80 x 30	1	Land donated by Town	80,000	775,000
156	1967	30 x 140	1	Land donated by Town	80,000	1,500,000

**ANNEX 2**

**PHOTOGRAPHS IN AND AROUND THE MARKE**



Figure 1. Market Day



Figure 2. Market Day



Figure 3. Market Day



Figure 4. Market Day



Figure 5. Covered Stalls



Figure 6. The Stone and Wooden Stalls



Figure 7. Traders Outside the Market



Figure 8. Banks and Other Businesses Immediately Around the Market



Figure 9. Overspill Market 200m Away



Figure 10. An Overspill Market



Figure 11. Storage on Vacant Land



Figure 12. Site for a New Market, Opposite the Town Hall



Figure 13. Matatus in the Bus Park

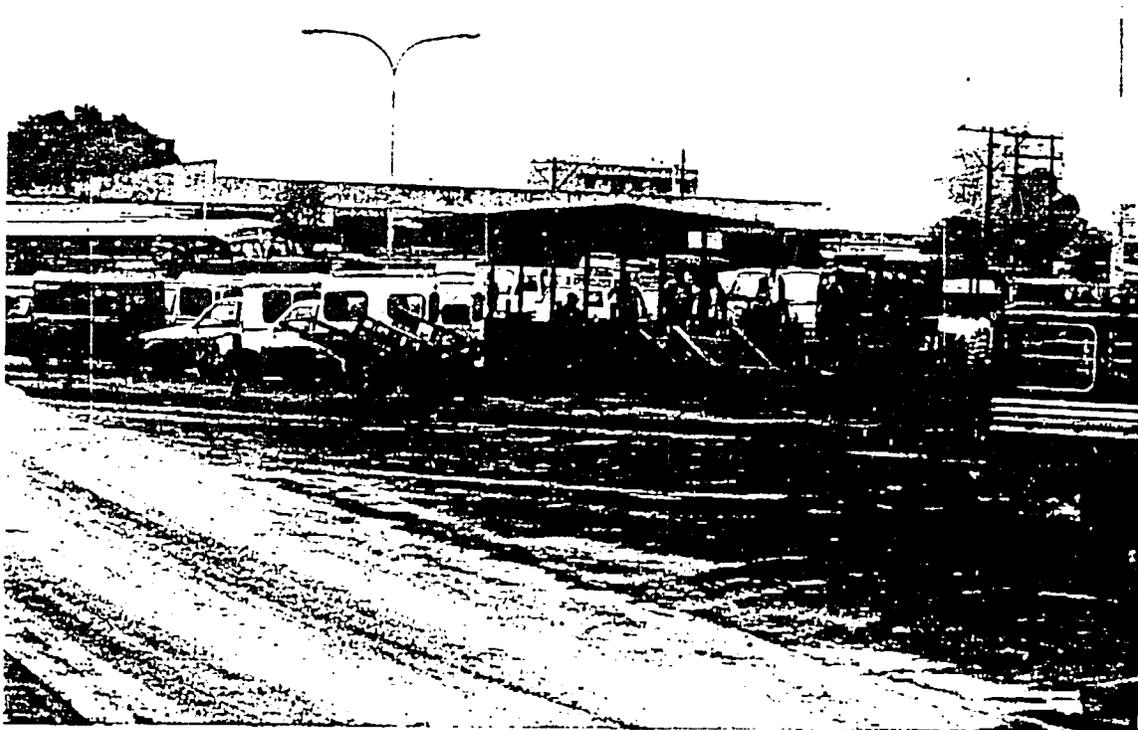


Figure 14. Bus Park - Note Carts to Haul Produce to the Market



Figure 15. The Non-Operational Toll-Booth

**ANNEX 3**

**QUESTIONNAIRES**

KARATINA IMPACT STUDY

CARD 1

Location  
Card Code  
No. Type . Ser. No.

