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Economic and Social Soundness Analyses for the Kenya Market Development Program

FINAL REPORT

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DAI
Development Alternatives, Inc.

and

IDA
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Economic and Social Soundness Analyses

for the

Kenya Market Development Program

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PREFACE

This report is the product of an intensive six-week field study that was commissioned by USAID/Kenya to develop supporting analyses for the proposed Kenya Market Development Program (KMDP). The KMDP is envisioned as a multi-year program that will combine three forms of assistance to the Government of Kenya, in support of policy changes affecting the marketing of agricultural commodities, and related investment in improved transportation infrastructure. This volume presents economic and social soundness analyses of proposed KMDP interventions. Other design studies that are being undertaken independent of this one have dealt, or will deal, with institutional, financial, and information management issues affecting the program.

The study team was assembled and staffed by Development Alternatives, Inc. (DAI), and was managed from the outset as a joint effort involving Kenyan professionals and U.S.-based consultants. The Institute for Development Anthropology (IDA) furnished Dr. Peter Little under its joint venture Indefinite Quantity Contract with DAI. The team was fortunate in benefiting not only from each individual's strong credentials and relevant experience, but from the guidance of its two clients: USAID/Kenya and the Ministry of Planning and National Development, which is the lead Government of Kenya agency for the KMDP. As a result, we believe that we were able to meet the challenge of a very demanding scope of work, and isolate those aspects of the program that would have the greatest beneficial impact on Kenya's economy.

For most of the six-week study period (mid-May to the end of June 1989), the team was organized internally on the basis of functional specialties, with sub-teams responsible for preparing each of the deliverables called for in the Scope of Work. Sub-team composition, corresponding to authorship of the four major chapters in this document, was as follows:

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We were ably assisted during the fieldwork phase by a group of research assistants, each with in-depth knowledge of the area under study, who were employed to augment the team's interviews and data collection capacity. Special thanks are due to all of them: Gerald King'ori (Nakuru and Nyeri Districts); Stanley Karanja (Kitui District); Hezron Nyang'ito (Kisii District); Jacob Munyasa (Kakamega District); and Kimeli Chepsiror (Uasin Gishu District).

The team is grateful for the excellent cooperation and assistance it received on all fronts, not least from the hundreds of people who were contacted and interviewed at the national and district levels. A list of individuals contacted in their official capacities appears as Appendix 3 to this volume. Many others who are not listed, especially private traders operating in the "informal" market -- whose expansion the team believes to be the key to future development of the country's rural market system-- also provided us with valuable information and insights, and made this study a rewarding one for every member of the team.

Tony Barclay
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GLOSSARY OF TERMS

ARMES	Applied Research, Monitoring and Evaluation System
CBK	Cooperative Bank of Kenya
CBS	Central Bureau of Statistics
chai	Kiswahili term for tea, used colloquially to describe "tips" and similar unauthorized payments to police and other government employees
CSRP	Cereal Sector Reform Program
DAO	District Agricultural Officer
debe	Kishwahili term for a metal tin holding approximately 18 kg of maize
DC	District Commissioner
DDC	District Development Committee
EEC	European Economic Community
FSS	Food Security Stock
GOK	Government of Kenya
Ha	Hectares
IBRD	International Bank for Reconstruction and Development
ICO	International Labor Organization
KCB	Kenya Commercial Bank
KGGCU	Kenya Grain Growers Cooperative Union
KIE	Kenya Industrial Estates
kimbo	Kiswahili term for a small tin (originally containing cooking fat) with capacity for 2 kg of maize
KMDP	Kenya Market Development Program
Kshs	Kenya Shillings

matatu	Kiswahili term for a privately owned small taxi, usually a van or covered pickup truck
MoA	Ministry of Agriculture
MoPND	Ministry of Planning and National Development
MoPW	Ministry of Public Works
MSM	Ministry of Supplies and Marketing
MRP	Minor Roads Program
NCPB	National Cereals and Produce Board
PAM	Policy Analysis Matrix
PMCs	Primary Marketing Centers operated by the National Cereals and Produce Board
posho	Kiswahili term for unsifted maize flour
RARP	Rural Access Roads Program
RHUDO	Regional Housing and Urban Development Office of the U.S. Agency for International Development
RTPCs	Rural Trade and Production Centers
SSE	Small Scale Enterprise
USAID/Kenya	United States Agency for International Development Bilateral Mission to Kenya

CHAPTER 1

BACKGROUND TO THE STUDIES

1.1 INTRODUCTION

This volume contains the results of four studies conducted in May and June of 1989 by Development Alternatives, Inc. (DAI) as part of the design exercise for the proposed Kenya Market Development Program (KMDP). These studies address two principal analytical requirements that must be satisfied prior to program approval by the U.S. Agency for International Development: the economic justification for the program and the social soundness of the interventions that are proposed.[1] The analysis should also prove useful to Government of Kenya (GOK) policy makers who have been engaged in continuous dialogue with USAID during the conceptualization and preliminary planning of the KMDP.

The KMDP is an innovative program, insofar as it seeks to combine support for policy reform measures with investments in the physical infrastructure that is used by market actors who buy, store, ship, and sell agricultural commodities. The program is being designed as a three-year activity (1990-92) with the possibility of an expanded second phase if the results are positive. In most African countries where government policies have been subjected to adjustment or wholesale reform in the 1980s, cash grants or other forms of balance of payments support have been the principal mode of assistance used by bilateral and multilateral donor agencies. In Kenya, a cash grant of $10 million for "non-project assistance" is planned under the KMDP, but will be complemented by $5 million to strengthen GOK institutions concerned with policy and program implementation, and up to $40 million (Kenya shillings equivalent) to upgrade market infrastructure, primarily the country's rural road network. The program's sponsors, USAID and the GOK, believe that the viability of policy reform, and the payoff to be derived from it, will be substantially greater if institutional and infrastructure support are made available within an integrated program framework.

The studies that compose this report address specific elements of the proposed program, which concentrates on two important commodities, maize and beans. Chapters 2 to 5, respectively, focus on **policy reforms** intended to raise efficiency and reduce costs in marketing of those products; the likelihood that the **Kenyan private sector** will respond positively to those reforms; the probable impact of the reforms on different **socio-economic groups**; and the economic justification for investments in the **rural transport network** that would complement the recommended policy changes. Other studies, contracted separately, are addressing financial and institutional issues, and the

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[1] The terms of reference for this assignment are contained in Appendix 2. Also included there is a copy of the letter of introduction provided by the Ministry of Planning and National Development, which was very effective in facilitating the team's work.

requirements for improved market information services and food security planning i Kenya.[2]

By linking policy changes to investment in infrastructure, the KMDP fits wel into the GOK's development strategy for the current plan period (1989-93). Not onl is the government committed in principle to liberalization of the marketing system fo major commodities, particularly maize, but it is consciously directing investments towar secondary towns and market centers in the countryside. The latter thrust, which aim at promoting a better rural-urban balance, is reflected in the designation of Rural Trad and Production Centers (RTPCs) which are targeted for physical infrastructure investment such as marketplaces, electrical power transformers, upgraded water systems, bus parks and other improvements. Although USAID initially contemplated a broad menu of suc investments under the KMDP, it now aims specifically at the transport system, whic has a pivotal function in agricultural marketing, and can readily absorb the plannec investment.

1.2 THE FUNDAMENTAL PROBLEM TO BE ADDRESSED

For the past 50 years, first in colonial times and then after independence, the Government of Kenya has tightly controlled the marketing of the country's main staple food, maize, and, to a lesser extent, the marketing of most other cereals and pulses. Originally intended to provide direct economic support to white settlers in the Kenyan highlands, the system of marketing controls has been maintained for a variety of reasons, with the stabilization of prices to producers and consumers and the assurance of food security cited as the main justifications.

Since independence in 1963, evidence has been mounting that unacceptably high costs are incurred as a result of the GOK's domination of staple food marketing. The current system is based on strict regulation of private trade and direct government participation in the market, using a succession of state cereals and produce marketing boards, now consolidated into one, the National Cereals and Produce Board (NCPB). Distortions and costs to the economy that arise from the current system may be summarized as:

- Excess costs involved in the production, processing and marketing chains for staple food crops which have been attributed to inefficient practices and weak management in the NCPB system, and suppression of the normal functioning of private markets;

- The costs of foregone private sector innovation in production and marketing, traceable to inadequate margins, decreased incentives, and uncertainty both as to what future policies will be, and how they will be interpreted by the civil authorities. Restraint of innovation can be observed at all levels of the grain subsector, from lagging adoption of improved production technologies to low rates of investment in cost-efficient means of storage and transportation; and

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[2] The Financial and Institutional Analysis is being prepared by consultants from a Kenyan firm, KK Consulting Associates. Members of the DAI team briefed KK's team leader in late June and met with him again several times in September. A two-person team from the U.S. Department of Agriculture prepared a report for USAID/Kenya in April-May providing recommendations for improved crop forecasting and market information systems.

- The excess profits earned by some private market channel participants who are able to maneuver around the regulatory system through payment of rents or political influence.

The main question here, as in all debates on key issues in national economic policy, is whether the costs are outweighed by the benefits of this particular set of economic regulations and state expenditures. The GOK is acutely aware of the mushrooming budgetary costs generated by the current marketing policy framework, and is trying to reduce these through a five-year Cereals Sector Reform Programme (CSRP), which was launched in 1988 and is supported principally by the European Economic Community (EEC). The CSRP aims primarily at streamlining the operations and upgrading the efficiency of the NCPB. The difficulties encountered in dismantling the current marketing control system revolve around:

- Legitimate concerns for national food security, in a country which has faced severe food shortages twice in the last decade (1979/80 and 1984/85);

- Built-in inertia and reluctance to change policy approaches which the current national leadership grew up with over the past half a century; and

- The presence of a great number of unanswered questions on how to deal practically with food security and price stabilization, the two most complex agricultural policy issues facing any country.

In Kenya, this complexity is illustrated by the following points, which are explored in more depth in the main chapters of the report:

- **Agro-Ecological complexity:** Kenya has the good fortune to have spatially separate areas of high potential agricultural land due to a combination of elevation and rainfall. These areas produce much of the country's cash crop exports and its food surpluses, which traditionally have been traded to lower, drier areas. Kenya's complex agricultural geography lends itself to inter-regional trade to maximize productivity and comparative advantage. Yet this natural and beneficial trade is being hampered by current policy;

- **Technological complexity:** Numerous technological options for crop production, cereals harvesting, storage, and transportation are available within the Kenyan agricultural economy. The range of options is influenced by the national policy choices made. There are equally serious issues involving grain quality, taste, and processing characteristics which influence the choice of crops to be promoted and the extent to which imports can be substituted for domestic production in a balanced approach to food security;

- **Institutional complexity:** The GOK has a 50-year record of continuity in the regulation of the cereals trade. It is neither easy nor prudent to dismantle this system precipitously, yet experience elsewhere shows that piecemeal, partial liberalization is almost as difficult to accomplish. Looming, unanswered questions include: What will the reduced role be for the NCPB? What are the institutional and legal consequences of its altered status?;

- **Economic complexity:** Forecasting in any economic system which has two major sources of continuous uncertainty (domestic weather fluctuations and shifts in world market prices for substitutable commodities) is a risky business at best. In Kenya this is further complicated by a complex economy, a persistent lack of reliable market and production information, and a shortage of trained Kenyan policy analysts; and

- **Political complexity:** Perhaps most importantly in the short run, the political decision making process on this topic is a unique, sub-optimal combination of public policy which has outlived its original purpose, and entrenched interests that benefit from the current regulated system. Change in the face of these forces requires exceptional, long-term vision and leadership, supported by clear and pragmatic policy analysis.

The members of the study team recognized at the outset that there are no easy answers to these questions, and that facile application of pre-determined solutions will not achieve the desired results in the longer run. Good policy reform always takes time; it must be fine-tuned along the way; and it must be consistent with underlying socio-economic realities in order to reflect the long-range interests of the population. The team has attempted to respect these realities in its analysis and recommendations throughout the report.

1.3 METHODOLOGY AND TIMETABLE FOR THE STUDY

A study of this kind, conducted over an intensive six-week period, cannot hope to break significant new ground by collecting and analyzing large quantities of primary data. The scope of work emphasized this point, and directed the team to draw to the maximum extent feasible on the large body of secondary data and published reports on the subject of market development in Kenya. Fieldwork in the rural areas would inevitably be brief and intensive, using "rapid reconnaissance" methods to obtain data from key informant interviews, direct observations of marketing behavior, and review of statistical information collected by GOK officers at the district level.

Given the orientation of the KMDP toward strengthening private sector market channels, it was important for the team to examine current market behavior in "informal" channels, i.e. those operating outside of, and parallel to, the official monopoly/monopsony of the NCPB. Fortunately, several earlier studies (especially the work of Schmidt in the late 1970s[3]) provided a baseline on the conduct and relative magnitude of the informal trade, so that the team was able to judge the extent to which the trade had evolved and diversified in recent years. In addition to traders, the fieldwork also proved critical for gathering data on perceptions and current behavior of other actors in key industries along the marketing chain -- input suppliers, millers, and transporters -- whose roles would be expected to change in a liberalized market system.

Selection of the sample districts was undertaken prior to the team's arrival by the GOK's Steering Committee for the KMDP, which is chaired by the Chief Planning Officer in the Ministry of Planning and National Development. USAID and the Steering Committee decided early on to focus initial program interventions on six representative rural districts. The original list underwent some modifications, but was finalized in April 1989 to include two districts in Rift Valley Province, **Uasin Gishu** and Nakuru, both significant surplus producers of maize; one district each in Nyanza and Western Provinces, **Kisii** and **Kakamega**, both densely settled smallholder areas; and one each in Central and Eastern Provinces, Nyeri and **Kitul.**[4] The latter two are maize-importing districts, though for different reasons: Nyeri because of specialization in high-value cash crops, and Kitui because it is semi-arid and generally unsuited to maize production.

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[3] Listed in the Bibliography as Schmidt 1979. All references in the text of the report use this method of citation.

[4] See Figure 2.1 for a map of Kenya that shows overall maize production patterns on a district basis, and identifies the six districts that were included in the field study.

The study team was large, multidisciplinary, and well balanced among the key subjects required for the four analyses: agricultural economics, food marketing, social anthropology, transport economics, and rural enterprise development. The work plan, which was developed before the full team arrived in Kenya, called for two distinct organizational sets:

- A functional sub-team was formed for each of the deliverables called for in the contract, and a principal author was identified for each chapter.[5] These sub-teams devoted the first week (22-27 May) to preparing detailed outlines, interviewing GOK officials and private sector representatives in Nairobi, and laying out information needs for fieldwork in the districts;

- For the fieldwork phase, lasting two and a half weeks (through 13 June), the team broke into two geographic sub-teams, each covering three districts. Each functional sub-team was represented by at least one person in each group; and

- The functional sub-teams reassembled in Nairobi for the analysis and write-up phase, which lasted from 14 to 29 June.

To augment the capacity of the geographic sub-teams, which could devote only four or five working days to each district, arrangements were made to employ one research assistant for a two-week period in each of the six districts. The research assistants accompanied team members during initial interviews and then followed up with additional data collection (especially interviews with private traders, millers, and transporters) after the team moved on to the next district.

Complete drafts of all chapters in this volume were reviewed by USAID/Kenya in late June, and a revised draft report was submitted at the end of July. In September, half of the DAI team (Barclay, Wilcock, Odhiambo, Kariungi, Mintz, and Anyango) reassembled in Nairobi. They met as a group, and individually, with members of the GOK Steering Committee, and then revised all of the chapters, with Chapter 2 undergoing substantial expansion.

This report has been prepared with a view to balancing the interests of a potentially diverse audience. There is a modest amount of cross-referencing between chapters, which is inevitable given the nature of the problems being addressed. While the document is best read and understood in its entirety, the individual chapters can also be read as stand-alone items by subject matter specialists. The latter feature anticipates the type of scrutiny that the KMDP will undergo when the full program -- incorporating the results of other design studies -- is submitted for approval by AID/Washington and policy makers within the GOK.

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[5] For Chapter 2, which was written by the agricultural economics/marketing sub-team, Dr. David Wilcock served as primary author, with specific sections drafted by Dr. Mark Odhiambo, Dr. David Hughes, and Felix Kariungi. For Chapter 3, William Grant was primary author, assisted by Dr. Caleb Wangia. Chapter 4 was drafted by Dr. Peter Little, with assistance from Dr. Carolyn Barnes. Dr. Samuel Mintz coordinated preparation of Chapter 5, with contributions from Dr. William Dodge and Gordon Anyango.

CHAPTER 2

MAIZE AND BEAN MARKETING REFORM IN KENYA: AN ECONOMIC ANALYSIS OF KMDP

2.1 INTRODUCTION

This chapter synthesizes findings from a number of previous studies on maize and bean marketing in Kenya which have been conducted over the past decade. These are combined with the study team's own field observations of the current maize and beans marketing situation in rural Kenya (and other sources of data) to focus on defining a constructive role which may be played by USAID, through the Kenya Market Development Program (KMDP), in assisting the GOK in pursuing the marketing reform process. The section thus concentrates on two interlocking sets of information: national level policy issues involving the current and future structure and operation of the Kenya-wide maize and bean markets, and a more in-depth examination of the same issues at the level of six of Kenya's 42 administrative districts: Kakamega, Kisii, Kitui, Nakuru, Nyeri, and Uasin Gishu. Six topics are covered in this chapter:

- An overview of national patterns in maize and bean production and marketing, emphasizing a synthesis of results from other studies and identification of key trends and issues;
- A portrait of the structure and performance of the maize and bean trade in the six sample districts visited by the study team, with a major focus on the costs which are imposed on the marketing system by the current policy restrictions;
- An analysis of the national marketing policy issues which are the subject of current debate and reform efforts and the potential areas of focus for the proposed KMDP;
- An estimation of some of the potential savings which could accrue from the proposed package of policy reform measures;
- A description of the likely distribution of savings from market reform measures to producers, consumers and traders; and
- A summary economic analysis of the costs and benefits to the overall KMD program.

2.2 AN OVERVIEW OF THE NATIONAL MARKETING SYSTEM

The maize production and marketing systems[1] in Kenya are quite complex, and understanding the potential impact of major system reforms requires a basic analysis of production and consumption patterns across the country. The spatial and agro-ecological dimensions of Kenyan maize production and consumption help both in identifying the varied roles played by the major actors in the marketing system, and also in understanding how Kenya's great potential for internal agricultural trade is severely constrained by current policy, leading to sizeable economic loses. Thus, the stage is set here for further analysis by summarizing issues involved in:

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[1] The marketing of dry beans is covered in Section 2.2.3 of this Chapter.

- The spatial and temporal dimensions of maize production and consumption;
- The structure, conduct and performance of both the "formal" and "informal" parts of the national marketing system; and
- The varied roles played by major actors participating in the vertical marketing channels.

2.2.1 The Structure of Maize Production in Kenya

Detailed descriptions of maize production in Kenya can be found in studies by Maritim (1982), Ackello-Ogutu and Odhiambo (1986) and Acland (1971). Precise statistics on the area under maize and total production are hard to come by. Ministry of Agriculture estimates give the area under maize to be about 1.2 million hectares in 1987, a fairly typical year, with total production standing at about 30 million bags or 2.7 million tons (Table 2.1). Being the staple food crop, maize is widely grown in most parts of the country where arable agriculture is practiced. Topography and altitude (through their moderating influence on the country's climate) and farm size (or type) determine the distribution of maize production and the political economy of the national maize industry.

Rainfall and Elevation

Rainfall in most parts of Kenya comes in two distinct seasons. The long rainy season occurs between February and June, and is more reliable and widespread than the short rainy season, which comes between September and December. In most middle elevation production zones, maize can be grown twice a year, coinciding with the two rainy seasons. Because of the two seasons, maize is harvested almost year round in some part of Kenya, although very little is harvested during the April-June period (see Figure 2.2). Maize planted during the long rains accounts for about 70-80 percent of the total annual production with the balance produced during the short season. Thus, failure of the long rains spells disaster for Kenyan maize production.