ID:

1				
1	2	3	4	5

Head of Household:

\_\_\_\_\_

Address:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Interviewer Name:

\_\_\_\_\_

Interview Date:

\_\_\_\_\_

6	7	8

Quality of Interview:

Accurate/Reliable.....1  
Fairly Accurate.....2  
Poor.....3

9

Time Interview Began:

\_\_\_\_\_ a.m./p.m.

Time Interview Ended:

\_\_\_\_\_ a.m./p.m.

FARMERS

[1]

1. How large is your farm (or farms if more than one), in acres?

\_\_\_\_\_ acres

10	11	12

2. Do you now own your farm?

Yes.....1

--

No.....2

13

3a. (IF YES TO Q.2) How many acres of your farm do you:

Cultivate yourself

14	15	16

Rent out

--	--	--

Sharecrop out

17	18	19

Leave fallow

20	21	22

--	--	--

23 24 25

3b. (IF NO TO Q.2) How many acres of your farm do you

Rent

--	--	--

Share crop

26	27	28

--	--	--

29 30 31

4. Did you own a farm in 1986?

Yes.....1

--

No.....2

32

5a. (IF YES TO Q.4) How many acres of your farm in 1986 did you:

Cultivate yourself

33	34	35

Rent out

--	--	--

Sharecrop out

36	37	38

Leave fallow

39	40	41

--	--	--

42 43 44

5b. (IF NO TO Q.4) How many acres of your farm in 1986 did you:

Rent

--	--	--

Sharecrop

45	46	47

--	--	--

48 49 50

6. Here are some questions about your crops, comparing the period before 1986 and this past year:

6A. Output and prices. Compare area cultivated, amount marketed and farmgate price in 1989 and 1986.

<u>Crop Code</u>	<u>Area Cultivated</u>	<u>Amount Marketed</u>	<u>Farmgate Price</u>
<input type="text"/> 51	<input type="text"/> 52	<input type="text"/> 53	<input type="text"/> 54
<input type="text"/> 55	<input type="text"/> 56	<input type="text"/> 57	<input type="text"/> 58
<input type="text"/> 59	<input type="text"/> 60	<input type="text"/> 61	<input type="text"/> 62
<input type="text"/> 63	<input type="text"/> 64	<input type="text"/> 65	<input type="text"/> 66
<input type="text"/> 67	<input type="text"/> 68	<input type="text"/> 69	<input type="text"/> 70
<input type="text"/> 71	<input type="text"/> 72	<input type="text"/> 73	<input type="text"/> 74
<input type="text"/> 6	<input type="text"/> 7	<input type="text"/> 8	<input type="text"/> 9
<input type="text"/> 10	<input type="text"/> 11	<input type="text"/> 12	<input type="text"/> 13

CARD 2  

2				
1	2	3	4	5

More=3  
 Same=2  
 Less=1

More=3  
 Same=2  
 Less=1

Higher=3  
 Same=2  
 Lower=1

6B. Input use: compared to 1986, in 1989 did you use more, the same amount or less of the following inputs. (Total for all crops) (circle one for each item).

	<u>More</u>	<u>Same</u>	<u>Less</u>	<u>Not Used</u>
i) Fertilizers (chemical)	1	2	3	4
ii) Manure	1	2	3	4
iii) Pesticides	1	2	3	4
iv) Irrigation	1	2	3	4
v) Improved seeds	1	2	3	4

14  
  
 15  
  
 16  
  
 17  
  
 18

6C. Input Costs: Compared to 1986, did the following inputs cost more, the same per unit, or less in 1989?