TABLE 2.1

MAIZE PRODUCTION IN KENYA, 1979-87

Year	Area (1000 ha)	Yield/Ha Bags	Yield/Ha MT	Production Million Bags	Production Million MT '000
1979/80	839	21	1.93	18.0	1620
1980/81	989	18	1.62	17.8	1604
1981/82	1208	16	1.46	19.7	1768
1982/83	1236	21	1.89	27.8	2340
1983/84	1200	19	1.73	26.0	2070
1984/85	1130	14	1.25	15.7	1411
1985/85	1240	18	1.67	29.0	2074
1986/87	1220	25	2.21	30.0	2696

Source: GOK/MOA

The crucial long rain harvest is divided into two time periods. In the middle elevation parts of Central, Eastern, Rift, Nyanza, and Western Provinces, shorter cycle maize is harvested in July through September, mostly by smallholders. (About two-thirds of these farms will then replant and harvest a short rains maize crop in the December through February period). The second part of the long rain harvest comes in the higher elevation areas of Western and Rift Valley Provinces where larger farms (using hybrid maize which matures after 9 to 11 months due to the altitude) harvest one crop in the October through December period Reflecting its colonial heritage in service of European large farms, this is when the NCPB buys a majority of its annual supplies, using its facilities on or near the main branches of Kenya's up-country rail lines running through these highland areas.

Farm Size and Dual Production Systems

Maize production in Kenya is characterized dual production systems, and by the contiguous existence of small and large-scale farms and production technologies, with the definition of size categories varying from one district to another. For example, in districts of former large-scale European farms, like Uasin Gishu, Trans Nzoia and Nakuru, small-scale farms are those between 1 and 20 hectares (ha) in size. However, in the districts with traditional settlements and heavy population densities, such as Kisii and Kakamega, farms are so small that MOA officials in these districts refer to farms 8 ha and above as large farms.

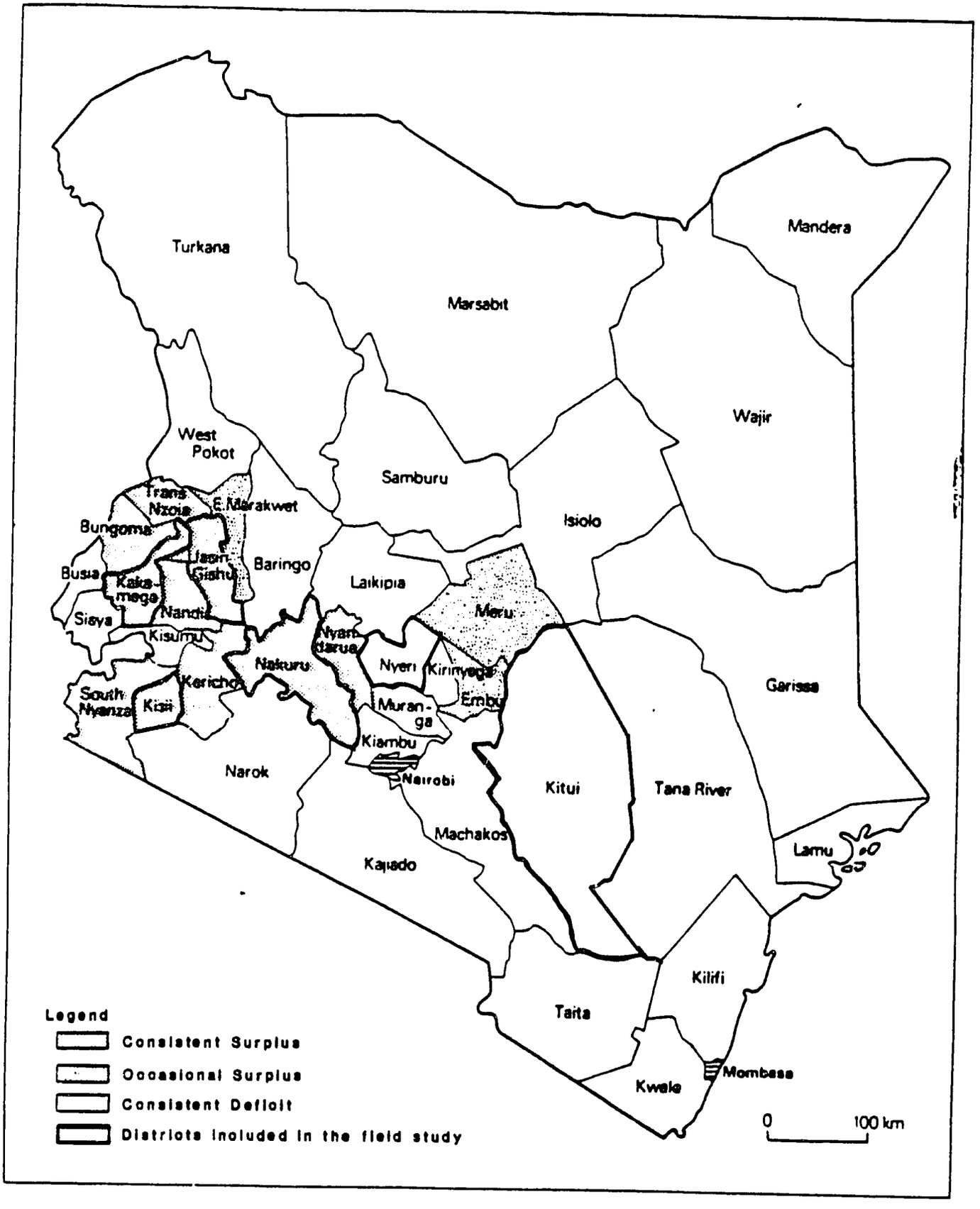
Smaller farms (those under 8 ha), account for 75 percent of the total annual maize production in the country. Most of the small-scale producers are subsistence farmers; thus, a majority of the maize produced on the small-scale farms in a normal year remains on the farm for home consumption. Virtually all large-scale farmers grow maize only in the long rains. In the small-scale sector it is estimated that about 95 percent of the farmers grow maize during the long rains. However, only about 65 percent of the small scale farmers grow maize during the short rainy season (Ackello-Ogutu and Odhiambo, 1986).

On a regional basis, it is estimated that Western Kenya accounts for about 60 percent of the total smallholder maize production and marketed surplus. Maize surplus districts are shown on the map in Figure 2.1, with most found in Rift Valley, Western and Nyanza Provinces. Eastern Kenya, made up of Central and Eastern Provinces, produces about 40 percent of smallholder maize. Most of the districts in Central Province (Nyeri, Murangia, Kiambu and Kirinyaga), with high potential for maize production, produce little marketable surplus, largely because farmers in these districts concentrate on high value cash crops like tea and coffee. Eastern Province is largely a deficit area with Machakos and Kitui being perennial deficit districts.

Embu and Meru Districts are major maize producing districts in Eastern Province but even here, the marketed surplus is quite limited. Maize production in Coast Province takes place under smallholder conditions but is negligible in its impact on national totals.

Large-scale maize production in Kenya is mainly concentrated in Rift Valley Province, especially in the mixed farming districts of Trans Nzoia, Uasin Gishu and Nakuru. These three districts are very important surplus maize producers and account for about 95 percent of the total maize production from large-scale farms, with scattered pockets of large-scale maize production in other districts. No appreciable large-scale maize production takes place in the Eastern region. The dual nature of maize production is reflected in the widespread use of sophisticated production technologies on larger farms, including mechanical land preparation, herbicides, and virtually 100 percent

Figure 2.1
Map of Kenya's Maize Surplus and Deficit Districts



use of hybrid seed. While most mid-size farms[2] produce some maize for home consumption, all larger farms evaluate the growing of maize as a cash crop, and this fact is critical to anticipating supply response to production under freer market conditions.

Summary Points on Kenyan Maize Production

There are important summary patterns, taking account of rainfall, elevation, and farm size, which emerge from this brief examination of Kenyan maize production:

TABLE 2.2

SUMMARY OF KENYA MAIZE HARVEST AND NCPB PURCHASES BY KEY AGRO-ECOLOGICAL VARIABLES

Rainy Season	Elevation	Typical Farm Type	Harvest Time Period	Harvest Percent Kenya Total	Percent NCPB Purchases
Long	Middle	Small	July-Sept	50 %	15-20 %
Long*	High	Larger	Oct.-Dec.	25 %	55-60 %
Short	Middle	Small	Jan.-March	25 %	20-25 %

* Note: The long rains extend through much of the year in higher altitude zones.

The key pattern above is that the higher elevation, larger farm districts of Kenya (former areas of predominant European settlement) produce much more marketable maize surplus which makes up a disproportionate percentage of maize purchased by the NCPB. This is reflected in Figure 2.2 on the next page, where it is clear that with a month to two lag (farm sales begin at least one month after crops are initially cut and stocked in the fields due to drying and shelling time), the NCPB is buying most of its maize from the second peak in the monthly distribution of national harvests, which comes in October through December from the higher elevation, larger farm production districts. The same pattern, in a slightly different form, is reflected in the figures below:

TABLE 2.3

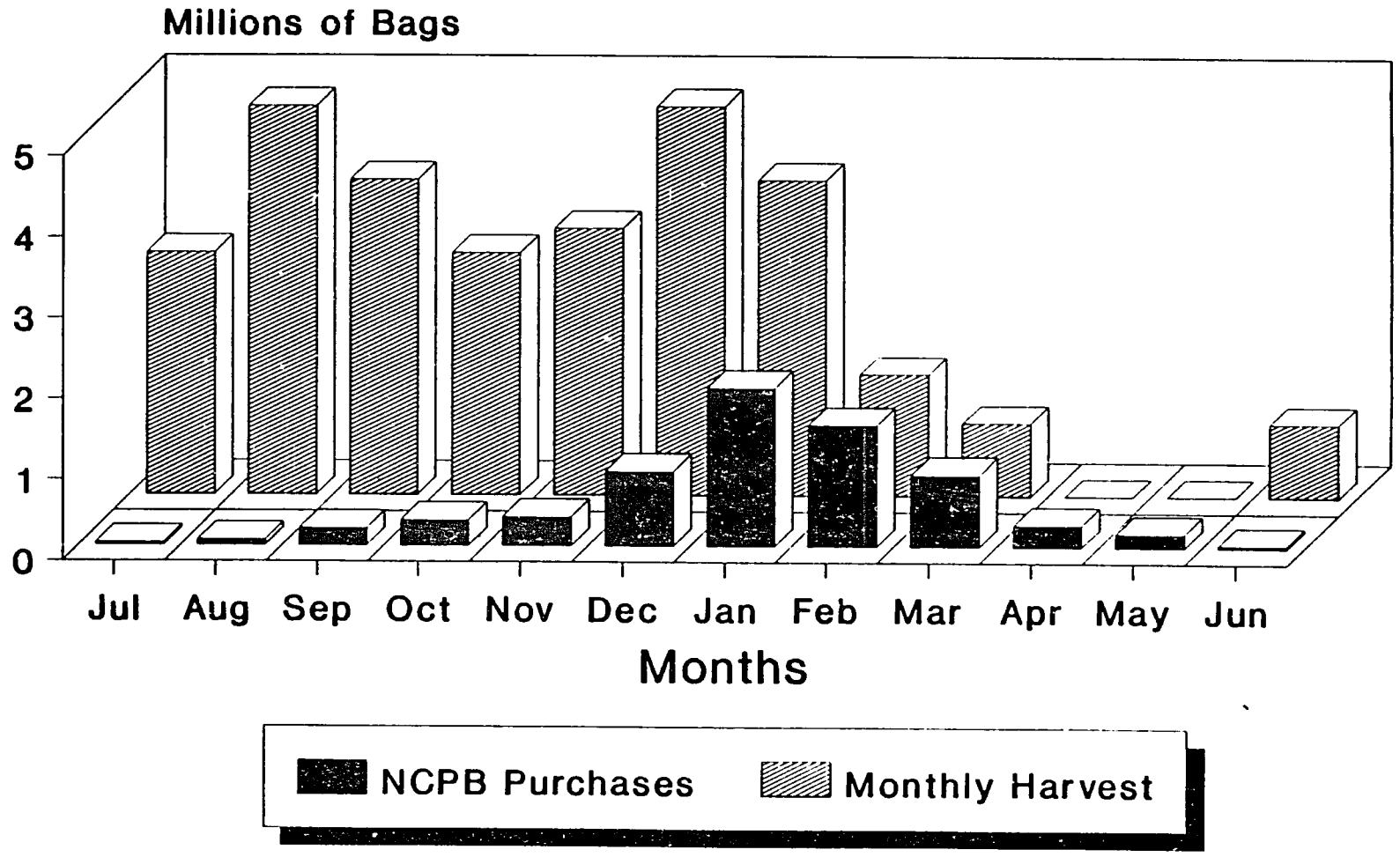
PERCENT HARVEST BY PROVINCE AND HARVEST PERIOD

Harvest Period	Percent Harvest by Province: Central, Coast, East & Nyanza	Percent Harvest by Province: Rift Valley and Western	Percent of Annual Harvest	Percent of NCPB Purchases
July-September	68 %	32 %	39 %	9 %
November-January	26 %	74 %	40 %	65 %

Source: Calculated from NCPB and MOA Statistics

[2] In areas with large farms, small farms are those up to 20 ha, mid-size to 40 ha, and large are those over 40 ha.

FIGURE 2.2
KENYA MAIZE
MONTHLY HARVEST AND NCPB PURCHASES



NCPB AND MOA DATA

Compared to other countries in Africa, Kenyan maize production and food security have the following unique characteristics:

- The maize harvest takes place over a greater part of the year than the staple cereals harvest in other countries. This is due to the harvest coming from a wide range of agro-ecological conditions. This implies **greater security from crop failure** than in most other parts of Africa dependent on cereals consumption;[3]

- The geography of the country's maize production and consumption provides ideal **conditions for internal trade** in agricultural goods based on regional comparative advantage. This potential and Kenya's history of trade between various highland and dryland zones has been hampered by GOK restrictions on cereals and bean trade; and

- The existence of Kenya's commercially-oriented, larger-scale farm zones provides a key to the **potential aggregate supply response** to alternative scenarios under market reform programs.

2.2.2 Structure, Conduct and Performance of the National Maize Marketing System

Maize marketing in Kenya has been the subject of many studies in the past 15 years, the most notable including those by Hesselmark and Lorenzl (1976), Hesselmark (1977), Kariungi (1976), Ireri (1977), Schmidt (1979), Maritim (1982), Booker/Githongo (1988), Ackello-Ogutu and Odhiambo (1986), and Technosynesis/EEC (1988). A thorough review of the structure, conduct and performance of the official (formal) marketing system is given in the Booker/Githongo and EEC reports cited above. Schmidt's study, based on extensive field work, gives the most detailed review of the structure, conduct and performance of the "informal" or parallel marketing system.

It is widely recognized that maize marketing in Kenya consists of two distinct systems operating side by side. The first system is normally referred to as the "formal" or the "official" marketing system and is managed by the National Cereals and Produce Board (NCPB). The official marketing system has had a long history of rigid government control of pricing and distribution. The second system is usually referred to as the "informal" or the "unofficial" marketing system. In many respects the two systems are interdependent; and, moreover, it is likely that they will become increasingly so as the process of market reform continues.

The Formal Marketing System

The formal maize marketing system in Kenya essentially involves NCPB purchasing of part of the annual maize harvest which is then sold to (a) large mills for the production of sifted flour for sale to consumers or (b) is sold as grain to wholesalers or directly to consumers in urban or other deficit areas. This system or marketing channel is by law monopolized by the NCPB, established as a parastatal under the Kenya Maize Marketing Act of 1962 (revised 1965 and 1972) and the National Cereals and Produce Board Act of 1985. The NCPB is empowered by the GOK to handle all maize "officially" purchased and sold, and to import or export maize as the need may arise. Maize movement is regulated and limited by law; until a few years ago it was illegal to transport more than just a few kilos without a permit. Since 1987, the limit

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[3] This can be confirmed by comparing the coefficients of variation in estimated national cereals production for countries in different parts of the continent.

has been increased to 10 bags per person anywhere in Kenya for "personal use" but, as we will see, this recent limited freedom of movement is widely misunderstood or ignored. Theoretically, moving larger quantities can only be done when accompanied by a movement permit issued by the Board.

The history of government control over maize marketing in Kenya dates back to colonial times when such controls were initially instituted to provide a guaranteed market for European settlers who grew maize on a large scale as a cash crop, mostly for export. During the Second World War, the Maize Control Board (one of the predecessors of the NCPB) was formed and compulsory maize delivery to the Board was instituted, ostensibly to increase marketed maize to support the war effort. After the war the Maize Board underwent some minor changes but continued to function to provide European settlers guaranteed outlets and fixed prices. At independence in 1963, the new Kenya Government inherited and retained most of the control mechanisms in the maize marketing system. In 1979, the Maize Board was amalgamated with the Wheat Board of Kenya to form the NCPB which now oversees the marketing of maize and wheat plus other grains and legumes (often lumped together as "agricultural produce").

NCPB activities are supposed to be oriented towards meeting the following GOK intervention policy objectives, as summarized by Ackello-Ogutu and Odhiambo (1986) and World Bank (1982):

- To ensure the availability of adequate food supplies to meet domestic demand and prevent malnutrition;
- To stabilize maize supplies in both surplus and deficit areas;
- To stabilize incomes through control of producer and consumer prices;
- To provide a secure outlet for smallholder production and prevent possible exploitation of smallholders by private traders;
- To maintain strategic maize reserves; and
- To control grain smuggling to neighboring deficit countries.

Critics of the NCPB have pointed out that the Board has had limited success in achieving these objectives, mainly because the current forms of market controls were designed for a different set of objectives (World Bank 1982); because concrete implementation measures to certain objectives have never been formulated; and because there are inherent conflicts among these objectives and with the normal governmental responsibility for fiscal restraint. The price and market control mechanisms were designed to benefit large-scale farmers who marketed large quantities of maize and who were concentrated in higher elevation, high potential areas. However, today the Board is also expected theoretically to assist small producers in lower potential areas who formerly were left to fend for themselves in the informal marketing channel.

Despite many criticisms, the NCPB still handles a significant portion of the maize produced in the country, particularly when compared to the amounts handled by cereals boards in other countries. After allowance has been made for the maize retained by farmers for home consumption (approximately 50 percent of production in an average year), the NCPB handles about 45 percent of all commercially traded maize in the country. A summary of NCPB buying, selling and stock positions for both white and yellow maize (imported for drought-relief purposes) as contained in Table 2.4.

Since the official marketing channel is monopolized by the NCPB, participants in the marketing chain are quite limited in number. The NCPB primarily buys and resells maize to major mills or to wholesalers and consumers in deficit areas. The Board has a network of depots in both surplus and deficit areas to facilitate its buying and selling functions. The NCPB buys maize by working through a system of:

- **Primary Marketing Centers (PMCs)** which are small units operated by Board permanent staff, assisted by hired temporary staff. The PMCs are mainly situated in maize surplus areas where smaller-scale producers may not be able to make direct deliveries to the Board depots. By 1987 there were 575 PMCs (originally known as "buying centers") throughout the country. However, following recommendations of the EEC Reorganization study (1988), the number of these centers has been drastically reduced since many PMCs were seen to be inefficient, mismanaged and under-utilized.

- **Buying agents.** These are traders who are licensed by the NCPB to buy maize on its behalf from farmers. Currently they are paid a Kshs. 6.50 commission per bag (equivalent to approximately US$ 0.32) for assembling, storing and bulking maize from scattered producers, paying the farmers, and transporting the maize to the nearest NCPB depot. About three percent of NCPB maize procurement nationwide is through buying agents who, being in trade already, are generally viewed as more cost effective in maize marketing than PMCs and Cooperatives. (In some districts, such as Kisii, agents buy a majority of the maize purchased);

- **Cooperative Societies and the KGGCU.** Recently, following the closure of many of the PMCs operated by the Board, existing cooperative societies were thought to be a better replacement especially in areas where it was felt private buying agents would exploit farmers.

  However, as it turned out most of the societies were ill-equipped for this task in terms of management, finance and storage (Odhiambo, 1988). The Kenya Grain Growers Cooperative Union (KGGCU, the dominant farm input supply company) was also allowed to purchase maize from farmers and sell straight to the mills in the 1988/89 season, as part of the CSRP liberalization program, but this produced negligible results; and

- **Farmers' (and Traders') direct delivery to NCPB depots.** Farmers with large quantities of maize are allowed to make direct deliveries to the board's depots provided they have the required minimum, which can be up to 30 bags. The farmers are reimbursed transport and insecticide costs, but are not paid the commission normally received by the private and cooperative agents.

TABLE 2.4

NCPB MAIZE TRANSACTIONS, 1984-1989 ('000 Bags)

		NCPB Operating Year				
		84/85	85/86	86/87	87/88	88/89*
OPENING STOCK:	WHITE	3,977	1,812	7,470	11,180	9,572
	YELLOW	6	2,822	2,059	336	131
PURCHASE:	WHITE	4,036	9,323	7,693	5,369	6,866
	YELLOW	2,816	6	4	121	2
SALES:	WHITE	6,201	3,656	1,844	5,258	4,480
	YELLOW	0	494	656	347	1
EXPORTS/ LOSSES:	WHITE	0	9	2,139	1,719	1,690
	YELLOW	0	235	1,071	(21)	26
CLOSING STOCK:	WHITE	1,812	7,470	11,180	9,572	10,268
	YELLOW	2,822	2,059	336	131	106

Source: NCPB Data

* Note: Data for the 1988/89 year are complete through the first week of June, 1989. Thus, the last 3 weeks of the year are not included.

As indicated above, the relative importance of different Board buying mechanisms varies substantially from district to district, with District Development Committees currently having some say in terms of whether buying agents will be allowed. As an example, the following are the proportions of NCPB purchases in the North Rift Valley Board area in the 1988/89 buying season (of a total of 3.3 million bags or about 50 percent of total NCPB purchases):

	Percent 88/89 Purchases:
Primary Marketing Centers:	21 %
Buying Agents:	3
Cooperatives:	20
Direct Deliveries:	53

The "secondary" part of the formal maize marketing channel involves the sale of NCPB stocks to traders, consumers and registered millers at government-controlled prices. The large millers are found in the major urban centers such as Nairobi, Mombasa, Nakuru, Eldoret and Kisumu, and they sell to numerous wholesalers and retailers located mostly in major urban areas and rural deficit area market towns.

Issues in the Formal Marketing System

Formal maize marketing is dominated by the NCPB and the millers and flour traders. There are three issue areas which are of concern in analyzing the participation of the GOK in maize marketing:

- The policy or legal foundations of state participation;
- Efficiency and cost implications of Board marketing; and
- Efficiency and cost implications for other participants in the overall maize marketing system.

Here we briefly examine the first two of the above points; impacts of state control on the rest of the marketing system are explored in later sections of this chapter.

Policies essential to a heavily regulated maize trade. The monopoly and monopsony powers of the NCPB, as those in other African countries, have their foundation in national law. In the case of Kenya there are several fairly extreme aspects, including legal provisions which essentially make maize the property of the state once it has been harvested. However, these legal foundations for extensive GOK participation as the dominant wholesaler would not amount to much if it were not for two other key supporting policies: movement controls and the cereals pricing policy.

Movement controls on agricultural commodities are enforced through the use of movement permits that must accompany any shipment of an "officially scheduled" commodity being moved. There are three types of movement permits, all issued by the NCPB:

- A **farm/market to depot** movement permit which is used for grain moving from the farms or agents' stores to the nearest NCPB depot;
- A **depot to depot** permit is used for movement of grain from one NCPB depot to another or from a buying center to the NCPB depot; and
- A **general movement** permit which is used to move grain from NCPB depot to any other specified destination, or from a mill to any specified destination in the case of milled products, or to cover movement of commodities not going to the NCPB or one of the larger mills. (There is now a nominal fee of Kshs 20 per permit for this category; the other two types of permit are still free of charge).

In the team's field work, a number of conclusions were reached regarding the operation of the permit system in practice:

- Permits can be very time-consuming and costly to obtain for many private sector traders;
- Obtaining permits to move maize on contract within the "formal channels" (i.e., to the Board, the mills, or from the Board for resale in certain deficit areas) was not particularly difficult. However, obtaining a general permit (which is what the market-to-market private wholesale trade would need) is much more difficult

and, when accomplished, often subject to some type of "rent" or similar, unauthorized transaction cost;

- Not having a movement permit subjects traders to arrest and seizure of merchandise, but also presents opportunities to pay "rent" at the many roadblocks which dot the Kenyan countryside. This is apparently done frequently enough that there are fairly standard levels which are accepted by both sides to the transaction, thus obviating the need for the permit.

- The CSRP reform program has an intended schedule of gradual increases in the amount of maize private parties can move without restriction. Now the legal limit is 10 bags (900 kg) that can move anywhere in Kenya without a permit. It is explained that this is intended to allow producers to transport maize to their families or home areas for consumption (and not necessarily to encourage small scale private trade). The CSRP implementation agreement states that this ceiling may be increased in the future, but there is no agreed timetable.

Price regulation. The gazetted official prices for maize as it moves through the marketing system from farm to mill to consumer apply within one July-June crop year, and they are largely undifferentiated seasonally or spatially. In general, Kenya's maize producer price has been increased periodically in relation to the cost of maize production, local market conditions, and since 1981, world market prices. Since Kenya may sometimes either export or import maize, the main question with respect to official price setting has been, what is the "right price"?

The policy of fixed prices has resulted in the burden of adjustment being placed on NCPB stock management, and importing and exporting. Decisions regarding when to import and when to export require effective monitoring of international and domestic grain markets, efficient and effective NCPB management, and good overall economic management (conditions which, unfortunately, do not always prevail in Kenya). As we shall see below, decisions on the future role and implementation of support and ceiling prices can not be taken until a variety of other policy decisions are made concerning the implementation of the future reduced role of the NCPB.

The current pan-seasonal price policy does not offer any incentive to either farmers or traders to hold stocks to be sold later in the crop year, except in the informal and illegal trade. Whatever pricing system will be found to be politically feasible,[4] it should take into account spatial price differentials in order to meet national food security goals in terms of efficient movement of cereals from surplus to deficit areas. The basic pricing strategy which was to be pursued in the CSRP was summarized as a "widening band" between a producer price floor and a higher consumer price ceiling, in order to reduce budgetary exposure and to allow for more private participation within the widened band.

Consequences of monopoly powers for NCPB. The studies which have looked closely at the internal operations of the NCPB have documented the following types of problems:[5]

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[4] As this report is being written, the EEC-financed CSRP program is conducting a grain pricing study which is to make recommendations for setting price levels from producer to consumer, with some spatial and temporal variation and within a context of gradual liberalization.

[5] The complex and critical issues involving a new price structure to meet multiple objectives are currently under study by an EEC team as part of the implementation phase of the CSRP program. This is described further in section 2.4.

- Ensuring adequate finance for NCPB crop purchases, distribution and reserve stock operations. Until 1988 the Board was heavily in debt and unable to pay farmers promptly for crop deliveries. Some of these debts have recently been written off as part of the CSRP program;

- Poor stock management and under-utilization of storage capacity;

- Inadequate transportation management resulting in excess costs; and

- Excessively large numbers of staff for the functions to be performed and serious problems of administrative performance.[6]

Indeed, rising NCPB operating losses were estimated (EEC, 1988) at about Kshs 1.8 billion (about $120 million) in the 1986/87 season, added to the cumulative losses in the previous 5 years of Kshs 3.5 billion (about $240 million). In summary, critics of the formal maize market believe that the system of controls adversely affects marketing efficiency. The conclusion is that the control legislation has resulted in a market channel characterized by:

- Low operational efficiency and resulting high per unit marketing costs; and

- Low pricing efficiency as reflected by poor regional and seasonal market integration and instability in market conditions (Schmidt (1979), Booker/Githongo (1988).

These and other shortcomings (discussed below) of the NCPB and the official marketing system, led several studies to recommend decontrolling or liberalizing the maize market so as to leave the Board with the basic roles of custodian of the national maize strategic reserve, and buyer and seller of last resort. Liberalization is a sensitive issue in Kenyan policy circles and has generated a lot of debate in the last decade. It is also clear that efforts to date to modify the current formal marketing system have been poorly designed and poorly timed in their execution, which has allowed the GOK to retreat periodically from the reform process.

The Informal Marketing System

In Kenya, the informal maize marketing system thrives in parallel to the formal system. The existence of the NCPB has not always guaranteed a secure market outlet to all farmers, particularly those in many western districts. It has been estimated that about 70 percent of all small scale producers market some maize through the informal system and that between 30 and 50 percent of smallholder producers do not have access to the NCPB system (World Bank Report, 1982). The Board has also been unable to provide adequate consumer outlets in many of Kenya's rural areas. Thus, although smallholders do participate in the formal marketing system, the informal system with its network of local market places and traders, remains by far the most important outlet for farmer sales and for rural consumer purchases, particularly later in the crop year, as noted by Casley and Marchant (1979).

Informal maize marketing channels handle about 50-60 percent of maize traded in the country and are interdependent with the formal market in important ways. One distinguishing feature of the informal maize marketing system is that it tends to operate intensively at the local level within districts and to a lesser extent within interregional trade, largely due to its official illegality. Unlike the formal marketing system which

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[6] These personnel problems went all through the NCPB organization; reform efforts, for example, led the GOK to replace all the Department heads at Board Headquarters in the past year.

is integrated nationwide, the informal system, until recently, has been legally limited to operations within a given district. Movement of maize in sizeable quantities across district boundaries other than through the NCPB channels, requires a movement permit from the Board and/or the local District Commissioner (DC).[7]

Schmidt (1979) and Maritim (1982) studied and documented the structure, conduct and performance of the informal system in some detail. The basic conditions they described have not appreciably changed, although with partial liberalization in 1988, a larger number of participants are operating more openly in the Kenyan market. The informal marketing system consists of two major types of traders, smaller-scale "**market traders**" and larger-scale commodity **wholesalers, including "lorry traders"**. These two categories of middle-persons are distinguished primarily by their size of operations, with the smaller market traders generally not owning their own means of motorized transport or being able to trade at the level of the full lorry load.

Market traders, who usually operate in a local open-air markets or in small dukas, perform the following functions as the interface between the marketing channel and both the producer and the consumer:

- They aggregate or assemble small supplies of maize (one to five bags typically) directly from farmers or from other small traders which they then sell to wholesalers, to local consumers, or transport to other markets in adjacent areas where prices are higher; and

- They retail several bags of maize at a time which have been brought into their area by the larger category of wholesaler/lorry trader.

As Schmidt suggested, these smaller traders can further be classified into two categories:

- **Sedentary or permanent traders**, those who have a permanent operating point within a given marketplace, usually have some arrangement to receive regular supplies from farmers or other traders, and sell to local consumers without doing much traveling. They sometimes sell other produce as well as maize. Schmidt estimated that about one-third of the market traders do not move at all. Most of these traders are women;[8]

- **Itinerant traders** are market traders who travel within and across district boundaries to carry out their maize trade. Schmidt estimated that about two-thirds of the market traders fell in this category and that about three-fourths of them travel an average of 25 km in conducting their trade. A further quarter of the traders travel even further across district boundaries. These traders' movements and the direction of trade are dictated by regional and seasonal maize supply and demand conditions and they usually transship from surplus, low price regions to deficit, high price areas. They buy from farmers or other traders and, depending on the distance, terrain and quantities of maize involved, these traders use matatus, buses, donkeys and bicycles as their means of transport. In the majority of cases these traders are also women, although in some districts like Kakamega, the donkey and bicycle trade is dominated by men.

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[7] The involvement of the district civil administration in the issuing of permits is legally debatable, but has come to be accepted in many districts.

[8] A recent phenomenon among these traders is the "symbiotic" relationships some have cultivated with posho millers (term suggested by a miller in Luanda market!) who allow or encourage them to retail maize to consumers in front of the mills.

The second major category of informal maize traders are the larger scale wholesalers, primarily lorry traders. These independent traders normally buy maize from farmers and other small traders in surplus areas and transport it to deficit areas for wholesaling. These traders may also sell to the NCPB or directly to millers. Their trade is illegal, but most of them have devised their own survival mechanisms. This is the portion of the informal market channel which is the most repressed by the current policy restrictions and it is here where the greatest economic gains from reform will come as we demonstrate in parts 2.3 and 2.5 below.

A third group of participants in the informal market are the local millers producing unsifted flour (posho in Kiswahili). These small hammer mill operators serve rural consumers who bring in their own or purchased maize for grinding. These mills are numerous and are well distributed across the country, many in rural market centers. They are quite competitive and recently there has been a rapid increase in their numbers (perhaps a 50 percent increase in the past two to three years) to the extent that some of the large millers have come to feel their presence in the flour market. In and around the major towns like Kisumu, Eldoret and Nakuru, some posho millers are also involved in buying maize from other traders or farmers then grinding it for sale as non-sifted flour (See Chapter Three for more detail on the milling industry).

To help visualize the relative importance of the various actors in both the informal and formal maize marketing channels, Figure 2.3 schematically indicates the percentage disposition of an average harvest by the different participants in the overall Kenyan maize marketing system.

Issues in the Performance of the Informal Maize Marketing System

Schmidt (1979) evaluated the performance of the informal maize marketing system on the basis of:

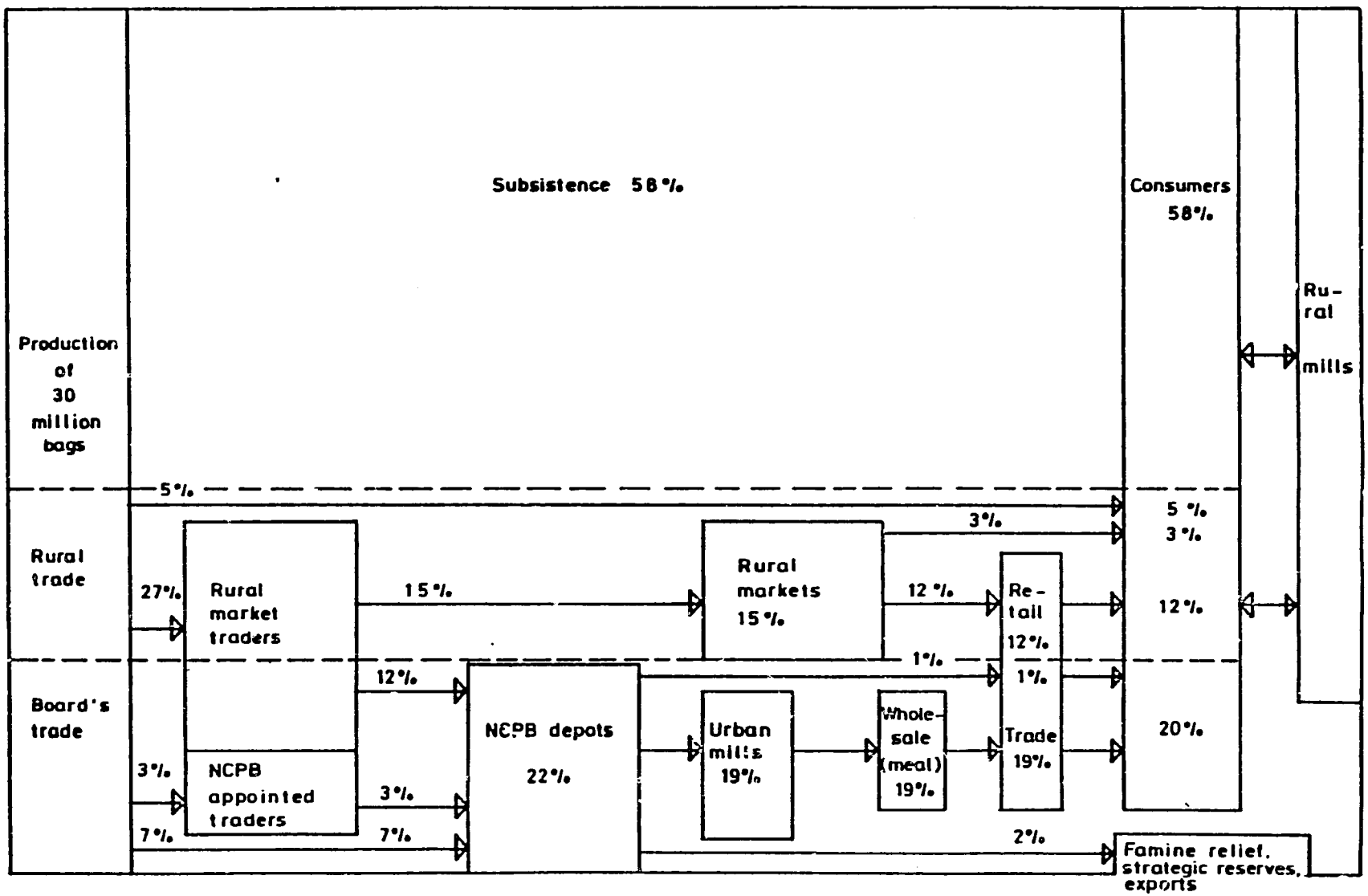
- The degree of market concentration and pricing efficiency;
- The degree of market transparency (availability of information to participants); and
- The extent of barriers to entry.

He found that the degree of market concentration varied significantly with the point of transaction. Controls imposed on maize trade prohibit free exchange and movement between surplus and deficit areas while the operation of the informal marketing system counteracts these restrictions to some extent. The result is spatial price differentiation higher than would prevail in an open market, thereby creating incentives for the small scale or illegal lorry trade. According to Schmidt, market transparency in the system is a big problem in most rural markets. Although prices vary between market places between regions and seasons within a year, traders' price knowledge tends to be limited to conditions in local markets in which they operate. Currently there is no official government price information on maize, as there is for other produce, such as horticultural crops.

There are few barriers to a trader wishing to join the small-scale trade. More barriers exist for entry into "large scale" trade as this encounters legal movement restrictions and perhaps access to working capital. The only traders in the system feeling this barrier are the lorry traders who would like to expand their business.

In sum, the informal marketing system is far from efficient. Operational efficiency is very low as reflected by high costs and lack of economies of scale. Movement controls discourage the use of economic modes of transport and reduce the volumes involved in each transaction. Pricing efficiency is also affected by the movement controls resulting in low market integration. Schmidt found very low correlations

Figure 2.3 Maize Marketing Channels in Kenya, 1986 / 1987



Proportions (%) are estimated on the basis of total production under the following assumptions: small scale farmers market 33% of their output, large scale producers market 72%, direct sales to consumers forms about 12% of total marketed output, the share of appointed traders is 22% of total marketed output. No account is taken of losses in transit nor in transformation.

SOURCE : Odhiambo, 1988.

between maize prices in different markets and observed that at times temporal and inter-regional price differentials greatly exceeded storage and transport action costs. As we see below in part 2.3, these patterns are still valid in rural Kenya today.

We have noted that both the formal and the informal maize marketing systems are inefficient. In the formal marketing system the objectives of controls are not being achieved by the NCPB. If anything, the present system of controls contributes to marketing inefficiencies and may increase food insecurity, particularly in dry areas. It seems clear that large mills and larger farms have benefited most from the operation of current policies, with urban consumers benefiting during periods of shortage. Under average circumstances or during bumper years, consumers have most likely paid excessively high prices for maize flour which has gone to cover large margins to the NCPB and mills and to cover part of the Board's high costs. As Schmidt pointed out, the population most affected by the marketing inefficiencies are smallholder producers and rural consumers.

2.2.3 Dry Bean Marketing: A Summary Note

The national market for dry beans is about one-eighth the size of the national maize market; while beans are an important item in the national diet, they are not a fundamental dietary staple. Apart from beans grown under contract for processing, they are a crop almost exclusively farmed by small-scale producers, in mixed stands intercropped with maize and other crops. Of the estimated national market volume of 350,000 tons (about 25 percent of production), the NCPB has only marketed about 10 percent in recent years. Most of the beans going to the NCPB are sold to government institutions such as hospitals, schools and prisons. Major bean surplus producing areas are not synonymous with the major maize producing areas: Nakuru District and particularly Kisii District are surplus producers along the surplus maize corridor, but Embu, Meru, and Kitui Districts are also important net exporters of beans.

Per capita consumption of beans is higher in surplus producing areas than in deficit areas and, undoubtedly, the highest proportion of national bean production is for home use and immediate trading among farm families. Currently, the private (illegal) trade undertakes a key role in distributing beans from surplus areas and has had at least 90 percent of the market in recent years. This private trade is undertaken in the face of considerable impediments to commodity movements, described elsewhere in this report. Lorry traders and Board agents play important roles in the private trade, often deciding whether to sell their stock to the Board or to private buyers, depending on prevailing market prices. The higher proportion of the bean trade handled by the informal channel is explained by two factors: one, since beans are not a staple for most of the population as is maize, it is less necessary for the GOK to monopolize the trade, and second, since beans have a substantially higher per unit value, it is more sensible for private traders to risk trade barriers on a commodity where the per unit profits are higher.