	<u>More</u>	<u>Same</u>	<u>Less</u>	
i) Fertilizers (chemical)	1	2	3	<input type="checkbox"/>   19
ii) Manure	1	2	3	<input type="checkbox"/>   20
iii) Pesticides	1	2	3	<input type="checkbox"/>   21
iv) Irrigation	1	2	3	<input type="checkbox"/>   22
v) Improved seeds	1	2	3	<input type="checkbox"/>   23

7. Land. How much is an acre of your land worth now compared with 1986?

1986.....thousand Ksh	<input type="checkbox"/>   <input type="checkbox"/>   <input type="checkbox"/>
1989.....thousand Ksh	<input type="checkbox"/>   <input type="checkbox"/>   <input type="checkbox"/>
	24 25 26
	<input type="checkbox"/>   <input type="checkbox"/>   <input type="checkbox"/>
	27 28 29

8. Transportation costs to Karatina. How do they compare now with 1986?

Higher.....1	
Lower.....2	<input type="checkbox"/>
	30

8a. Take a typical shipment (say your main market crop):

Cost now per unit.....Ksh	<input type="checkbox"/>   <input type="checkbox"/>   <input type="checkbox"/>
Cost 1986 per unit.....Ksh	<input type="checkbox"/>   <input type="checkbox"/>   <input type="checkbox"/>
	31 32 33
	<input type="checkbox"/>   <input type="checkbox"/>   <input type="checkbox"/>
	34 35 36

9. Describe how your main cash crops are marketed:

i) Are most picked up by traders at the farmgate?		
Yes.....1		<input type="checkbox"/>
No.....2		37
ii) Are these public or private traders?		
Public.....1		<input type="checkbox"/>
Private.....2		38
iii) Do the traders bear the transport marketing costs?		
Yes.....1		<input type="checkbox"/>
No.....2		39

9. (Continued)

iv) Do you take some produce to market yourself?

Yes.....1

40

No.....2

v) Do you sell in the new market?

Yes.....1

41

No.....2

vi) Do you sell in another market (in Karatina or elsewhere

Yes.....1

42

No.....2

10A. Do you now go to Karatina to buy food, clothing, tools, etc.?

Yes.....1

43

No.....2

10B. Do you do this more often since the new market opened?

Yes.....1

44

No.....2

10C. Is there a wider range of goods for sale now in Karatina since the market opened?

Yes.....1

45

No.....2

11. Do you or any member of your family have a business in Karatina?

Now: Yes.....1

46

No.....2

In 1986: Yes.....1

47

No.....2

12. Travel. Do your family members travel more often now to Karatina than they used to in 1986?

- Much More.....1
- Little More.....2
- About the Same.....3
- Less.....4

48

13. Has the opening of the new market in Karatina been beneficial to your family?

- Very Beneficial.....1
- Slightly.....2
- Not at all.....3

49

14. Has the opening of the bus park in Karatina been beneficial for your family?

- Very Beneficial.....1
- Slightly.....2
- Not at all.....3

50

15. Family consumption and savings:

15A. What proportion of your family's income goes to satisfy the following needs now, and how was it distributed in 1986?

CARD 3

3				
1	2	3	4	5

	<u>Now</u> <u>Percent</u>	<u>1986</u> <u>Percent</u>
Food	_____	_____
Clothes	_____	_____
Housing	_____	_____
Health	_____	_____
Education	_____	_____
Others (MENTION)	_____	_____
_____	_____	_____
Savings	_____	_____

6	7	8	9
10	11	12	13
14	15	16	17
18	19	20	21
22	23	24	25
26	27	28	29
30	31	32	33

15B. What proportion of the crops that you produce, do you (family) consume yourself?

In 1986..... \_\_\_\_\_ percent

--	--

Now..... \_\_\_\_\_ percent

34	35
----	----

36	37
----	----

16. Family income:

16A. Is your family's income in 1989 higher, about the same or lower than in 1986?

Higher.....1

--

Same.....2

38

Lower.....3

16B. How many members of the family contributed to the family's income?

Now..... \_\_\_\_\_

--

In 1986..... \_\_\_\_\_

39

--

40

16C. What proportion of the family income comes from wage labor in Karatina?

Now..... \_\_\_\_\_

--

In 1986..... \_\_\_\_\_

41

--

42

17. Finally try to have an informal discussion about the impact of the Karatina improvements. Probe for more detail on the meaning of the improvements in Karatina for them. Is the impact direct (i.e., has it helped their farming and other income earning activities directly)? Or has the impact been indirect, through increased prosperity in Karatina raising the demand for their produce? See if they think that the improvements are the cause, or other matters, such as improved roads, or general prosperity.