Given the relatively minor role played by the Kenyan bean trade, we will concentrate our efforts on the maize trade in this report. However, where appropriate we will illustrate impacts caused by restrictions on costs in the bean trade and ultimately we will argue, as have others before us, that beans should be removed from the list of officially scheduled crops, with their trade completely opened to free private sector participation.

' OVERVIEW OF MAIZE MARKETING IN SELECTED DISTRICTS

ction

? confirm information from previous marketing studies and to anticipate
: potential market reforms, the study team visited six districts in
fieldwork component of this assignment: Kakamega, Kisii, Uasin Gishu,
and Kitui. This geographic coverage provided an opportunity to view
production and marketing environments that characterize much of Kenyan

tled, high potential smallholder areas (typified by Kisii, Nyeri, and parts
ega);

farming areas that also include small- and medium-scale resettlement
g. Nakuru and Uasin Gishu Districts); and

it areas with generally low population densities (e.g. Kitui).

field areas visited by production and marketing environment, rather
noting administrative boundaries, provides an opportunity for the
dy to be extended from the parochial to the national level, since
ricultural sector (with the possible exception of the Coast Province)
to these three general categories. For example, many of the
eting characteristics of Kisii can be found in Nandi and Kericho
parts of Machakos and Baringo districts share similar farming
itui District.

he advantages of this classification method, economic statistics in
al data in particular are collected on a district basis in Kenya.
ne key statistics that define the agronomic, economic, social and
ers of the six study districts. Inferences drawn from the
picture may not hold for each division within a district. For
amega as a whole is a surplus producer of maize, Vihiga and
eficit areas which import substantial quantities of maize via both
l trade from, amongst others, Lugari Division (a division of the
large-scale maize production base).

on the Operation of Maize and Bean Markets

' Behavior of NCPB Agents

ntary is germane to the formal maize and beans marke
that licensed agents of the NCPB perform, whether in
reas, or in areas that are characterized by large annual
riencing chronic maize deficits.

rice for maize delivered by an agent or cooperative
ot or buying center is Kshs 239.40 per 90 kg bag
up of the following elements: Kshs 199 farm-gate
+ Kshs 10 allowance to transport the produce to
gunny sack + Kshs 6.50 per bag as a comm
d delivery services on the Board's behalf. In
to cover the costs associated with providing s
costs:

Best Available Document

TABLE 2.5

SUMMARY CHARACTERISTICS OF STUDY DISTRICTS

Characteristic	Densely-Settled Districts			Large-Farm Districts		Grain Deficit District
	Nyeri	Kisii	Kakamega	Uasin Gishu	Nakuru	Kitui
Pop. Density (per KM Sq)	266	604	434	120	120	21
Ag. Potential:						
% High	97	100	100	100	52	3
Medium	0	0	0	0	7	50
Low	7	0	0	0	41	47
Av. Farm Size (ha)	1-2	1-2	1-2	15	15	7
Percent Large Farms	9	4	1	42	39	N.A.
Maize Net Supply Position	Deficit	Surplus	Surplus	Surplus	Surplus	Deficit
Importance of NCPB (1-5)	2	3	3	5	5	4
Import of Open Air Markets (1-5)	5	5	5	2	2	3
Major Cash Crops:	Coffee Tea Vegtbs. Pyreth. Dairy	Tea Coffee Pyreth.	Tea Coffee Vegtbs. Sugar	Wheat Maize Dairy Pyreth.	Wheat Maize Dairy	Beans Legumes

Various Sources

For example, the agent may have to pay "rents" at various checkpoints along the road, as much as Kshs 3 per bag to move goods through, whether or not he possesses a bona fide movement permit.

- Once at the depot, NCPB employees often demand up to Kshs 5 or 6 per bag as a "gratuity" to ensure reception and unloading of the produce. Agents report that the amount is split in some proportion between the produce inspector, receiving clerk, and unloading and stacking crew. Depot staff use the following claims to support their request for cash payments: the produce, in the case of maize, is claimed to be above the maximum 13.5 per cent moisture level; the bags are claimed to weigh less than the 91 kg minimum (90 kg for the produce and 1 kg for the sack); or the bag stitching is claimed to be inappropriate; and/or the bags are declared to be in poor condition.

To compensate for costs not taken into account in the official pricing formula, agents reduce the price they are willing to pay the farmer for his/her produce. As a result, few small-scale farmers receive the gazetted price. The actual price received by the farmer will reflect some or all of the following factors:

The agent's calculation of the actual transportation costs associated with moving the produce from point of purchase to the point of sale to the NCPB (often more than Kshs 10);

- The agent's perception of the quality of the maize or other produce being purchased (e.g. moisture level, insect infestation etc);
- The competitive position of the agent vis-a-vis the seller;
- The volume being purchased (typically, the smaller the lot being sold, the lower the price - for example, grain sold by the sack receives a higher price than grain sold by the debe or kimbo tin);
- The commercial honesty of the agent (i.e. the extent to which the agent's calculation reflects actual weight and quality); and
- The agent's perception of the degree of difficulty he will experience in delivery (e.g. waiting time to unload at the depot, and the amount of "rents" to be paid).

The net result is that in the immediate post-harvest period, farmers can receive anywhere between a low of Kshs 150 per 90 kg bag of maize (on an equivalent basis) and a high of the official price of Kshs 199 per bag when selling maize to a licensed agent. As supplies in the system are reduced through the marketing season, typically, maize prices at all levels in the market increase and farmers can receive substantially higher than the Kshs 199 gazetted price (e.g. in late July to early August farm-gate prices for maize in some districts can reach Kshs 300).

From a trading standpoint, some Board agents receive only a very modest return for undertaking their designated collection functions, particularly small-scale agents without their own transport who only buy commodities at their stores; while others do very well financially (larger-scale agents, with their own transport, who purchase from the farm-gate in areas where the farmer has only limited access to other buyers and transporters).

Conversations with grain traders indicated clearly that most large-scale agents were participating in both the formal and informal marketing systems. For example, the commercially astute agent could decide on a number of alternative marketing channels for maize that had been purchased under the guise of "delivery agent for the NCPB", including: sale to a lorry trader for subsequent shipment outside the district or province;

direct sale and delivery to a trader or miller in a major urban center such as Nairobi or simply delivering to the NCPB depot. The channel selected would reflect the opportunities available at the time a truckload was ready for shipment, and the potential net returns accruing from each alternative.

An agent may have paid, on average, Kshs 180 per bag for a truckload of maize collected from farmers (and small traders) in a particular rural area. The NCPB depot price, less cost of new gunny bags and "rents" for depot employees, is about Kshs 217. The agent may have the firm prospect of shipping a truckload of maize to an urban-based miller, with a delivery permit, at an ex-mill delivered price, less costs of transport, gunny bags and "rents" to policemen as an overloading penalty, of Kshs 233. The latter alternative would net the agent an additional Kshs 1,800 per (100 bag) load and, very probably give him a quicker truck turnaround than the former alternative. Irrespective of whether the agents are small or large-scale, they share three principal common problems:

Collection of "rents" has become completely institutionalized. NCPB agents in particular, and traders in general, freely discuss the level and impact on marketing costs of these additional transaction costs as if they were a bona fide cost element in marketing activities;

- The long waiting time that transporters must endure when delivering produce to the NCPB depots (delays of 2-3 days are not uncommon during peak delivery periods). Such delays result in increased unit transportation costs as trucks are out of action for the day when parked idle waiting to be unloaded; and

- Late payment by the NCPB for goods received from agents, who have usually aid the farmer in cash.[9] This increases costs to the agent (who commonly is operating on a line of credit from a commercial bank), creates acute cash flow problems, and limits the agent's ability to increase overall delivery volume as he/she is continually bumping up against the overdraft limit of the business.

Almost without exception, licensed NCPB agents whom we interviewed believed that liberalization of the marketing process would be in the best interests of their business. The present system was perceived to add costs with few tangible benefits, and it constrained their ability to expand product purchases and sales. Those capable of articulating their views on "winners and losers" arising from a liberalized system (specifically, removal of movement controls) saw farmers, consumers and the more successful traders as being the potential winners; and Board employees, the police, select individuals who use extensive political "clout" to enter the informal trade, and less successful traders as being the potential losers.

Against this general background, observations and interview data from field work highlighted some distinctive features of the marketing systems in each of the three major production and marketing environments.

Marketing in Densely Settled, High Potential Smallholder Areas

These areas are concentrated in the highland regions of Kenya, where high-value export crops are grown by a large proportion of households. Average farm size is small, and household incomes are characterized by significant earnings from non-farm sources. While maize and beans are important elements in the family food supply, they

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[9] Historically, the Board has taken up to one month to pay the agent for this maize and produce; in the 1987/88 season, delays extended to several months. During the past buying season this situation improved dramatically due to the availability of a buying fund provided under the EEC-supported CSRP program.

are not regarded as principal cash crops. Most agricultural income is generated from the sale of coffee, pyrethrum, vegetables, tea, bananas, etc, all being substantially more remunerative per unit of land than maize and bean production. However, virtually all farmers in these areas do grow some maize and beans.

Farmers may sell their crop immediately after harvest to meet immediate cash needs, and often buy maize and beans later in the marketing season to meet family food requirements. In Western Kenya (eg. Kisii and Kakamega), average annual sales of maize among small-scale farmers (10 bags or more) are much higher than in Central and Eastern Kenya (e.g. Nyeri) where maize sales, particularly in acutely populated areas, may be minimal. The decision to sell maize at the low immediate post-harvest price and buy it back at the higher late season price has some economic rationale, and is not driven solely by the need to earn cash: reported on-farm storage losses of one bag out of five are common and, therefore, early sale for later buy-back relieves some storage risk.

In the densely settled, high-potential areas, marketing of maize and beans is a stronghold for the informal trade and, even when maize is handled by agents of the NCPB (which has 172, for example, in Kisii District), the agents may trade more on their own account than as representatives of the Board.[10] Much of the maize that is marketed, even for such relatively large towns as Kakamega, Kisii and Nyeri, is channeled through the towns' open-air markets. Consumers buy maize to take to small-scale posho mills for milling flour, although, early in the marketing season when maize is still plentiful, the volume of maize traded at retail is very small as farm families take their own produce directly to the posho mills.

A snapshot of marketing activity in Nyeri during June 1989 illustrates many of the key characteristics of the informal trade. The maize and bean trade in Nyeri town is focused around the public marketplace. Market selling was active all week long, with Wednesday and Saturday being the major volume days. The market was characterized by large numbers of market vendors (as many as 300) selling small quantities, and much smaller numbers of wholesalers (who also undertake retail trade) operating in the same area. Local county council officials collected daily market fees of Kshs 3.50 per small retail table, plus a flat fee of Kshs 4 per bag for commodities stored on or below the retail tables, irrespective of the storage period. A watchman guarded the market area, which is fenced, to ensure the security of stored produce.

Farmers typically came at the beginning of the market day to sell their maize to both wholesalers and retailers, in units of less than one bag. Wholesalers viewed this trade as generally unattractive, as there was considerable competitive pressure for low volume of sales from the many retail traders in the market. In the small number of wholesale maize transactions, wholesalers were selling a 90 kg bag of maize to retailers for around Kshs 250, having consolidated small purchases from farmers at a cost of about Kshs 200, providing a 25 percent margin. However, the bulk of the trade was from farmer to retailer to consumer, with the retailer's margin over the buying-in price from the farmer at around 30 per cent (for example, purchasing 6 kg of maize from farmers at about Kshs 13 and selling it to consumers for around Kshs 17). One or two wholesalers/retailers were trading in green maize: wholesale bags of green maize (approximately 300 cobs, with a shelled maize equivalent weight of 40 kg) were priced at Kshs 230 per bag, and the retail price per cob was 1 shilling.

In most districts surveyed, the retail margin taken on maize sales ranged between Kshs 0.50 and 1.50 per kg, and between Kshs 1.50 and 2.50 on bean sales. Maize

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[10] In Nyeri District, the NCPB depot only opened in early 1988, and the Board has only one official buying agent who handled close to 60 percent of deliveries to the depot in 1988-89. Most intra-district maize trade in Nyeri is undertaken by farmers and small-scale traders operating at the local level.

and bean retail vendors are, generally, at the lowest rung of the entrepreneurial ladder. The trade requires minimal fixed capital items and, therefore, has exceedingly low entry costs. As a result, financial returns to the retailer are low. Retail margins on maize and beans are modest. Retail vendors do not pare their margins down to the bone, however, as might be expected when hundreds of small-scale units are competing against each other. Rather, there seems to be a consensual view that Kshs 0.50 per kg is the lowest acceptable retail margin on maize, and at times when market volume is low (as it is in June), retailers must wait stoically until it is their "turn" to net the few customers that wish to purchase maize.

Of course, market vendors of maize and beans are not a homogeneous group. At one end of the continuum are very small-scale retailers, often farmers themselves, who sell their own produce in rural market centers once or twice a week. Their motivation is threefold: a desire to generate cash for essential purchases; to visit the market to buy essential goods; and to meet friends and acquaintances to exchange news and views. At the other end of the continuum are market women, often based in larger urban, more formal markets who sell from more established stores. Such retailers buy from farmers who come to the market, from wholesalers, or from farmers in retail areas. They sell six days per week and may retail the equivalent of 2-3 bags per week in the low marketing season and 7-8 bags in the peak season.

Major problems for retailers include: access to sufficient cash to purchase farmers' output; lack of secure storage space at public markets and occasional theft of produce; the seasonal nature of the business (as demand picks up, weekly sales of four bags per vendor are not unusual in some markets); and lack of adequate or affordable transportation to link the market vendor with rural suppliers.

Given the limited involvement of the Board in beans and other minor commodities, it is perhaps not surprising that the wholesale trade in these commodities is showing interesting signs of development. For example, in the very large Karatina market in Nyeri District, a female entrepreneur was placing orders by telephone for truckloads of rosecoco beans with traders in Kisii, sending transport to Kisii to collect the beans (accompanied by a female relative to expedite the movement of produce through check-points), and selling the beans to the wholesale and retail traders in Nyeri district. Other wholesalers were also using the telephone as a means of ordering produce -- an important development indicating predictability in product quality and the growth of trading arrangements based on mutual trust between commercial partners. Margins accruing to traders for undertaking their trade were in the order of 15 per cent over costs.

In general, people in the densely settled smallholder areas have access to a well-developed road network. Buses, matatus[11] and larger vehicles are available on the classified roads as well as many of the unclassified rural access roads. The distance from the farm gate to point of sale for maize and beans is generally short: in the western districts of Kisii and Kakamega, for example, it averages only 2.5 km. Because of the good access to transport and numerous market centers in these districts, farmers rate market availability as a low-priority constraint.

As described more fully in Chapter Four (Social Analysis), traders in these areas make extensive use of matatus and small buses in moving small amounts of maize and beans between local markets. Donkey transport is also very important, both in terms of moving produce from farm-to-market and from market-to-market. Donkeys fill an essential niche in the transport network between areas of different elevation, such as between the Nandi escarpment and eastern Kakamega and between the highlands of Kisii and the lowlands of Kisii and South Nyanza districts, where roads are few and

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[11] Matatus are small buses which provide much of the transportation in all parts of Kenya.

in very poor condition during much of the year. While donkey transport involves much lower cash costs than motorized means, it consumes much larger amounts of time and labor. What takes two hours to move by matatu can take more than two days on a donkey, and a donkey can carry no more than one sack of grain.

Lorry transporters tend to concentrate their business on higher value commodities (e.g, vegetables, fruits, tea, and coffee) or on long-haul shipment of maize and beans for the NCPB, rather than on trade in the limited amounts of locally produced maize. Those who do business regularly with the NCPB tend to own two or more lorries, and to have been well established in the industry for 8 to 10 years. Most were able to secure bank loans which they used to purchase their first lorries. Partnerships as well as sole proprietorships are common especially among those who have more than one lorry.

Marketing in Larger-Scale Farm/Resettlement Areas

Almost all of these areas comprise lands which were reserved for Europeans during the colonial period, viz. much of Uasin Gishu and Nakuru Districts and the northeastern parts of Kakamega and Kisii Districts. Since independence, what previously were large-scale farms have been subdivided into smaller-scale units - parcels of between 1 and 5 hectares in Nakuru and 8 to 40 hectares in Uasin Gishu and the settlement zones of Kakamega and Kisii Districts. In addition, both Nakuru and Uasin Gishu still contain an important base of larger-scale farms and ranches.

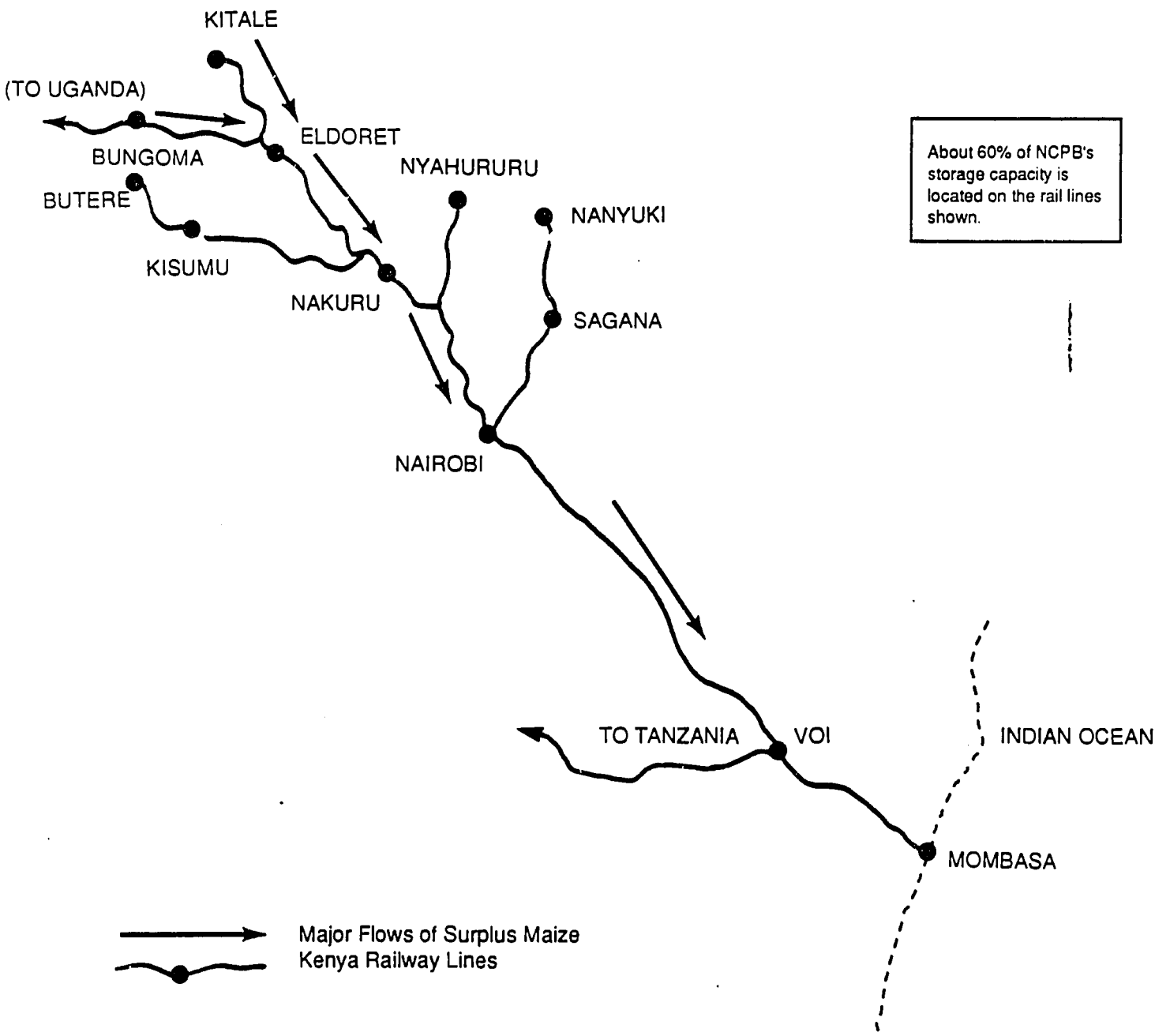
Maize and beans are grown by virtually all farmers in the large farm/resettled areas, but are significantly more important for small-scale farmers in locations which are relatively newly settled and/or where dairy and wheat production are not feasible. Larger-scale farms focus more on wheat production -- an enterprise that is financially more attractive under current input and product prices than maize, requires less management, and is more conducive to mechanized production. One important recent development has been the expansion of small-scale production of wheat in parts of Njoro, Rongai and the Greater Nakuru area, and in much of western and southern Uasin Gishu.