DIRECT BENEFICIARIES SURVEY

MARKET

[2]

1. Location of stall:

- Back covered.....1
- Back uncovered.....2
- Open on ground.....3

10

2. Produce (pre code major type of product)

11

3. Location before new market:

- Same site.....1
- Another site in Karatina.....2
- Another site elsewhere.....3
- \_\_\_\_\_
- New business.....4

12

4. Do you sell more now than in 1986?

Quantity

- Yes.....1
- No.....2

13

Value

- Yes.....
- No.....2

14

5. Did you pay market fees before 1987? If so, how much per day

\_\_\_\_\_ Ksh

15	16	17

6. What are your fees now?

\_\_\_\_\_ Ksh per day

18	19	20

7. What portion of your customers come from out of town?

- More than half.....1
- Between a quarter and half.....2
- 10 percent to a quarter.....3
- Very few.....4
- None.....5

21

8. From where do you obtain most of your supplies?

Locally.....1

22

Nearby towns (less than 50 km).....2

From other more distant places.....3

9. Compared to 1986 do you pay more, same or less now in transport cost to acquire your supplies?

More.....1

23

Same.....2

Less.....3

10. How satisfied are you now in terms of reliability and timeliness of your supplies compared to 1986?

More satisfied.....1

24

Same.....2

Less satisfied.....3

11. Are you pleased that a new market was constructed?

Yes.....1

25

No.....2

Why? (open ended, but post code answers)

26 27

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DIRECT BENEFICIARIES

BUS PARK

Bus Owner/Manager

[3]

1. How many buses do you own? (based at this bus park)

\_\_\_\_\_ Large

\_\_\_\_\_ Mini

\_\_\_\_\_ Micro

10	11
12	13
14	15

2. Where do you travel to? (please circle)

Yes    No

Nairobi.....1    2

Nearby towns.....1    2

Local (Karatina and vicinity).....1    2

16
17
18

3. Where did you pick up most of passengers prior to 1987?

Nearby to this bus park.....1

Another part of town.....2

Didn't operate then.....3

19

4. How many km is your average trip?

\_\_\_\_\_ km

20	21

5. How many trips to you make a day?

\_\_\_\_\_ trips

22

6. How many passengers did you carry per day before 1987?

\_\_\_\_\_ passengers

23	24

7. How many per day now?

\_\_\_\_\_ passengers

25	26

8. Are you pleased that the new bus park was constructed?

Yes.....1

No.....2

27

Now discuss informally how business has changed since the construction of the bus park. Has revenue increased? have costs fallen? Have profits increased? Are you going to different destinations? Are people coming to Karatina from further away?

DIRECT BENEFICIARIES

BUS PARK

Traveller

[4]

1. How often do you travel by bus?

Daily.....1	<input type="checkbox"/>
Several times a month.....2	10
Not very often.....3	

2. Where do you travel to?

	<u>Yes</u>	<u>No</u>	
Nairobi.....1	1	2	<input type="checkbox"/>
Nearby towns.....1		2	11 <input type="checkbox"/>
Local (Karatina and vicinity).....1		2	12 <input type="checkbox"/>
			13

3. Which bus stop do you use most often?

This bus park.....1	<input type="checkbox"/>
nother (MENTION)	14
_____.....2	

4. On average, how long do you have to wait to catch a bus here?

Less than five minutes.....1	<input type="checkbox"/>
Between 5 and 10 minutes.....2	15
More than 10 minutes.....3	

5. Is this less, the same or more than it was in 1986?

Less.....1	<input type="checkbox"/>
Same.....2	16
More.....3	

6. Would you say this bus park has added to your convenience

Tremendously.....1	<input type="checkbox"/>
Significantly.....2	17
Not much at all.....3	

DIRECT BENEFICIARIES  
BUS PARK

Karatina Business Survey  
[4]