The majority of farmers who produce maize in quantity are major suppliers to the formal marketing system: more than 80 percent of farmers interviewed sold their maize either directly to NCPB (buying stations or depots) or to the Board via cooperatives. Farmers in these areas are part and parcel of the "main-line" grain delivery system that supplies the major urban areas of Kenya, as shown in Figure 2.4.

In both Uasin Gishu and Nakuru Districts, larger-scale farmers are generally in a position to rent transport or rely on their own vehicles to make direct deliveries to NCPB depots. Small to medium-scale farmers have to choose from a range of options:

- Since NCPB buying centers generally open late, farmers may deliver to a trader, at the farm-gate and for cash, receiving a discount on the gazetted price (e.g. Kshs 170-180 for a 90 kg bag);
- They may take one or two bags of maize to a local market, either for direct retail sale or for sale to a small-scale wholesaler or a market vendor or local posho millers;
- They may sell small quantities, less than one bag at a time, to neighbors; or
- They may sell their grain to a local cooperative society for onward sale to the NCPB.

Figure 2.4
Movement of Maize Grain and Flour on the Backbone of the NCPB System



In practice, an individual farmer may use more than one of these marketing channels; access to reliable and affordable transportation is a key determining factor. For example, small-scale farmers in a resettled area near Njoro (Nakura District), although only 3-4 kms from a paved road, are frequently marooned during the wet season as the feeder roads are impassable to all but tractors and load-trailers.

Cooperatives have been largely unsuccessful in undertaking grain marketing activities. Major constraints to expanding trade in grain were:

- The NCPB's marketing margin (Kshs 6.50 per bag) that was insufficient to cover marketing costs;
- Corrupt practices by NCPB employees at grain delivery points that penalized the cooperative on spurious grain quality grounds; and
- The predilection of the Board to establish buying centers immediately adjacent to the society's buying points, thereby posing direct competition.

In contrast to the trade patterns of the densely-settled highland zones, trade in open-air marketplaces plays a relatively minor role in the marketing of maize in the large farm/resettlement areas. Most activity is concentrated in the larger market towns (e.g. Turbo, Eldoret, Naivasha and Nakuru town), although as might be expected, there is evidence of a medium-scale wholesaling trade that undertakes grain collection from farms and small-scale local markets for onward sale along the marketing chain. In Nakuru District, two patterns of informal trade were observed:

- Individuals purchasing maize from rural areas for onward sale to small-scale retailers within the district; and
- Traders performing a consolidation function for large-scale traders from both within and outside the district who may "export" the maize to customers (mills, urban wholesalers etc) outside the district. This trade is undertaken, frequently, without a movement permit and, as a result, bears a cost to the entrepreneur which may exceed Kshs 5,000 per lorry load.

Several examples of these informal trade patterns are presented in Chapter Four. In general, men dominate this trade, compared with our findings on substantial trade by women in the densely settled smallholder areas. Lorry traders play a more significant role, principally because the quantities available for sale and movement are large enough to invoke economies of scale. In addition to making deliveries to the NCPB via formal channels, many lorry traders engage in inter-district arbitrage: notable cases involve shipments of maize from Uasin Gishu and Lugari Division of Kakamega to the maize deficit areas of southern Kakamega and Siaya.

Farmers in the large farm/resettlement areas frequently must travel a greater distance to sell their maize than those in the densely settled zones. Because they often are selling their maize to either a cooperative or the NCPB, they must transport their maize up to 5-6 kilometers to transaction points. In these areas where the formal market system is dominant, transport costs (including labor) from farm to depot or cooperative can be as high as Kshs 5-8 per bag, or as much as 4 percent of the sale price. Large farmers usually have their own transport to move maize to the point of sale, but small and medium-scale farmers must hire lorries, pick-ups, or tractors (with a load trailer). Availability of these vehicles for hire is relatively good in these areas but, on a cost per bag basis for short journeys, are costly (e.g. Kshs 10 per bag for short-hauls of less than 5 km).

In virtually all of the resettlement areas visited, the role of the NCPB had increased considerably in the 1980s. The Board opened a great number of new depots and buying points within the past few years. Prior to this recent period, lorry traders

were active in the area and would buy maize directly from producers at the farm, reducing transport costs to the farmer.

Marketing in Grain Deficit Areas

Over three-quarters of Kenya's land area is classified as arid or semi-arid. With mean annual rainfall of less than 650 mm of rain per year, these lands support about 20 per cent of the country's population and 50 per cent of its livestock. Drought is common, and may occur in one out of every three seasons. Not surprisingly, these areas are generally importers of maize, and frequently suffer the most serious food security problems requiring emergency food relief (as in 1980 and 1984).

Kitui, which reflects most of these characteristics, offers strong contrasts to the other five districts included in the field study. It has much poorer agricultural land and significantly lower population density. The principal food crops grown in the district are maize, beans, cowpeas, pigeon peas, green gram, millet, sorghum, cassava and sweet potatoes; in addition, some fruits (guava, oranges, and bananas) and vegetables (onions, tomatoes) are grown on smallholdings for cash sale.

Kitui is served by more than 250 licensed NCPB agents, most of whom have small stores in market centers located along the main roads and sell more NCPB maize for consumption than they buy from producers in normal years. From field observations, it appeared that some "agents" are self-appointed, and attempt to derive legitimacy from association with the Board.[12] They purchase maize in whatever quantity is offered (almost always small), pay cash immediately upon purchase, and assemble it on site. Often the trader combines the function of buying maize, beans, grams and pigeon peas with running a general retail shop. Less frequently, the trader combines this function with being a wholesaler of sugar and other food items. The agent usually transports the produce to a Board depot when he has accumulated enough to fill a lorry. Those who do not have a cash flow problem, however, often store some bags of maize and beans which they sell later to schools or other consumers when the price rises.

The Board's mandated role in chronic deficit areas is to ensure adequate distribution of food. Operationally, however, its depots are not operated on a cost center basis, nor is there effective decentralization to the area management level. The general manager at each depot has amorphous responsibility as custodian of the grain and produce, but has little or no strategic input on, for example, the level of stocks to be held, stock turnover etc. The role is passive: buying when they have cash and selling when they have produce, filling up the stores and shipping any surplus to other NCPB depots upon orders received from Nairobi.

Board agents throughout Kitui District voiced similar complaints about the operations of the NCPB system, corresponding to those noted in other parts of the country. The main problems were: (1) delayed payment after delivery; (2) institutionalized practices of "tipping" at the depot, amounting to Kshs 5-6 per bag, which is deducted from the price paid to the farmer; (3) waiting time, usually measured in days rather than hours, which increases unit costs for transport; and (4) shortweight of 5 kg or more in maize purchased from the Board, coupled with poor grain quality.[13]

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[12] Included among "agents" are some general retail shop and posho mill owners, who often engage in purchasing maize on a small scale. They usually store some maize which they subsequently sell directly to consumers or to small retail stores.

[13] Of course, the agents are not necessarily paragons of commercial virtue, and some admit that a suitable "tip" to a depot employee can ensure reception of underweight and poor quality produce when they are making deliveries.

Several factors cited by the Kitui town depot manager explain losses incurred by the NCPB, and appear to be endemic in the current system and procedures:

- Many bags purchased (or received from other depots) weigh less than the official 90 kg, reflecting, inter alia, "short-weighting" practices at other depots, and weight loss, either because the original moisture level was too high or the produce had been in-store too long;
- High spillage losses due to poor bagging and poor quality/old sacks;
- High levels of insect/rodent damage;
- Pilfering by depot employees; and
- More quixotically, misdirecting of wagons and trucks moving grain and other produce from depot to depot, resulting either in a windfall gain to one and a loss to another, or often a loss to both depots.

Areas such as the eastern parts of Kitui District are often considerable distances from the major maize producing areas. The distances and costs of moving maize to the deficit areas restricts market entry for many small-scale traders and, historically, lorry traders that have penetrated outlying areas have exercised disproportional bargaining power in their commercial relationships with rural consumers. More recently, NCPB maize depots have been established (following the 1984 drought) as a food security hedge.

Theoretically, from the perspective of the local retailer and ultimate consumer, the NCPB depots offer real benefits: retailers now can buy maize directly from the depot and should be less affected by supply problems than was the case in the past. In practice, however, two observations from Kitui suggest that the system does not necessarily function as intended:

- First, at times when produce is in short supply and market prices are above the NCPB selling price, it requires a leap of faith to assume that depot employees will not exercise their market power by extracting more than the "official" price for stocks held in NCPB stores; and
- Second, even Board officials acknowledged that notwithstanding the poor access of many of the outlying areas (e.g. Nuu Division), the private traders in the most recent drought year (1987/88) had reached remote villages faster than the Board and had been selling maize at a Kshs 20-30 per bag discount below NCPB prices.[14]

Informal trade, particularly for beans and other legumes, is a feature of maize-deficit areas. Private traders from Nairobi have been trucking produce out of Kitui, using locally-based agents to consolidate shipments. Generally speaking, this informal trade is less prevalent, and involves smaller traded volumes, than in the more densely settled, productive areas.[15]

The wholesaling and milling of maize in most deficit areas differs strongly from the other two types of areas described earlier. Unless it is an unusually favorable agricultural season (e.g., 1988/89 when Kitui had excellent rains), most mills are

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[14] For example, in June 1989 the Mutito Depot still held 10,000 bags of maize that had been earmarked for surrounding areas, but had remained unsold because of aggressive competition from the private trade.

[15] Several brief individual case studies of Kitui-based informal traders are cited in Chapter Four, Social Analysis.

processing grain imported from outside (sometimes via the NCPB distribution depots) rather than locally-produced maize. Thus, in most years, much of the trade and sale of maize is in the form of maize flour, particularly the coarser flour, posho. Wholesalers in these areas often are large-scale traders who own both a mill and transport. They buy their maize, either from a lorry trader or an NCPB depot, process the grain, and then wholesale the flour to small retail stores in the outlying areas. The consumer, in turn, buys maize flour rather than grain at the retail level.

Road conditions are often poor in the deficit zones and, consequently, vehicle availability is severely limited in many localities. Because of these factors, access to markets is often a constraint in parts of Kitui district. Floods and sometimes even normal rains result in different parts of the district being isolated because the roads are impassable due to bridges being washed out. This has even led to food having to be airlifted into some areas.

While matatus and smaller vehicles operate in these areas, they are considerably less important for movement of maize and beans than lorries. As noted above, long-distance trade in large volume is the norm, and unless a transporter/trader has access to a large vehicle, his/her role is unlikely to be significant in the maize movement business.

2.3.3 Performance of the Current System in Sample Districts

Assessment Criteria

The performance of a particular agricultural marketing system can be evaluated by analyzing how the system performs with regard to satisfying several critical sets of criteria. The first set of performance measures are, classically, indicators of static efficiency:

- **Pricing efficiency** -- including the degree to which price differences between markets reflect normal transfer costs at different points during the year, and the extent to which inter-seasonal price movements reflect normal returns to storage and prevailing supply and demand conditions;

- **Technical efficiency** -- including the degree to which post-harvest losses are minimized, the appropriateness of the technology utilized in marketing a particular commodity etc; and

- **Operational efficiency** -- the least-cost provision of a quality product, and the extent to which marketing margins reflect the real cost of providing such services.

The second set of performance measures, more qualitative but nonetheless important, relate to the marketing system's dynamic efficiency. These measures include:

- **Progressiveness** -- the extent to which marketing innovation can be introduced into the system;

- The extent to which **entrepreneurship** is encouraged to foster competition within the system;

- The extent to which the system allows and encourages **new institutional arrangements** (e.g. producer contracts, vertical integration) that will lower marketing costs; and

- The extent to which the system generates and participants use **information to improve production and marketing decisions.**

Measures of Static Efficiency

Pricing efficiency: The cornerstone of GOK maize and bean marketing policy is the establishment of gazetted farm-gate prices for these commodities that are pan-territorial and pan-seasonal. They are fixed at their respective levels (Kshs 199 per 90 kg bag for maize and Kshs 480 per bag for Rosecoco beans) for the entire season and across all areas of the country. The price signal to the farmer in a maize surplus area is identical to the one given to the farmer in a deficit area. Thus the producer closest to the source of market demand receives no price premium to reflect his/her market advantage; and, for all farmers, no incentive is provided to store grain on the farm for sale later in the season when prices should rise above immediate post-harvest levels.

Arguing that the GOK needs to balance political and social equity factors against economic factors is largely academic. In practice, the prices for maize and beans that many farmers receive (in particular, small-scale farmers) do vary by the point in the crop year in which their output is marketed. The Kshs 199 per bag price for maize is, in effect, a benchmark price. In the first part of the marketing year, most small-scale farmers receive something less than the gazetted price - the discount reflecting, inter alia, the relative bargaining position of the farmer vis-a-vis the grain buyer, distance of the farm from point of first sale, quantity of grain being sold, the farmer's need for immediate cash, whether the Board has funds to purchase grain, but above all basic supply and demand, with supply being largely inelastic at harvest. Later on in the season, if the farmer has any grain to sell and if the sale is made in the informal trade, the price received will more closely reflect prevailing supply and demand conditions. Over a 12-month period, the price per bag can range between Kshs 150 and Kshs 300.

A comparison of average monthly retail prices for maize and beans in individual market centers within selected districts highlights the degree to which pricing inefficiencies occur throughout the system:

- In areas that experience seasonal deficits, price differences between market centers are substantially higher than can be explained by transport costs alone;[16]

- In areas that normally produce surplus maize, exemplified by Kisii, average monthly retail prices for maize show less variation within the same month but still exceed inter-market transportation costs in several months;[17]

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[16] For example, in Nyeri District, the difference between the highest and lowest quoted prices for a kimbo tin of maize in seven market centers surveyed by MOA for a given month ranged between Kshs 1.33 and Kshs 4 per kimbo. Price differentials were even greater for beans: in July 1988, for example, Rosecoco bean prices in Mathira were less than half the cost they were in Kieni West and, an average, the range between highest and lowest quoted price for a particular month was Kshs 7 per kimbo. Transport costs between the various market centers are, at the very most, Kshs 1.50 per kimbo tin or Kshs 67 per bag.

[17] In eight markets surveyed in Kisii District, during the months immediately after the maize harvest the average differential was 1 shilling per kimbo tin, but this widened to 2 shillings in months in which maize was in relatively short supply.

- Sharp seasonal variation in retail prices for beans and maize was recorded, especially in Nyeri District, with price differentials far exceeding storage costs for either commodity;[18] and

- There is no consistent pattern in price variations among the various market centers within a particular district. In Kisii, for example, at some point during the 1988/89 marketing year, virtually every one of the seven market center surveyed was both the highest and the lowest priced bean market in the district. In other words, the center with the greatest "bean deficit" did not necessarily have the highest priced product.

A number of factors serve to explain this overall picture of pricing inefficiency. First, road conditions in many districts, particularly during the wet season, act as a significant barrier to market entry for traders seeking to benefit from arbitrage activities. Second, no doubt, traders operating in some localities have been able to establish disproportional market power and exploit it to their advantage. Third, and most important, the GOK policy of controlling movement of produce both between and within districts ensures that the price mechanism will operate inefficiently. In many cases, traders are well aware of price differentials that would offer opportunities for profitable trade; but the risks and additional marketing costs associated with the movement control regime are perceived as being too high to make it worthwhile.

Technical efficiency: In a typical marketing season, on-farm post-harvest losses for maize have been reported (USAID Small Farm Marketing Project) to be in the region of 20 per cent (i.e. one bag out of five). These relatively high losses reflect, in part, poor physical storage facilities on small-scale farms and, in part, low usage of insecticides to minimize storage damage. The latter is a consequence more of a cash constraint to purchasing post-harvest inputs than a lack of availability of farm inputs per se. Obviously, though, the pan-seasonal pricing policy serves as a deterrent for the farmer to invest in up-graded maize storage facilities.

As mentioned earlier, discussions with NCPB depot mangers indicated that grain losses in Board storage facilities were high vis-a-vis normal commercial losses. However, this seems to reflect inefficient inventory management practices rather than poor post-harvest treatment programs. For example, in some depots visited, maize had been in-store for two seasons or more and bag weights had declined significantly as a result of insect spoilage, compaction damage, and initial storage of grain that was too moist. Frequently, the loss level was exacerbated because the weight of the full bag when placed in-store had been significantly less than the required 90 kg.

Particularly in the surplus maize production areas, larger-scale farms are utilizing mechanical plowing and seeding, although all the elements of a bulk-handling system (from farm to mill) are still largely absent in these major producing areas. Cost savings of the order of 15 per cent of the delivered cost of maize could be realized through the use of different combinations of mechanical harvesting and bulk storage and handling techniques. Uncertainty about the future NCPB food security stock and the producer price support system is constraining private sector investment in mechanical and bulk handling systems.

Operational efficiency: One consequence of the present GOK maize marketing policy, in particular the regulations that restrict movements of produce both between and within districts, is that the informal trade is characterized by small-scale traders moving

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[18] For example, in Nyeri municipality, average retail prices for maize in May 1989, at Kshs 4.50 per kimbo tin, contrasted with an average price of Kshs 8, six to eight months earlier. Even in the major market center of Karatina, average monthly retail prices for beans ranged between Kshs 18 per kimbo tin in June 1988 and Kshs 9 in August of the same year.

very small volumes in multiple transactions. As a result, unit costs of providing marketing services are high relative to a system that would exist if the trade was open (rather than illicit) and undertaken by larger-scale businesses. The following examples serve to illustrate this point.

In June, a substantial amount of maize is marketed via informal trade through the busy municipal market in Eldoret, much of it being resold and shipped to deficit areas in Kakamega, Siaya and Kisumu. The trade is undertaken by itinerant women traders who buy two-six bags of maize and transport it by matatu or large bus. The women traders purchase maize from wholesalers in Eldoret market who, in turn, have purchased it from farmers at the farm-gate (transporting it to market by lorry, pick-up truck, or matatu). Marketing costs incurred by the women traders include:

- Purchase price of Kshs 7 per 2 kg kimbo tin, equivalent to Kshs 315 per bag;
- Handling charges at the market and loading fees of Kshs 10 per bag;
- Transport (for one bag plus passenger) at Kshs 35;
- Unloading charges at destination, plus miscellaneous costs, Kshs 5 per bag; adding up to;
- Total costs before trader's markup of Kshs 365 per bag.

Under an open marketing system, the women traders could purchase maize directly from farmers and transport it in larger lots, direct to deficit areas in adjacent districts. The costs associated with this trade would comprise:

- Maize purchase price of Kshs 6 per kimbo tin, equivalent to Kshs 270 per bag;
- Handling at purchase and sale of Kshs 10 per bag;
- Transport per bag (on a truckload basis) at Kshs 20 per bag; adding to
- Total expenses of Kshs 300 per bag, a reduction in unit marketing costs of Kshs 65 per bag, or a savings of about 18 per cent.

A similar pattern of operational inefficiency was observed in the produce trade for beans and peas. A wholesaler based in Nyeri travels each week to Meru town by matatu to purchase beans, peas, millet etc. from wholesale dealers located there. The buyer ships his produce as back-haul freight on lorries that are returning to Nyeri District with empty milk cans, and travels back by matatu himself. Shipping smaller quantities of bags and using milk transporters who are well known reduces the payments that must be made at various checkpoints between Meru and Nyeri. The buildup of marketing costs is as follows:

- Purchase price for beans, Kshs 680 per bag;
- Loading, unloading, and handling charges, Kshs 10 per bag;
- Matatu fare between Nyeri and Meru and subsistence for wholesaler, Kshs 10;
- Transport charges for beans, Kshs 50;
- "Rents" paid at roadblocks, Kshs 15;
- Market entrance fee in Nyeri, Kshs 5; adding up to
- Total expenses before trader's margin of Kshs 770 per bag of beans.

Under a decontrolled marketing system, the wholesaler would purchase greater quantities at a lower unit cost and transport a full truckload of beans back to Nyeri, paying lower unit transportation costs. Handling and loading costs could be reduced on a truckload basis. "Rent" payments would likely remain as a cost item, but at a reduced rate (based on purported defects in vehicle condition, rather than contravention of movement regulations). The buildup of marketing costs, as summarized below, would lead to a saving of about 10 percent, or Kshs 75 per bag:

- Purchase price of Kshs 640 per bag;
- Loading and handling, Kshs 5;
- Transport charges, Kshs 40;
- "Rents", Kshs 5;
- Miscellaneous charges, Kshs 5, adding up to;
- Total expenses before trader's margin of Kshs 695 per bag.

Lorry traders from grain surplus areas in Western Kenya ply an informal (i.e. illegal) trade in maize and beans between, for example, Kitale, Eldoret and Nakuru and Nairobi. In the absence of a movement permit, those traders must pay an aggregate of Kshs 2,000-5,000 per lorry load over the numerous checkpoints between the starting point and the capital. For a lorry carrying 100 bags, these transaction costs compute at Kshs 50 per bag. Under an open marketing system, they would not disappear, but the amount would be reduced.

In general, within the marketing system as currently structured, the costs incurred by farmers and traders when undertaking both formal and informal trade significantly reduce operational efficiency. As noted earlier, traders routinely calculate the amounts that must be paid to clear institutionalized hurdles in the system; and one cooperative society that we visited makes a standard deduction for "rents" from the proceeds that it pays out to its members.

Despite the significant barriers that private individuals face in the maize and bean trade, the private trade carries the major share of the volume of produce marketed. However, given these barriers and the fact that the informal trade is presently illegal, the pace of development of this sub-sector can only be sporadic and slow.

The marketing margin accruing to the NCPB, Kshs 77 per bag,[19] is high considering the marketing services provided. For example, as discussed more fully in Chapter Four (Private Sector Analysis), in the sifted maize flour business, the NCPB's markup of Kshs 1.35 per kg is larger than the combined mark-ups for the miller, wholesaler and retailer (Kshs 1.23). The difference is even more marked for posho where the NCPB mark-up of Kshs 1.35 is more than double the combined official markups of the other participants (which means that posho millers can only make money by illegally buying maize at lower than NCPB rates).

From the NCPB's perspective, the margin taken on the buying and selling of maize must exceed the amount that would be expected in a normal commercial maize marketing business because NCPB overhead costs are high relative to the volume of business it transacts (a characteristic shared by many parastatals); and the Board must seek means

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[19] This represents the difference between Kshs 240 paid on delivery for each 90 kg bag (including the cost of the gunny bag) and the ex-depot price of Kshs 317 for sales to millers and other purchasers.

to cover the costs of its food security operations (for the strategic storage reserve). When the cost of maintaining the reserve is melded into commercial marketing costs however, it distracts Board management from striving to improve the efficiency of its commercial maize marketing operations. Further, it is simply just good business practice to identify the specific costs of commercial operations and operations that are undertaken for national social and economic reasons.

Marketing margins for traders in the informal market for maize and beans were, in general, reflective of the real costs of services rendered and normal returns to labor, management and capital. For example, returns to wholesalers of beans in Karatina, Nyeri District -- after deducting major marketing costs but including management input and cost of capital -- ranged between 8 and 15 per cent. Retailers of maize and beans, depending on the unit price of goods sold, were averaging a margin between buying-in price and selling price of between 15 and 25 per cent. These modest rates are, perhaps, surprising given the large price differentials between markets noted earlier. In fact, the "excess" profit between markets is dissipated through the payment of "rents" by the trader.

Where excess profits certainly will exist are in the formal trade between large-scale farmers/traders and the mills: if a movement permit can be acquired, then, the shipper can sell to the mill for a price that is greater than the Board's buying-in price (Kshs 240) but still less than the Board's selling price (Kshs 317, varying slightly by district). For example, a trader whom we interviewed had purchased maize at close to Kshs 180 per bag from a farmer, and delivered it direct to the mill with an official permit for Kshs 290, while receiving the empty bag back. After deducting Kshs 60 per bag direct marketing expenses and making an allowance for the value of the gunny bag, the trader netted Kshs 60 per bag, or Kshs 6,000 on a truckload -- not a fortune, but still an excellent return on a low-risk venture.

In sparsely populated grain deficit areas, competition in the buying and selling of maize and other produce is less intense than in the densely-settled areas and the maize surplus areas, and, as a result, private traders can extract a higher margin. Even so, it was notable that in Kitui during the past year, the private trade has consistently sold maize to consumers at a lower price and in further outlying areas than the NCPB.

Assessment of Dynamic Efficiency

Although there are some encouraging developments in the maize and bean marketing systems -- for example, telephone ordering of large-scale bean shipments in the informal trade and the NCPB showing increasing interest in bulk handling of maize -- in general, and particularly for maize, the marketing system cannot be characterized as one that is progressive and innovative. The present structure of maize and bean policy, and uncertainties about its future direction and shape, serve to constrain private sector investment and keep progressive entrepreneurs out of the maize and bean trading business because of the complexity of the marketing regulations and the fact that the informal trade is actually illegal.

Entrepreneurship is encouraged in a perverse manner: farmers and traders spend time, money and effort trying to circumvent the marketing regulations and other constraints to trade, rather than focusing on ways to improve the system. To cite an obvious case, small-scale traders in the Rift Valley were seen transporting grain in a pickup, covered in cabbages, as a means of contravening movement controls.

2.4 POLICY AGENDA FOR THE KENYA MARKET DEVELOPMENT PROGRAM

2.4.1 Introduction

In this section we examine the priorities and prospects for significant change in the policy framework that governs the marketing of maize and beans in Kenya. The presentation is based primarily on the study team's analysis of significant issues in cereals marketing and direct field observations in the six sample districts, but also draws on the findings and recommendations of predecessor studies, especially those financed by the World Bank and the European Economic Community (EEC) in the past six years.

As noted in Sections 2.2 and 2.3, there are striking contrasts between the "formal" and "informal" segments of the marketing system, the first of these being officially sanctioned and monopolized by the NCPB, and the second involving a multitude of market actors who maneuver within and around the formal system, while incurring high costs and low levels of operational efficiency. The main thrust of the policy measures that are proposed here is to legitimize the informal trade which is now, and always has been, a fact of life in Kenya's agricultural economy, which is "made for trade." The complexity and sensitivity of the reform process suggest the need for an agenda that combines steps that the GOK may agree to undertake immediately, with reinforcement for longer-term adjustments in the formal marketing system, where the EEC and the World Bank have taken the lead, and where many of the essential questions concerning the NCPB's role and functions have not been fully resolved.

The policy agenda forming the foundation of the KMDP consists of five items which are intended to be mutually reinforcing:[20]

Elimination of the system of movement controls on grain and other produce throughout the country;

- Removal of beans, other legumes and minor cereals from the list of scheduled commodities handled by the NCPB;
- Establishment of a timetable for the definition and implementation of the future reduced food security stock and price stabilization roles for the NCPB;
- Institutionalization of GOK units for improved market information and food security policy planning; and
- Implementation of three changes in GOK policies affecting road construction and maintenance, to ensure future sustainability of key market-to-market linkage roads whose upgrading would be financed with local currency funds under the KMDP.

The following sections treat each of the first three items in detail, and comment on the information needs for improved food security planning. Section 3.4 in Chapter Three contains material on the function of market information dissemination in decision making by private sector actors and firms. Section 5.8, in Chapter Five, deals with the policy ramifications of the proposed investments in the rural road network.

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[20] This listing of the policy agenda is slightly different than what has been presented to the GOK for negotiation and, if different, the list in the body of the PAAD is should be considered definitive.

2.4.2 Elimination of Movement Controls

The team's findings make a compelling case that this should be the cornerstone of the KMDP. The costs of movement controls to the Kenyan maize market and larger economy are estimated in Section 2.5 and the distribution of benefits in their elimination in Section 2.6. In sum, the gross costs to the economy (in terms of distribution inefficiency and disincentives to making further productivity-enhancing investment in maize production and marketing) represent almost 10 percent of the current retail maize price. Major cost savings can be had in the national maize system by allowing private trade to move more freely, particularly in the wholesale market-to-market trade. These measures to improve the overall efficiency of Kenyan maize marketing can be made without necessarily having solved all the details of the future reduced role for the NCPB.

In the course of program development for the KMDP, consideration has been given to making the transition to unrestricted movement a gradual one, on the premise that it would be most politically feasible to address the problem in this manner. For example, one model would phase the upper limit from 10, to 20, to 100 bags moving freely, over three years, reaching total decontrol in the fourth year. Whether this is really necessary is a political judgement call. From a practical implementation point of view, however, the gradual approach is less attractive since the minimum quantity at which substantial economies of scale are possible is the standard 100-bag lorryload, which is the norm on Kenya's roads. Moreover, it is easy to foresee potential administrative problems at police checkpoints if a fraction of a lorryload is "legal" and a full load is not.

Implementation Issues

If the decision is taken to relax and, sooner or later, remove the controls, several practical aspects must be addressed within the KMDP. First, if the gradual approach is taken, then the schedule of permissible quantities and legal status of the transition will need to be broadly and carefully publicized by the GOK (with financial assistance from KMDP) in order to avoid the chaos and confusion which surround the current 10-bag allowable level under partial liberalization. For example, in the western districts of Kisii and Kakamega the study team found few Board officials or District Commissioners who believed that 10 bags could be moved freely anywhere in the country -- notwithstanding a high-level GOK policy decision to this effect which was made in 1987. Most stated the view that this quantity was legally transportable only within districts when intended for home consumption, and that only two bags could be moved freely cross district lines.

A national media campaign (particularly radio and newspaper stories), would be essential, with emphasis on the rights of individuals and small traders. Complementing this, the GOK would have to ensure that the District Administration no longer uses the administrative or regular police to interfere with market trade, on the grounds that "too much maize is leaving the district," or that the Board's depots are not getting enough of the surplus. In short, the actions as well as the policies of the GOK should reflect the fact that Kenya is ideally suited for internal trade in maize. This means, in turn, that the legitimate concern of food security must be addressed in a national framework rather than on a district-specific basis.

Second, the Board may want to maintain some sort of internal movement documentation for statistical and inventory control purposes. Selling to the NCPB/large mill system should be a privilege, rather than an obligation, so that possession of a permit should only be required in order to deliver to the Board, and would no longer

be a restraint on private trade. To be clear, this would also mean that "movement permits" would no longer have any legal purpose at police road points. They would only be required to make deliveries to the Board or to mills, and to the latter only if the "80/20" rule on deliveries (or some variation on this approach) were still in effect.

There are a number of arguments which are made as to why the GOK will find it difficult to accept the elimination of movement controls. Some of these reflect varying perceptions of the objectives for movement controls in the first place. Some feel that controls are needed for:

- Ensuring food security within a district, i.e. preventing commodity flows to other areas from denuding the district of sufficient grain for home consumption. (This is largely a false issue, however, and serves to justify heavy-handed application of police and administrative powers);[20]

- Ensuring overall national food security, with an attendant need to know "where the grain is" since this presumably will allow stocks being held (hoarded) in inappropriate places to be seized if the country experiences a serious deficit; and

- Ensuring that the NCPB receives adequate supplies of grain to sell to the mills and trans-ship to other locations. The only satisfactory answer is that the NCPB, in the long term, must be a market competitor.[21]

The above perceived objectives for movement controls reflect the overlap between legitimate policy concerns (national food security); protection of certain vested interests who are benefiting from the status quo; and reluctance to enter the "unknown" by dismantling part of a state marketing system which has operated for the past 50 years. In any case, they must be addressed effectively if this reform is going to be accepted over time within the Kenyan political process. This can be done by examining the presumed justification for movement controls (or alternatively, the presumed negative impacts of their removal) under three scenarios of direct concern both to politicians, technicians, and other maize market participants: the average year, a bumper harvest and drought conditions.

Impacts of Removing Movement Controls under Alternative Scenarios

Under average production conditions (such as are modeled below in Table 2.8) the operations of the NCPB in buying 4 to 7 million bags would not be greatly impacted by the elimination of movement controls since current GOK producer prices are fixed at levels which are substantially above prevailing market prices at harvest time in most of the Board's major purchasing areas. Thus, as a buyer, in average years, under the

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[20] Most countries have areas of surplus production and others which are in deficit. Citizens in both areas benefit from trade which allows them to take advantage of the comparative advantage of the area in which they live. Arguments that it is necessary for the civil administration to interfere with the local market in order to prevent the local population from foolishly selling off all their stored food sorely underestimate the intelligence of the Kenyan people.

[21] This simply means that the NCPB will have to buy its supplies at or above prevailing market prices unless it can make arrangements to contract with certain groups of farmers, at prearranged prices and quantities, which would allow the farmers to make further cost reducing investments based on the "bankable" present value of those Board contracts.

policies currently in force, the NCPB would be largely unaffected by movement control elimination.

Of much greater impact on the Board, under current conditions, is the erosion of its role as a seller of maize to the sifted flour mills, under the operation of the "80/20 rule", a reform agreed to under the CSRP programme (described below in more detail in Section 2.4.4.) Under the first year's experience with this policy, traders and farmers were allowed to make direct deliveries to the mills at prices between what they would normally receive from the Board and what the mills would normally pay the Board for their maize supplies. It is clear from internal Board documents that direct deliveries in 1988/89 negatively affected the Board's stock levels and cash flow, further complicating its problems of disposing of excess stocks built up over the past few years.

Thus, in sum, it is clear that the biggest problem facing the NCPB in average years (represented well by the past few from 1986 to 1989) has been one of sales at adequate prices and not purchases. **Thus, we conclude that elimination of movement controls, in and of themselves, would not have an appreciable impact on NCPB operations and budgetary deficits under average production/stock level conditions.**

Under bumper harvest conditions in all or large parts of Kenya, the conditions described above for the average year will hold even more strongly. The NCPB's buying price will undoubtedly be far above the prevailing market price, once the harvest begins in earnest. Thus, the Board will have even less difficulty in buying as much maize as it wants to provide for turnover of the food security stock (FSS) and for some degree of price stabilization.

The biggest question under bumper conditions is one of how much price support can be provided to farmers or one of how to distribute access to Board purchasing at above-market prices. This could be done at a fixed price through use of some sort of "quota mechanism" (dangerous because of the potential for abuse) or the Board could solicit bids from traders and farmers for delivery at prices between current market levels and the target level (the latter would be more economical for the Board), but would not please certain parties who are accustomed to regular sales to the Board and to receiving high guaranteed prices.

Again, in sum, elimination of movement controls would have no negative impact on the NCPB's ability to act as a buyer of maize under bumper conditions. The bigger problems would be limitations on the degree to which the Board can be the "buyer of last resort" given budget restrictions, and, as mentioned above, erosion of its protected market under the CSRP strategy of partial liberalization of the secondary formal market (direct sales to mills under the "80/20 rule").

Under the "drought scenario", the opposite conditions prevail and this is where more serious questions of the Board's future reduced role are posed. The market price will be rapidly moving above the target buying price on maize markets across the country, and the Board will not be able to purchase desired amounts of maize unless it competes on price. Under free market conditions, this is just what it should do until key regional price and supply indicators reach levels which automatically trigger two levels of action by the Board in its role of keeper of the national food security stock and coordinator of cereals imports:

- First, regional maize market prices reach predetermined levels which trigger a phased selling of the FSS. If the drought is mild this action may be sufficient; and

- Second, if maize prices continue to climb as national supply dwindles, then the second price trigger is reached which causes the NCPB to place emergency commercial orders for white or yellow maize (color/quality decisions depending on relative price differentials) on world markets.[22]

Planning for this market situation will be one of the principal challenges for the Board's Forward Planning Unit and the market price information collection/ dissemination and food security planning functions of KMDP ARMES (Item 4 in the Policy Agenda, described below in Section 2.4.4). Experience in Kenya during the 1984 drought illustrates that automatic import/food aid trigger mechanisms must be in place; must have access to correct and up-to-date domestic and international price and supply information; and must be used as designed, free from politically-motivated interference. It was months of delays and indecision in 1984 which hampered maize imports from arriving on a timely basis, and as a further consequence, have inflated some GOK officials' estimates of the ideal size of the FSS.[23]

In sum, under deficit production conditions, the eliminations of movement controls will have the following impacts:

- Under mild deficit supply conditions the NCPB will have to compete on the market to acquire its desired level of supply to roll over the FSS;

- However, as maize supplies tighten, the Board would stop buying and instead begin to sell the FSS. Should the situation further deteriorate, imports would have to be ordered;

- The key questions to be answered are: at what regional price levels does the NCPB begin to sell its food security stocks (FSS)? At what higher price level does it place orders for future delivery of imported maize? The trigger formulae will have to take into account NCPB stock levels, prevailing market prices, the time of year, and knowledge of the coming crop. These decisions are usually made in the February-May period, anticipating the next August-September harvest (in the mid-altitude zones with two maize harvests) and the October-December harvest (in the high elevation large farm zones).

The above discussion was based on the current set of operational policies controlling Board actions. In the longer run, the role of the Board in Kenyan food security will have to be defined by the national political process answering a set of interrelated policy questions which are listed in an attachment which concludes this annex. It is important to note that the current CSRP in the formal side of the Kenyan market has only begun this process. This is where the ARMES component to KMDP can make an important contribution to national policy dialogue over the first three years of the program.

Also, in the longer run, a widening price band implies that the NCPB would have to compete on Kenyan maize markets for supplies under a wider range of price conditions than at present. It probably also implies less producer support than is currently the case with existing maize policy. Greater opening of the formal maize

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[22] Yellow maize is viewed as a decidedly inferior good by Kenyan consumers on the grounds of the taste and color of the resulting "Ugali". However, US yellow maize can currently be delivered to Mombasa for about Kshs 285 for 90 kg, very competitive when domestic supplies are short.

[23] See Attachment 2.1 to this Chapter for further discussion of questions that must be answered on the size of the FSS in relation to the NCPB's overall role in a liberalized system.

market to private trade also implies that the Board would have to be more competitive as a seller on the market as well, unless it could work out a contracting scheme with Upper Rift farmers to buy at lower fixed prices the quantities necessary to roll over the FSS.

2.4.3 Descheduling Beans and Minor Grains

For this item on the Policy Agenda, a two-step process is recommended. First, all crops now being handled by the NCPB except maize, wheat, and rice (i.e., beans, sorghum, millet, all pulses and legumes, etc.) should be taken from the schedule for the following reasons:

- They are less essential to food security than the main cereals;
- With the exception of beans, they are not purchased to any great degree by the Board. This would provide a politically acceptable reduction in the Board's mandate which could pave the way to addressing eventual descheduling of the "big three" cereals; and
- This would allow government officials' confidence in the efficiency and transparency of private trade to increase with experience in minor crops;
- It would allow promotional programs for minor crops (special extension/research efforts, export promotion efforts, etc.) to be more targeted and cost-effective; and
- Progress on the liberalization of these other crops could be monitored through the price data collection and analysis functions supported under the KMDP.

The second step would be to study carefully the relationship between the juridical implications of scheduling and the desired future role of the Board in maize, wheat and rice marketing. Among the key questions is: Do the latter two crops have any role in the definition of basic food security, or is that carried by maize alone? It is possible that a cost-minimizing NCPB bulk maize security stock operation might require some degree of vertical integration (through contracting for example) which would reduce risk on the production side and allow farmers, coops and traders to invest in cost-reducing mechanical harvesting and bulk-handling, drying and storage facilities. In that case there may be some need for a secure legal foundation for such an operation (although this may differ from the current scheduling legislation.)[24]

2.4.4 Support to NCPB Reform and Reduction in Its Role

This item on the Policy Agenda acknowledges the lead role of the EEC and the World Bank in addressing the internal dynamics of the formal marketing system, and is designed to reinforce the Cereals Sector Reform Program (CSRP) which the GOK is now undertaking with financing from the EEC. It also acknowledges the time which will be required to answer many of the operational issues involved with a reduced NCPB role, enumerated in Attachment 2.1.

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[24] In the final stages of the KMDP design process, these legal issues should be addressed by Kenyan consultants fully conversant with the nuances of the Kenyan legal system and its use as the basis for administrative practice.

Role of IBRD and EEC

The World Bank funded a major grain marketing study which was started in 1982, submitted in draft in 1983, and finally accepted by the GOK in 1987 (Booker Agriculture International and Githongo Associates, 1988). No significant decisions were taken by the GOK during the elapsed period between the draft and final acceptance (a period marked by the disruptive 1984 drought), although by the time of the latter, a study financed by the EEC had also been conducted (Technosynesis, 1988) and an inter-ministerial steering committee was in existence with the mandate to further explore recommended reforms. In the past two years the World Bank has largely ceded the leadership role on cereals policy reform to the CSRP program, and is trying to support this effort by funding of complementary investments and studies.