1. Location relative to center of Karatina:

- Right next to market or bus park.....1
- Close (400 m?).....2
- Quite close (500 to 1000 m).....3
- Some distance away.....4
- Long way away but within the town.....5

|  |  
10

2. Type of business: (Please circle one)

- Retail.....1
- Wholesale.....2
- Bank.....3
- Repair.....4
- Petrol.....5
- Small scale manufacturing/processing....6
- Medium to large scale manufacturing/  
processing.....7
- Other (MENTION) \_\_\_\_\_.....8

|  |  
11

2A. Type of product: (Please circle one)

- Fruit and vegetables.....1
- Meat and fish.....2
- Dairy.....3
- Drink.....4
- Consumer durable.....5
- General store.....6
- Agricultural Supplies.....7
- Other (MENTION) \_\_\_\_\_.....8

|  |  
12

3. Were you in the same business in 1986?

- Yes.....1
- No.....2

|  |  
13

4A. (IF ANSWER TO 3 IS NO) Did you start a new business because of the bus park or new market?

- Wholly.....1
- Partly.....2
- Not at all.....3

14

5. (IF ANSWER TO 3 IS YES)

a. How many more new staff have you taken on in the past two years?

15

b. Has your revenue gone up?

- Tremendously (100% plus).....1
- A lot (50 to 100%).....2
- Quite a lot (25 to 50%).....3
- Modestly (5 to 25%).....4
- Stayed the same.....5
- Fallen.....6

16

c. If revenues went up tremendously (Q.5b), why?

---

---

17	18

d. Are you planning to expand your business?

- Yes.....1
- No.....2

19

e. (IF YES IN Q.5d) Why are you planning expansion?

---

---

20	21

f. Has business improved since the opening of the market and bus park?

- Yes.....1
- No.....2

22

6. What proportion of your employees travel by bus and use the bus park?

\_\_\_\_\_ percent

23	24

DIRECT BENEFICIARIES

BUS PARK

Household Survey

[6]

1. Do you use the new market?

Yes.....1

No.....2

10

IF YES, CONTINUE. IF NOT, GO TO Q.7.

2. Do you use the market more now than in 1986?

Yes.....1

No.....2

11

3. What do you buy at the market?

(Classify: potatoes, oranges, etc.)

12 13

4. Do you buy more than you did in 1986?

Yes.....1

No.....2

14

5. Is the quality of produce better now than in 1986?

All of the produce.....1

Some.....2

15

None.....3

6. Are there any problems with the new market? (open ended)

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---

16 17

(END OF QUESTIONS FOR USERS OF NEW MARKET)

7. Do you use other markets?

Yes.....1

No.....2

18

IF YES, CONTINUE. IF NO, END OF QUESTIONS FOR USERS OF NEW MARKET.

8. Would you please compare prices in the new Karatina Market with the other market you use most frequently?

<u>Commodity</u>	<u>Karatina</u>	<u>Other Markets</u>
<input type="text"/> 20	<input type="text"/> <input type="text"/> <input type="text"/> 21 22 23	<input type="text"/> <input type="text"/> <input type="text"/> 24 25 26
<input type="text"/> 27	<input type="text"/> <input type="text"/> <input type="text"/> 28 29 30	<input type="text"/> <input type="text"/> <input type="text"/> 31 32 33
<input type="text"/> 34	<input type="text"/> <input type="text"/> <input type="text"/> 35 36 37	<input type="text"/> <input type="text"/> <input type="text"/> 38 39 40
<input type="text"/> 41	<input type="text"/> <input type="text"/> <input type="text"/> 42 43 44	<input type="text"/> <input type="text"/> <input type="text"/> 45 46 47
<input type="text"/> 48	<input type="text"/> <input type="text"/> <input type="text"/> 49 50 51	<input type="text"/> <input type="text"/> <input type="text"/> 52 53 54
<input type="text"/> 55	<input type="text"/> <input type="text"/> <input type="text"/> 56 57 58	<input type="text"/> <input type="text"/> <input type="text"/> 59 60 61