The agreement establishing the CSRP was signed in December 1987. In it the GOK approved a series of measures to introduce internal management reforms in the NCPB and improve efficiency in grain marketing channels. A detailed implementation timetable was designed to specify, in the form of a five year action plan, the measures to be taken by NCPB and means of implementation, and how progress was to be monitored (EEC 1988). In addition, this agreement provided formal recognition of the two cornerstones of the future reduced role of the Board:

- To maintain a food security stock of maize; and
- To be the maize buyer and seller of "last resort."

In its first year and a half, the CSRP has concentrated most of its efforts to date on internal restructuring and reorganization of the NCPB, and there has been less attention given to the detailed definition of the future reduced role of the Board, partly due to the political sensitivity and difficulty of decision-making in the latter. Attachment A-2 is a table summarizing the five-year CSRP implementation timetable, highlighting the fact that progress to date has been quite slow in many key areas that relate to defining the longer-term role and functions of the Board. Slippage in the implementation timetable of the CSRP is beginning to raise doubts within some GOK and donor circles, and offers the very real possibility of substantial backsliding on the reform process.[25]

One of the most serious problems encountered in Phase I of the CSRP involved interpretation of the 80/20 percent ruling by which shares in the formal market were to be allocated in that ratio between the NCPB and the private sector, notably the KGGCU. As described elsewhere in this report, the KGGCU was initially unprepared to enter the secondary market (direct sales to mills), but hurriedly contacted several millers in Nairobi, Nakuru and Eldoret, and arranged for some large-scale farmers, who were recipients of their credit, to deliver directly to selected mills. The KGGCU had managed to sell about 90,000 bags of maize by the end of February, 1989. While there were the usual problems with maize moisture content, the poor performance of the KGGCU was at least in part due to farmers not wanting KGGCU credit to be directly deducted from payments by the mills. In the meantime, in the face of increasing private trade in maize and NCPB stocks not turning over, the GOK revoked the KGGCU license, which did not deter a few influential people in the northern Rift Valley from continuing deliveries to the mills. The apparent "failure" of liberalization

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[25] On the afternoon that this team made its first summary briefing to USAID on study findings and recommendations, the NCPB and the Kenya police were conducting a massive crackdown on "illicit maize trade" by urban wholesalers and traders in the center of Nairobi. This resulted in the seizure of substantial quantities of maize in bags out of shops and the general closing of shops in that wholesale/retail district (Reported in *The Standard* of June 23).

in the secondary market suggests that partial measures aimed at the formal market were substantially more difficult to implement and sustain than initiatives such as Item 1 in the Policy Agenda, focusing on the informal trade.

One indication of the lack of a coordinated GOK approach to policy affecting the formal market over the long run appears in the National Development Plan (1989-1993), which proposes to increase total national grain security reserves to 17.05 million bags of maize and wheat by 1993. This is directly contradictory to the stated goals of the CSRP. The Plan states further that, due to the reduced role of NCPB, the private sector (farmers, traders, etc) will be expected to construct storage facilities to meet a greater proportion of their own needs.[26]

In these complex circumstances, while moving ahead aggressively on the issue of movement controls, the KMDP Policy Agenda should be explicit in its support for the eventual rationalization of the formal market. This involves linking policy analysis, monitoring, and evaluation activities to support two NCPB functions (food security and price stabilization) while progressively de-emphasizing others, particularly commercial activity that purportedly cross-subsidizes those two functions, but leads inexorably to over-regulation and measures that crowd out more efficient private trade.

Greater Private Sector Participation in the Formal Channel

The idea of opening up the formal side of the maize market is sound and important. However, from our analysis above, it is clear that this will be more complicated than decontrolling the informal side of the market, already dominated by the private sector. The particular liberalization targets agreed to in the CSRP (particularly giving a phased percentage private delivery access to the large mills) seem rather arbitrary and, more importantly, one wonders what bearing they have on how the Board would operate in its future reduced role. Since the future role is not fully defined, then it is hard to see whether the targeted levels of private deliveries to the mills are leading in a direct path to the desired "end product", the future reduced role for the Board.

Second, as the 1988/89 experience underlined, there is great doubt as to the workability of these particular implementation targets. Unresolved are how to measure and predict the size of the market, how to allocate quotas for deliveries when there is maize being harvested at least eight months of the year in Kenya, how to avoid excessive rent payments in order to be on the list of those eligible to deliver directly to the mills, and who should be able to deliver (cooperatives, farmers, traders). These and other issues must be resolved before the logical transitional path to freeing the formal channels can be defined. In addition, it has also been suggested that this wholesale/flour part of the formal maize marketing system is the one where the NCPB can make some profit which is needed in order to cross-subsidize the other parts of "the reduced NCPB role" which will lose money.

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[26] The Plan states: "In developing the on-farm storage programme, it is expected that with appropriate incentives in prices, credit availability and physical infrastructure, the farmers would release their produce gradually over the year. To achieve this transition, Government will introduce a seasonal price differential which will enable farmers to profitably install improved storage facilities and to cover their costs. This seasonal price differential will be operated through Crop Purchase Revolving Fund to be operated by NCPB." Government of Kenya (1988).

The Price Band

Although properly part of the KMDP Policy Agenda, this item has not been made operational, since it awaits the outcome of the current CSRP cereals pricing study[27] to define the operational pricing procedures in such a way as to resolve some of the obvious internal conflicts and contradictions within the "reform package" as it now exists on paper, or in the informal planning of selected donor and GOK personnel.

Many of the practical issues in the operation of the price band are addressed in Attachment 2.1. In addition, it should be emphasized that general Kenyan expectations regarding the success of producer and consumer price stabilization are probably too high. Experience from countries in other parts of the world demonstrates the pitfalls and enormous economic costs which can be incurred through producer price support programs. It is conceptually easier to provide some level of consumer price stabilization through a sensible import policy and the creative use of donor food aid from North American and European sources.

Strategy to Follow in the Support of Existing Reform Efforts

It is critical that USAID work closely with the GOK, the EEC, and the IBRD to define an acceptable range of policy options on the key issues involved in implementation of "food security reserves with limited price buffering intervention." The firmest rock to which to anchor such simulation or modeling efforts is that of budgetary constraints. These, of course, may be lifted somewhat through the use of monetized grant food aid.

There needs to be a two-part strategy to supporting the existing cereals market reform movement in Kenya. First, we are suggesting that the conditionality here cover two time periods. In the first year or two, the emphasis should be in setting deadlines by which certain priority issues would be resolved by GOK and Kenyan consultants, supported by appropriate outside assistance provided under the Institutional Strengthening component of the KMDP. The first task of this group should be a realistic initial strategy for Kenyan food security. Next, the reform team must address the implications which stem from the initial definition of food security for the essential unresolved issues involving the operation of the FSS and stabilization operations. (Attachment 2.1 provides a listing of unresolved issues which could serve as initial terms of reference for such an effort.) This will be a core activity of the Applied Research, Monitoring and Evaluation System (ARMES) program, along with market information collection and dissemination, and food security preparedness planning as described below.

In the third year, implementation options should be laid out by the same group for the GOK and the assembling of an implementation timetable should be a precondition for the release of the third tranche of program funds.

2.4.5 Support for Market Information and Food Security Preparedness Planning

Given the great uncertainty which surrounds the market reform process, this policy agenda item is critical to the longer run success of the program. While many aspects of this item could be seen as program inputs rather than reform measures, they are maintained in the reform category since their institutionalization and execution in practice would represent significant departures from current practice.

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[27] The study is being conducted under contract by the firm of AgroProgress and a completed report is expected in September 1989.

Many of the practical issues in the institutional design of ARMES are being addressed in an additional design study underway in Nairobi in July-August, 1989. A key conclusion of this team is that it will be important for this component of KMDP to be designed so that the resources made available to GOK by ARMES are well spent and contribute significantly to addressing:

- The information needs of a freer Kenyan cereals market;
- The Kenyan definition and debate as to the practical content and operation of national food security; and
- The constructive collaboration with the GOK and other concerned donors for practical, operational answers to implementing the reduced role for the NCPB.

2.4.6 Summary of Current Situation in Cereals Marketing Policy Reform

There are many issues which need to be resolved in the process of developing an acceptable program on cereals market reform between the three major donor players and the GOK. Some of the issues need to be addressed now, some can be tackled over the next couple of years if there is a clear, shared view of the desired end-state for the NCPB and its various operations. There are five summary conclusions about where the reform process stands at this time:

- Our assessment of the Kenyan cereals situation is that the country finds itself somewhere in the grey middle area (between the free markets and a totally directed system), paying a high price through gross inefficiencies coming from restricted private trade and through budget hemorrhaging on the formal side of the market;
- The CSRP reform process is much further away from beginning to resolve key issues on the future reduced role of the NCPB than was initially believed. This means that it is unreasonable to expect the GOK to be able to initiate immediate substantial reductions in the role of the Board over the next few years since the future role is still so operationally undefined;
- The 1988-89 experience with partial liberalization illustrates a conclusion seen numerous times in past GOK efforts at allowing freer markets: poorly planned efforts at allowing greater private trade often have led to substantial chaos and confusion in the market and have caused the government to retighten controls to protect the national interest. It is not sufficient to agree on the general objectives of the reduced role for the NCPB; there must also be sensible and detailed operational contingency plans for any cereals reforms to succeed. To date these operational plans have been lacking;
- In terms of USAID interest in marketing system reforms where change could take place more rapidly, the emphasis must be on the informal channels in the national maize market. This is where the private sector is already conducting much of national maize marketing, and where the negative cost effects of regulation are most visible and easy to remedy. However, addressing key issues such as movement control relaxation (even if the positive effects on consumers can be shown clearly) will have to be able to address two expressed fears: one, that informal channel liberalization will further erode the tottering state of the NCPB and its continuing drain on GOK finances and, two, that such changes would increase national food insecurity; and
- In addressing the longer term FSS and stabilization roles for the NCPB, one must proceed more slowly, putting emphasis on a two-pronged approach. First,

begin to implement smaller aspects of market liberalization on the margins of the current formal system. Second, put major emphasis on assistance to Kenyan agricultural economists and GOK officials to begin to define the basic food security strategy to be pursed by the country and how it can be implemented in practical terms (a major output for the ARMES component of the KMDP program).

2.5 ESTIMATED COST SAVINGS FROM KMDP POLICY REFORMS

This section provides a series of summary estimates of the potential cost savings for proposed KMDP policy reforms described above. These summary descriptions will provide the core building blocks to the final KMDP economic analysis.

2.5.1 Basic Assumptions

For the purposes of calculating the savings associated with liberalizing the present maize and bean marketing policy, the following assumptions are made on the dimensions and characteristics of the national maize and bean markets (See Section 2.6 for more detail on these assumptions):

- Total supply of maize in an average year is 31.4 million bags (i.e. 2.8 million MT), of which 58 percent is grown for home consumption. The marketed surplus -- 13.2 million bags -- is split approximately 50:50 between the NCPB and the informal private trade. Large-scale producers of maize account for about 13 percent of total production but 26 percent of the total marketed surplus.

- The total supply of beans in an average year is 3.9 million bags: (350,000 MT), of which 50 percent is grown for home consumption. The marketed surplus -- 2 million bags -- is largely handled by the informal private trade (90 per cent), with the NCPB only accounting for 10 per cent of the trade.

The costs of maintaining existing national cereals marketing policies (movement controls, a completely controlled price structure, and theoretical NCPB monopoly and monopsony powers) are contrasted with a policy regime that is open, i.e. in which maize and beans can move freely within the country, the NCPB monopoly and monopsony powers are drastically curtailed, and prices for the produce are determined by the interplay of supply and demand.

The estimates of savings attributable to liberalizing the present policy regime for maize and beans are, at best, only indicative. The estimates are presented in three categories:

- Savings likely in the formal maize trade (primarily movement to the major sifted flour mills) are represented most easily through a reduction in the overall marketing margin between producer and mill;

- Savings accruing to the informal maize and bean trade (ie., that which is outside the current NCPB/mills network) are again most directly estimated through a reduction in marketing margins at the wholesale level. (The distribution of these benefits to farmers, consumers and traders is contained in Section 2.6 below; and

- Savings that would be generated by farmers and other industry participants changing the way that they do business because of the changes in maize marketing policies.

2.5.2 Formal Market Savings

Removal of movement controls on maize and the concomitant shedding of gazetted prices at the farm-gate and NCPB depot levels would generate substantial savings within the existing formal maize marketing system. At present (June, 1989), grain traders with access to movement permits are willing to sell maize from surplus points in Western Kenya to major mills in Nairobi for around 260 Kshs per 90 kg bag. In effect, this season, the Kshs 260 price equates to an immediate post-harvest equilibrium price for maize.

The pan-seasonal pricing policy of NCPB obfuscates the pricing pattern that could be expected under an open market system, since gazetted prices do not rise during the marketing season to reflect storage costs for the commodity. If the system were open, we estimate an increase of Kshs 5 per bag per month from one harvest until the next. This would increase, for example, this season's average maize price delivered direct from large-scale farms to the mills to about Kshs 275 per bag (from the immediate post harvest level of Kshs 260).

Thus, opening up the formal maize marketing system would reduce the average price of maize delivered to the mill from Kshs 317 (the 1988/89 NCPB selling price to the mills) to an average of Kshs 275 per 90 Kg bag, ie. a savings of Kshs 42 per bag. The volume of maize delivered to the mills in the formal system is normally about 5.0 million bags. The private sector share of this formal trade would increase sharply, with at least 2.0 million of the 5.0 million bags being shipped directly from farm to mill (Implying at least a "60/40" or "50/50" split between NCPB and private deliveries in the terminology of the current CSRP reform program). The potential savings from liberalization would be 2.0 million x Kshs 42 = Kshs 84 million per year. Of that amount, at least half would represent real economic savings to the Kenyan economy in terms of efficiency of storage, handling, and transport, or a net savings to the economy of at least $2.0 million a year.

The savings resulting from maize policy liberalization are predicated on the basis of the average seasonal price for maize delivered to major mills being lower under open market competition than under the present regulated system. Subsumed under this aggregate amount of savings are specific areas of inefficiency in the current controlled market environment. Their elimination or reduction through a reduced role for the NCPB would assist in attaining the savings possible in the overall margin described above:

- Under the present marketing system, much of the maize that is destined for the milling industry is transported from farm to NCPB depot to mill. There would be substantial savings, in storage and handling costs, if deliveries were made direct from farm to mill;

- At present, the NCPB requires deliveries of maize to be in new gunny bags (costing Kshs 22 each) which are only used one season. Private traders, currently expect a gunny bag to last at least two years, i.e., a bagging cost half that incurred by the Board; and

- One of the major criticisms of NCPB procedures by the grain transporting trade is tremendous backlog in the loading and unloading of vehicles at the Board, causing very costly downtime for vehicles while they wait in line to load and unload their trucks.

2.5.3 Informal Market Savings

About one-half of maize and 90 percent of bean marketing in Kenya is undertaken by the private informal trade. Field interviews reveal that private traders, transporters, etc., are actively undertaking this illegal trade in the face of substantial impediments, not the least of which is movement control regulation. One result of such a stringent policy is that the development of larger-scale wholesale trading firms has been constrained; the trading environment is characterized by many small-scale traders operating at less than peak efficiency as they fail to reach the critical trading volume that can engender significant economies of scale:

- Small-scale wholesalers buying and selling maize in Western Kenya purchase maize for Kshs 315 per bag from other local wholesalers and incur expenses of Kshs 60 in shipping the produce in small volumes to their customers. If the wholesalers purchased direct from farmers in surplus-producing areas and delivered by the truckload to their customers in deficit areas, then, they could save Kshs 65 per bag (reflecting a combination of a lower purchase price when bought direct from the farmer and lower unit transportation and handling costs). This amount -- Kshs 65 per bag -- represents the imputed costs of the present movement control regulations. Numerous examples were worked through and, consistently, the savings calculated under increasing scale of business were in the Kshs 55-75 per bag range. Aggregated to the national level, this would represent gross savings (margin reduction) of Kshs 429 million per year on 6.6 million bags of maize traded in the present informal market. A more detailed modeling of the distribution of these benefits is covered in Section 2.6 below.

- About 90 percent of the 2 million bags of beans that are marketed in Kenya are handled by the private trade. Trade in beans is constrained by the present movement control regulations. Marketing costs are inflated significantly as a result of: having to paying "rents" to allow movement; and high per unit transport and handling charges associated with trading very small volumes. For example, small scale bean traders under present policy conditions incur marketing costs of an additional Kshs 75 per bag because of the inefficient scale of their operations compared to what it would cost to move the beans by full truckload under a freer market environment. Interestingly, Kshs 75 per bag is similar to the excess costs that large-scale traders incur when shipping truckloads of beans from Kisii to Nairobi -- as much as 60 Kshs a bag is accounted for in "rents". If projected to the national level, these excess costs add up to Kshs 132 million per year (i.e, 1.8 million bags of beans per year with a potential cost savings of Kshs 75 per bag in a more liberalized environment.)

Table 2.6 below summarizes some of these cost savings attributable to allowing the development of a less restricted wholesale function, particularly in the important trade among market centers, capitalizing on Kenya's inherent advantage in inter-regional trade.

TABLE 2.6

TYPICAL MARKET MARGIN SAVINGS DUE TO LIBERALIZATION OF KENYAN MAIZE AND BEAN WHOLESALING

(All Savings in Kshs per 90 Kg. Bag)

Cost Category	Current Small-Scale Wholesaling	Normal Wholesaling	Cash Savings Amount	Cash Savings Percent
A. MAIZE				
Purchase Price **	315	270	45	69%
Handling	15	10	5	8
Transport	35	20	15	23
TOTALS	365	300	65	100%
B. BEANS				
Purchase Price	680	640	40	53%
Handling & Fees	15	10	5	7
Transport	60	40	20	27
"Rents"	15	5	10	13
TOTALS	770	695	75	100%

Notes:* For more detail on assumptions, see part 2.3.3 of this chapter.

** This savings represents the elimination of one intermediary (and a 1 shilling per 2 kg margin) from the typical maize marketing channel.

2.5.4 The Value of a Production and Marketing Information System

Converting potential savings to actual savings accruing from the liberalization of Kenyan maize and bean markets will be contingent upon farmers, traders, millers and consumers having access to much improved production and marketing information than is presently the case. For example, it would be particularly useful to have better information on seasonal and regional price variation, supply and demand conditions, including expected regional surpluses and deficits, etc. The collection, interpretation and dissemination of the released data needs to be the responsibility of a well-equipped government agency. Of course, such information services will be provided at a cost, but the gains that accrue should far outweigh the costs. Indeed, all the calculations of the above cost reductions stemming from market liberalization presuppose that all market participants have access to comprehensive market information.

Overall this will result in fewer market distortions, enhanced market integration and greater transparency. This improved market information, linked with an effective food security preparedness planning system, will contribute to cost reductions assumed above. We have therefore not included a separate figure for benefits attributable solely to improved information.

2.5.5 Other Potential Savings

The third set of estimates relate to the cost savings that could be generated from investment in bulk harvesting, handling and storage equipment by large-scale farmers, cooperatives, the NCPB, and the milling industry. Uncertainty about the present status

and future direction of maize policy in Kenya is constraining investment in bulk handling equipment and facilities. At the larger-scale farm level, 99 per cent of maize is harvested by hand. Harvesting costs, at an average of Kshs 1575 per ha, are the second highest expense item in maize production (second only to fertilizer purchase and application). Switching to mechanical harvesting (either through the use of combines or corn pickers, with drying in cribs with later mechanical shelling and bulk storage), could reduce this major expense item by a minimum of 20 per cent, i.e. a saving of Kshs 365 per ha, given the following assumptions:

- Large-scale farm maize yield of 50 bags per ha;
- Large-scale farm production of 7.5 million bags;
- Ninety-nine per cent of land area hand-harvested;
- Hand-harvest acreage of 927,000 ha;
- Fifty per cent of larger-scale farmers switch to mechanical harvesting and bulk handling in response to GOK liberalization of maize market and some complementary investment in applied research and demonstration.

A move to greater mechanized harvesting and handling at the larger farm and cooperative levels could induce a national savings in maize production costs of Kshs 22 million per annum.