9. Why do you not use the new market? (open ended, post code)

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---

62 63

10. Which market do you mainly use? (list options, post code)

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---

64

**ANNEX 4**

**DATA FROM THE KARATINA SURVEYS**

## DATA FROM THE KARATINA SURVEYS, AUGUST 1989

### A. Farmers

1. Average size of farm : 3.4 acres. About 47 per cent owned two or less acres.
2. Ninety seven point five per cent owned their farms.
3. Almost all, 94 per cent, cultivate their farms themselves.
4. Almost all also owned these same farms in 1986.
5. Use of inputs: usage in 1989 compared with 1986, percentages:

	more	same	less	not used
fertilizer	49	32	13	4
manure	66	25	25	0
pesticides	58	27	11	1
irrigation	14	11	5	63
improved seeds	57	33	8	0

Totals may not add up to 100 per cent because of a small number of non-responses.

6. Cost of inputs in 1989 compared with 1986, as above:

	more	same	less
fertilizer	92	1	1
manure	49	37	3
pesticides	94	1	1
irrigation	13	17	6

7. Average value of land in 1989: Ksh 96,000 per acre
8. Average value of land in 1986: Ksh 55,000 per acre
9. Ninety seven point five cent thought that transport costs to Karatina are higher now than in 1986.
10. One third have their most of their cash crops picked up by traders.
11. Ninety per cent of these traders are private sector.
12. Seventy per cent take at least some of their produce to market. Almost all of these farmers take their produce to Karatina market.
13. Seventeen per cent take some of their produce to another market.
14. Almost all the farmers go to Karatir to buy consumer goods.
15. Two thirds now go to Karatina more often than they did in 1986.
16. Almost ninety per cent report that a wider range of goods is now for sale in Karatina than before the new market was opened.
17. Eighteen per cent of farm families have businesses in Karatina. The proportion was the same in 1986.

18. Thirty eight per cent of the farm families travel much more often to Karatina than they did in 1986. An additional 18 per cent travel more often.

19. Three quarters reported that the opening of the bus park was very beneficial to their family.

20. It proved difficult to collect data on the breakdown of family expenditure. The average expenditures as a proportion of total family expenditure for those who did respond are as follows:

food	20
clothing	12
housing	1
health	5
education	37
other	8
savings	8

These percentages do not add up to 100. The main reason is that in each case the standard deviations are about equal to the means, resulting in large sampling errors.

21. Family income now and in 1986:

More	46 per cent
Same	15
Less	39

It is of course hard to define or, on the part of the farmers, interpret the meaning on "farm income". Farm income should include the imputed value of subsistence crops. Since that would have been difficult and time consuming for the farmers to calculate, we asked them to refer only to cash income.

22. Farm income and principal crops.

	coffee growers	non coffee growers
income higher	22	13
income down	28	2

Almost all the farmers who had suffered falling incomes grow coffee. Only two farmers who do not grow coffee suffered falling incomes. Almost half the coffee growers now have higher incomes: given falling coffee prices, the rise must have come from the sale of other crops.

The Chi-squared statistic for the above table is significant at the 95 per cent confidence level.

23. On average two members of the family contribute to family income. The number was the same in 1986.

24. For 9 per cent of families, some of the family's income comes from wage labor in Karatina. For most families the proportion of family income represented by wage labor from Karatina is 10 per cent. Both proportions were the same in 1986.

25. Changing cropping, marketing, and price patterns and trends. Figures in numbers of farmers:

	Area cultivated			Amount marketed			Farmgate price		
	Less	Same	More	Less	Same	More	Less	Same	More
Coffee	3	42	14	19	18	16	19	6	1
Tea	0	1	1	0	0	2	0	0	2
Maize	10	45	15	5	10	9	0	5	22
Beans	5	34	3	4	4	4	0	1	22
Tomatoes	5	10	10	5	5	10	3	4	15
Other Veg.	6	29	17	5	11	19	2	4	27
Fruit	1	6	7	1	6	4	1	1	8
Others	12	60	24	6	13	21	4	6	35

The most significant farmgate price reduction was in coffee (yet more had increased than reduced their acreage under coffee). All around acreage and amounts marketed tend to have been increased. However the numbers marketing less coffee now are greater than the numbers marketing more of their coffee.

## B. Market Traders

Interviews took place in the new market.

1. The breakdown of those interviewed is as follows: at the back of the market under covered stalls 33 per cent, at the back with open stalls 39 per cent, and on the ground 28 per cent. By product the breakdown is: fruit 4, greens 5, maize 1, beans 1, clothes 1, others 9.
2. Twelve of the market traders interviewed traded in markets other than the central Karatina market (the old market on the same site) in 1986.
3. Thirty eight per cent of those who did trade in the Karatina market in 1986 now sell more in quantity and value than they did then.
4. Those same traders are now paying much higher fees than they did in 1986.
5. Where the customers come from. The proportion coming from out of town:

	percentage of traders giving the response
more than half	63
between quarter and half	11
10 per cent to one quarter	11
very few	16
none	0

6. Origin of supplies.

	percentage of traders giving the response
locally	63
from over 50 km away	37

7. Transport cost to acquire supplies now compared with 1986.

	percentage of traders giving the response
more	50
same	36
less	14

8. Reliability of supplies now compared with 1986.

more satisfied	64
same	21
less satisfied	14

9. Eighty nine per cent are pleased that the new market was constructed.

### C. Other businesses in Karatina

#### 1. Distance from the center of Karatina.

	percentage of businesses giving the response
right next to the market	31
close to the market	31
500 to 1000m from the market	28
further away	10

#### 2. Type of business

retail	21
wholesale	21
repair	14
petrol	7
small scale manufacturing	17
other	21

#### 3. Principal product

drink	3
consumer durable	3
general store	17
agricultural supplies	21
other	55

#### 4. Seventy nine per cent were in the same business in 1986.

5. Three quarters of those that were in business in 1986 have taken on no new staff since 1986. The others have added from 2 to 9 more staff.

#### 6. Has revenue increased since 1986?

100 per cent plus	8
50 to 99 per cent	4
25 to 50 per cent	15
5 to 25 per cent	40
the same	15
fallen	19

#### 7. Sixty six per cent are planning to expand their businesses.

8. Sixty one per cent reported that business had improved since the market and bus park opened.

9. On average, 44 per cent of the employees of businesses in Karatina come to work by bus and use the new bus park.

### D. Households in Karatina

1. All of the 40 households interviewed use the new market. Two thirds use the new market more often than they used the old market.

2. What households buy in the new market.

	percentage of households giving the response
fruit	80
greens	40
maize	58
beans	53
clothes	3
others	50

3. Seventy seven per cent buy more now from the market than they did in 1986.

4. Quality of produce now compared with 1986.

all of the produce is better	75
some of the produce is better	22
none of the produce is better	3

5. Eighty eight per cent said that there was no problem with the market.

E. Bus Operators

1. Breakdown by type of bus owned.

	percentage of bus operators giving the response
large buses	14
minibuses	33
microbuses	33
do not own a bus	19

2. Destinations

Nairobi	29
Nearby towns	33
Karatina and vicinity	81

3. In 1986 70 per cent picked up their passengers close to the site of the new bus park. One quarter did not operate in 1986.

4. The average trip length is 65 km. However over 40 per cent travel more than 100 km.

5. The average number of trips is 2.7 per day.

6. In 1986, bus operators carried on average 50 passengers per day. The average for 1989 is 77.

7. All but one are pleased that the new bus park was constructed.

F. Passengers

1. How often do you travel by bus?

	percentage of passengers giving the response
daily	25
several times a month	30
not very often	45

2. Usual destinations when they do travel.

Nairobi	43
nearby towns	70
local (Karatina and vicinity)	35

3. All those interviewed use the new bus park more often than any other in Karatina (there are 5 others).

4. Thirty per cent wait from 5 to 10 minutes for a bus; 70 per cent wait more than 10 minutes.

5. Seventy five per cent wait less time now than in 1986.

6. Sixty five per cent said that the new bus park has added "tremendously" to their convenience; the rest thought that it had added "significantly" to their convenience.

## BIBLIOGRAPHY

Abt Associates Inc., "Evaluation: Small Towns Shelter and Community Development Project 615-HG-006 and 615-0212," (Washington, DC) October 1988.

Adler et al., "Economic Appraisal of Transport Project: A Manual with Case Studies," Stock No. JH3429.

Agency for International Development, Kenya Small Towns Shelter and Community Development Project, Redesign Workshop, August 12-13, 1986.

Bendavid-Val, Avrom, Jeanne Downing and Gerry Karaska, "Rural-Urban Dynamics Synthesis Report," Settlement and Resource Systems Analysis, prepared for Agency for International Development (Clark University, Worcester, MA) 1988.

Bendavid-Val, Avrom, Hugh Evans, Blane Lewis, Michael Murray, and Peter Ngau, "Rural-Urban Exchange in Kutus Town and Its Hinterland," Cooperative Agreement on Settlement and Resource System Analysis (Clark University, Worcester, MA) 1988.

Binswanger, H.P., "The Impact of Infrastructure and Financial Institutions on Agricultural Output and Investment in India" (unpublished mimeo).

Carnemark, Curt, J. Biderman, and David Bovet, "Economic Analysis of Rural Roads Projects," Staff Working Paper No. 241, Stock No. WP 0241.

Enders, Michael J., Trip Report: Central Shaba Rural-Urban Linkages Study, RHUDO, May 1983.

Holtzman, John S., "Rapid Reconnaissance Guidelines for Agricultural Marketing and Food Systems Research in Developing Countries," MSU International Development Papers, Working Paper No. 30 (Michigan State University, East Lansing, MI) 1986.

Holtzman, John, Jerry Martin, and Richard Abbott, "Operational Guidelines for Rapid Appraisal," prepared for The Agricultural Marketing Improvement Strategies Project, S&T/RD Project 936-5447, Agency for International Development (Abt Associates, Washington, DC) December 1988.

Lele, Uma. Agriculture and Infrastructure, World Bank, Mimeo, 1987.

Longhurst, Richard (ed.), "Rapid Rural Appraisal: Social Structure and Rural Economy," IDS, Sussex, 1981.

Matrix Development Consultants, "Kenya, Small Towns Shelter and Community Development Project," Draft Final Report (Nairobi, Kenya) May 1988.

Poulin, Roger, "The Impact of Investments in Infrastructure and Market Services on Rural Growth," presented to Conference on Market Towns and Rural Growth: Economic and Social Linkages, Yamoussoukro, Cote d'Ivoire (Development Alternatives, Inc., Washington, DC) 1989.

## BIBLIOGRAPHY (continued)

Research Triangle Institute, "Workshop on Market Towns: Kathmandu, Nepal - September 11-14, 1989," Sponsored by United States Agency for International Development and Ministry of Housing and Physical Planning, His Majesty's Government of Nepal.

Rivkin Associates, "Secondary Towns: Five Case Studies," Prepared for Office of Housing and Urban Programs, Agency for International Development (Washington, D.C.) April 1985.

Rondinelli, Dennis A., "Market Towns and Urban-Rural Linkages," Presented at Eleventh Annual Conference on Housing and Urban Development in Africa, Lilongwe, Malawi (Research Triangle Institute, North Carolina) 1988.

U.S. Agency for International Development, "Housing and Urban Development Digest: East and Southern Africa," Vol. 5, April 1987.

Zaman, Samir, Harry Garnett, Marianne Beauregard, Michael Battaglia, and Theresa Bradley, "The Impact of CARE's Rural Roads and Bridges Program in Bangladesh," prepared for CARE Bangladesh (Abt Associates, Cambridge, MA) June 1989.