Because of the pan-territorial and pan-seasonal pricing policy for maize, the milling industry has not invested in substantial grain storage facilities. The NCPB has been the principal storage agent for the industry and storage, in the main, has been in bags and not in bulk. Currently, the mills purchase 7.2 million bags of maize annually of which 2.2 million are stored in bulk and the remaining 5 million in bags. Under a new policy regime in which market-determined maize prices increased through the season to reflect storage costs, it is assumed that 6.5 million bags out of the 7.2 million would be stored in bulk and only 0.7 million stored in bags, i.e. an increase in bulk storage of 4.3 million bags per year. The major mills estimate that there is a Kshs 7.50 per bag savings if grain is delivered to the mill in bulk and stored by the mill in bulk, relative to a system where grain is delivered in bags and stored in bags. The savings are lower (Kshs 5 per bag) if the grain is delivered to the mill in bags but stored in bulk. If, out of the 4.3 million bags 30 percent are delivered in bags and 70 per cent are bulk deliveries, and all 4.3 million bags are stored by the mills in bulk form, then, relative to the existing system, there would be a Kshs 29 million annual saving accruing to the industry from bulk handling and storage by the mills.

2.6 ESTIMATED ECONOMIC IMPACT OF ELIMINATION OF MOVEMENT CONTROLS

The analysis in the following pages assesses, in both quantitative and non-quantitative terms, the impact of the elimination of the movement controls restricting private commerce in maize and beans. Impacts are discussed in terms of their effects on producer and trader revenues, food costs to consumers, and their potential longer-run impact on production.

The heart of the analysis above (Section 2.5) focuses on the segment of the "informal" vertical marketing channel for maize where proposed KMDP reforms are likely to have their greatest impact: the reduction in the costs of marketing due to the emergence of a viable group of private maize wholesalers who would practice both

spatial and temporal arbitrage in a more efficient manner. The analysis above describes marketing savings of approximately Kshs 65 a bag of maize as it moves from the farmgate or first handler level to the mills, wholesalers, or retailers. What we would have under a freer market is wholesalers going directly to farmers or first handlers, buying available surplus and shipping it to deficit areas in economical 8 ton (or larger) lorry loads. The marketing savings of Kshs 65 are made up of:

- The elimination of one or more market traders from the channel — 45 Kshs
- Reduced handling charges due to fewer transactions and larger volumes being handled in each transaction; and — 5 Kshs
- Cheaper transport due to the use of larger lorries instead of pickups and the tops of buses (economies of scale primarily). — 15 Kshs

A general model of the distribution of the potential benefits from this reduction in margin are illustrated in Figure 2.5 on the next page. In that illustration we have assumed that part of the savings (20% or Kshs 13 per bag) is captured by wholesalers who may have somewhat greater influence in the market than the more numerous small market traders, some of whom are likely to be displaced in the reform process. [28] We then assume that the remaining 80 percent of the reduction in margin would be divided between the producer and consumer levels. Under this assumption, producers would get a Kshs 26 per bag increase in price (about a 10 percent increase at the 270 Kshs price level) and consumers (or millers or the final level of small retail traders) would also pay the same amount less per bag under average conditions (a 7 percent drop in average price at retail).

We are assuming that the majority of the reductions in marketing margins (80 percent in the general model) will be divided between "consumers" and "producers" due to actual or potential competition among wholesalers. Given the relatively low potential barriers to entry for new traders into the business and if it becomes clear that excessive profits are being made by a small number of traders in a freer marketplace, we would expect new entrants who would increase effective competition and help maintain market discipline. There are additional assumptions concerning the time it will take for the maize market to reach this new equilibrium point and what happens to the distribution of savings during the transition period, and these issues are addressed below.

2.6.1 Impacts On Maize Production and Marketing

What impact will higher prices have at the farm level? Everything else being equal, higher prices for the same quantity marketed will have a positive impact on both gross and net farm revenues. This is first explored before turning to the longer range question of what impact higher farmgate maize prices might have on supply response and cropping patterns. Here we will look at average farm revenue impacts for two size categories of farms: small (under 8 hectares) and large (over 8 hectares) in the six Provinces of Kenya which vary in their agricultural productivity and levels of maize availability.

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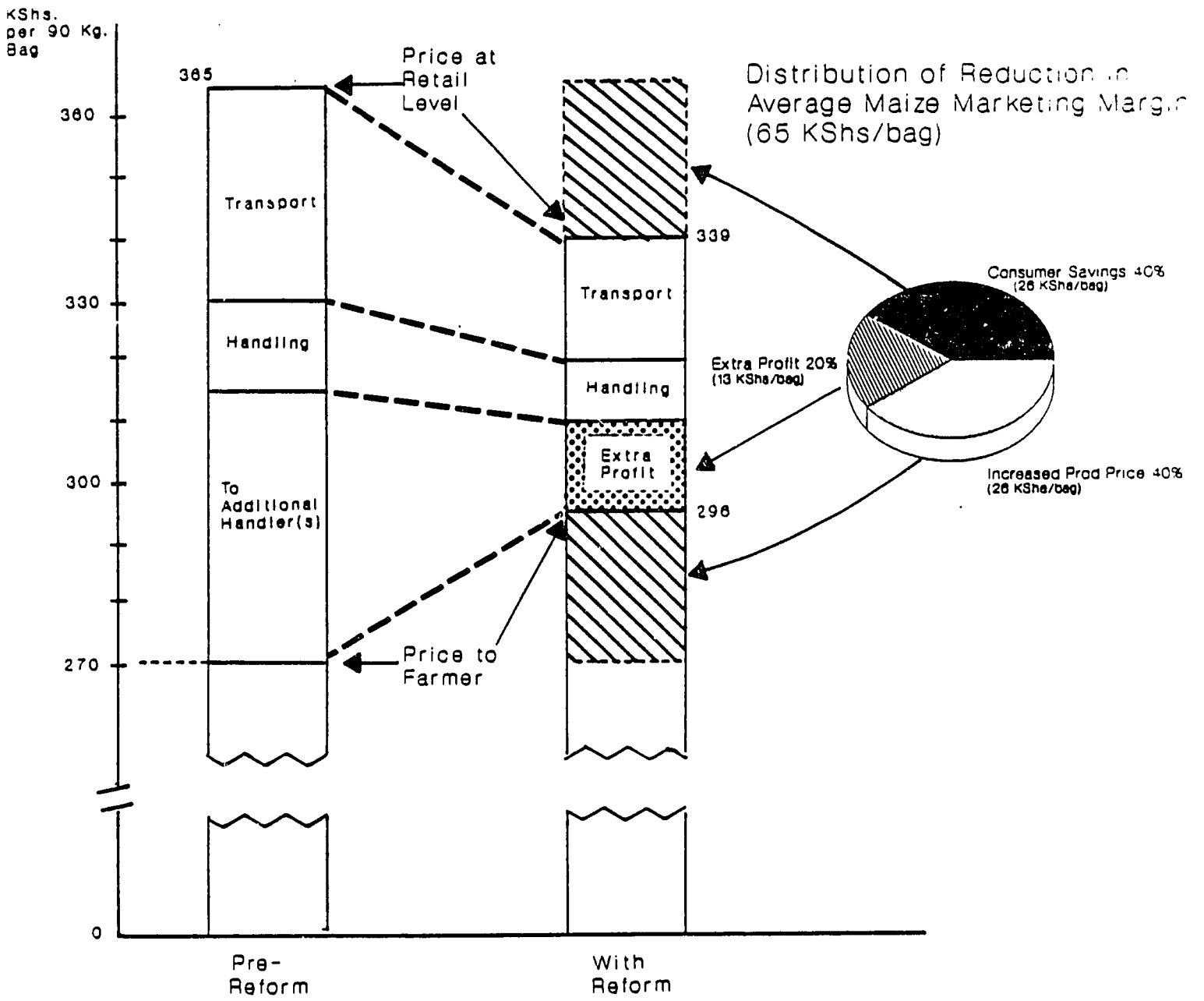
[28] In more theoretical economic terms, this "extra profit" should not exist. In the real but imperfect world, it represents imperfections in the market.

Figure 2.5
Potential Changes in Marketing Margins, Consumer and Producer Prices due to Elimination of Movement Controls in Kenya's "Informal" Maize Market



Maize Production and Marketing Model

To do this a statistical model of Kenyan maize production and marketing was constructed. This model's average year results and its assumptions about maize area, yields, and proportions of production marketed by sample districts are given in Table 2.7. In an average year it produces the following general parameters for Kenyan maize production and marketing, with substantial variation across districts and by size of farm:

Total Area in Maize:	1,588,000	Hectares
Total Farms Growing Maize:	1,388,000	Farms
Total Maize Produced:	31,387,000	Bags
Total Maize Marketed:	13,227,000	Bags
Average area under maize per farm:	1.1	Hectares
Average maize yield:	19.8	Bags/Ha
Average maize harvested per farm:	22.6	Bags
Average percent marketed:	42.0	Percent
Average maize sold per farm:	9.5	Bags

The data contained in the model have substantial limitations (in terms of precise counts of farms, acreages, and yields) and providing assistance to GOK agencies in the generation of improved information over time is one of the expected outputs of KMDP as it supports both recurrent data collection and special studies to be conducted on selected aspects of Kenyan food production and marketing systems.

Impact of Increased Prices on Farmers grouped by Region and Size of Farm

This question is addressed in the short run by applying a set of assumptions to the marketed surplus outputs of the model as developed in Table 2.7. The assumptions have to do with the following factors:

- The nature and timing of the reforms proposed for the national maize system;
- The extent to which the full benefits of the general reductions in marketing margins will apply equally to farms of different size and in different agro-ecological regions; and
- The length of time required for the reforms to be effectively translated into higher prices for farmers (or at the first-handler level).

<u>The Policy Reforms</u>: Consistent with the revised policy agenda they are assumed to be:

Year 1: The information mechanisms are put in place to broadly disseminate cereals and bean reforms. The current reforms (eg., 10 bag free movement of maize) and the future agreed-to reforms are widely disseminated by end of year.

Year 2: Beans and minor cereals are decontrolled. Limits for free maize movement increased to 100 bags by the end of the year.

Year 3: All movement restrictions on maize are removed by the end of this year.

<u>Flow of Price Increases to the Farmgate Level</u>: The following assumptions are made about the distribution of margin reduction benefits:

KMDP IMPACT ANALYSIS WORKSHEET ONE

TABLE 2.7

MAIZE PRODUCTION AND MARKETING IN KENYA IN AN AVERAGE YEAR BY PROVINCE, FARM SIZE AND GROWING SEASON

AREA		% Farms By Size (HA)		Small Farms (<8 Hectares)						Large Farms (>8 Ha)		Maize Production								Maize Marketing										
						HA's (000) in Maize		Num. Maize Farms	Province HA's Maize	# Farms	Averg Area Maize	Yields (bags/HA) Small=Farms=Large			Production (Bags 000) Small Farms		Large		% Kenya	% Harvest Sold			Total Bags Sold				Sales as % Totals			
																				Small		Large	Small		Large		Small		Large	
PROVINCE	District	0-8	Over 8	Av Size (HA's)	Land in Maize (Percent)	Long Rains	Short Rains	('000)	('000)	(000)	(HA's)	Long	Short	Long	Long	Short	Long	Total	Total	Long	Short	Long	Long	Short	Long	Total	Long	Short	Long	Total
COAST	Kilifi	99	1	1.9	0.65																									
	Kwale	95	5	1.9	0.69																									
	Taita	96	4	1.5	0.56																									
	Av./Total	97	3	1.8	0.63	47	26	41	0	0	0.0	12	8	NA	564	208	NA	772	2%	20	10	NA	113	21	NA	134	1%	2%	NA	1%
EASTERN	Machakos	89	11	2.1	0.47	64	96		1.2			12	13		768	1,248		2,016												
	Kitui	87	13	2.3	0.56	32	74		0.0			10	11		320	814		1,134												
	Meru	100	0	1.2	0.42	59	48		0.8			22	18		1,298	864		2,162												
	Embu	99	1	1.6	0.47	19	18		0.0			13	16		247	288		535												
	Av./Total	94	6	1.8	0.48	174	236	273	2.0	3	0.7			20	2,633	3,214	40	5,887	19%	30	30	30	790	964	12	1,766	9%	70%	0%	13%
CENTRAL	Nyeri	98	2	1.2	0.44	14	10		0.6			23	11	25	322	110	15	447												
	Muranga	99	1	1.1	0.51	29	16		0.2			20	9	24	580	144	5	729												
	Kirinyaga	100	0	1.4	0.44	25	12		0.0			18	11	0	450	132	0	582												
	Kiambu	100	0	0.9	0.45	16	16		0.2			21	9	25	336	144	5	485												
	Nyandarua	84	16	1.9	0.41	14	6		3.0			22	10	26	308	60	78	446												
	Av./Total	96	4	1.3	0.45	98	60	168	4.0	1	3.4				1,996	590	103	2,689	9%	40	20	50	798	118	51	968	10%	9%	1%	7%
RIFT	Nakuru	97	3	1.8	0.59	44	5		19.0			34	11	38	1,496	55	722	2,273												
	Nandi	92	8	2.2	0.49	64	7		0.4			29	14	33	1,856	98	13	1,967												
	Kericho	91	9	2.1	0.35	68	8		2.0			33	13	37	2,244	104	74	2,422												
	Uasin-Gis	87	13	2.3	0.35	24	1		22.0			37	11	40	838	11	880	1,779												
	Trans-Nz	96	4	1.5	0.34	12	1		38.0			45	11	48	540	11	1,824	2,375												
	Narok					26	3		0.2			27	7	31	702	21	6	729												
	Other					68	18		4.0			15	10	20	1,020	180	80	1,280												
	Av./Total	93	7	2.0	0.42	306	43	361	85.6	7	12.6				8,746	480	3,599	12,825	41%	40	10	90	3,498	48	3,239	6,786	42%	3%	94%	51%
NYANZA	S. Nyanza	90	10	1.6	0.40	70	30		0.0			12	8	NA	840	240	0	1,080												
	Kisii	100	0	1.1	0.47	35	4		4.0			26	12	30	910	48	120	1,078												
	Kisumu	100	0	1.2	0.57	14	6		1.0			17	9	22	238	54	22	314												
	Siaya	96	4	1.5	0.55	52	22		0.0			15	10	NA	780	220	0	1,000												
	Av./Total	96	4	1.4	0.50	171	62	246	5.0	2	2.8				2,768	562	142	3,472	11%	40	20	60	1,107	112	85	1,305	13%	8%	2%	10%
WESTERN	Kakamega	99	1	1.2	0.57	131	15		2.0			23	11	28	3,013	165	56	3,234												
	Bungoma	97	3	1.8	0.50	64	7		2.0			24	12	29	1,536	84	58	1,678												
	Busia	98	2	2.1	0.31	29	12		0.0			20	11	NA	580	132	0	712												
	Av./Total	98	2	1.7	0.46	224	34	286	4.0	1	4.1				5,129	381	114	5,624	18%	40	30	60	2,052	114	68	2,234	25%	8%	2%	17%
				KENYA TOTALS:		1020	461	1,375	100.6	14	7.4				21,836	5,435	3,998	31,269	100%				8,358	1,378	3,456	13,192	100%	100%	100%	100%

Total HA Maize ('000) 1,582 Total Bags Maize Produced ('000): 31,269

Total Farm Units ('000) 1,388 Total Bags Maize Marketed ('000): 13,192 (% Marketed: 42%)

Sources: GOK, Economic Survey of Kenya, 1989; GOK CBS: Crop Forecast Survey , 1981-82; and USAID Crop Data Base (KRAMU Areas).
Note: Number of Large Farms excludes those not producing maize; further adjustments from GOK Statistical Abstracts.

By Farm Size: In general, larger farms will be able to take quicker advantage of the margin reductions, since some of the very largest have already been making direct deliveries to the mills and otherwise skirting controls. They are also more commercially-minded and better informed about market conditions than their small farm counterparts.

By Zone: Maize surplus areas will feel the effects of the reforms sooner and more fully than other parts of the country. Drier areas with much smaller and thinner markets for maize will only receive a portion of the general farmgate price increase:

Farm Zones:	Price Impacts by Year:
1.) Large Farms, Rift and West Provinces	Higher initial benefits; Full price increase in Year 3
2.) Large Farms, Nyanza Small Farms, Rift and West	Full price increase in Year 5
3.) Small Farms, Nyanza All Central Farms, Wet Districts of East	Lower initial benefits; 77% of price increase by Year 5
4.) Coast Province and Dry Districts of East	Smallest initial benefits; 46% of price increase by Year 5

Summary of Benefit Timing by Farm Zone: The impact of the above assumptions produces a distribution of Kshs benefits per bag sold over time, as summarized in Table 2.8 below. Numbers represent higher prices for farmers, price reductions for consumers and extra profits for traders:

TABLE 2.8

AMOUNT, TIMING, AND DISTRIBUTION OF BENEFITS TO PRODUCERS, CONSUMERS AND TRADERS

Group	Year	Zone 1	Zone 2	Zone 3	Zone 4
Producers	1	0	0	0	0
	2	19.5	6.5	5	3
(Higher	3	26	13	10	6
Prices)	4	26	19.5	15	10
	5	26	13	10	12
Consumers	1	0	0	0	0
	2	26	13	10	6
(Price	3	26	17	13	8
Reductions)	4	26	21	16	10
	5	26	26	20	12
Traders	1	0	0	0	0
	2	19.5	45.5	35	21
(Higher	3	13	35	27	16
Margins)	4	13	19.5	19	11
	5	13	13	10	6

The price assumptions above were applied to one half the estimated bags of surplus maize marketed in, Table 2.7 and generate an aggregate stream of benefits in Kshs which is represented in Table 2.9 on the page following. This was done under the assumption that 50 percent of the marketed maize surplus goes through the informal marketing system and remaining half goes through the official NCPB channel.

Discussion of Assumptions and Model Results: A critical question is whether marketing cost reductions will result in higher prices for farmers. If markets are sufficiently competitive (and there is no a priori reason to believe that they would not be under a freer system) then at least a portion of market savings will be communicated to the farmgate. This will be enhanced if additional complementary changes take place in other aspects of the marketing system, also to be addressed by KMDP. Specifically, and in order of importance, are:

Improved Information: It is vital that farmers as well as traders be as fully aware of price trends and movements as possible so that they may make their marketing decisions based on complete information. This is where the complementary investment to be made by KMDP in assisting the GOK in the collection and dissemination of food crop price and market situation information is most vital. The publicity campaign proposed under KMDP will be vital to making sure that all market actors are fully aware of the nature and extent of reforms in food marketing systems;

Improvements in Road Infrastructure: A unique feature in KMDP is that it represents a policy reform program with a strong complementary investment component, in this case in road rehabilitation and maintenance. These improvements should substantially help to speed the growth of a more closely integrated marketing network and increase the spatial correlation of neighboring market prices; and

Cooperative Selling: Theory and Practice in Kenya: The use of cooperatives should theoretically help smaller producers to gain a greater measure of potential price increases. However, much of the Kenyan cooperative movement, particularly in non cash crop zones has not had a strong record in management and effectively assisting its members.

While the strengthening of the cooperative movement in Kenya goes well beyond the scope of KMDP, such an effort would undoubtedly help smaller farmers gain higher farmgate prices on a more consistent basis.

The above factors are cited both as reasons to believe that margin reductions will get to the farmgate of the Kenyan producer and also as partial explanation for the variable delay in price signals reaching farmers in different parts of the country and by differing farm size categories. Larger farms which are already more fully tied into both the formal and informal sector markets and are more likely to get improved price signals more quickly than the more dispersed smaller farmers facing more difficult access to markets, producing a greater proportion of their maize for home consumption, and who in the past have been subject to much greater market price fluctuations. We have further assumed that less than the full margin reduction will be realized in those zones (Coast, East and Central Provinces particularly) which have a lower comparative advantage in maize production, smaller amounts to market, thus producing thinner markets.

The assumed benefit streams in Table 2.9 are of course simply the rather detailed result of the assumptions made above. In terms of the impacts of potential reforms at the farm level, the projected shilling benefits are summarized below:

KMDP IMPACT ANALYSIS WORKSHEET TWO TABLE 2•9

DISTRIBUTION OF BENEFITS FROM ELIMINATION OF MOVEMENT CONTROLS
(ALL FIGURES IN MILLIONS KSHS)

	Distribution of Benefits to Farms by Province										Total Benfits to Farmers, Traders and Consumers, Kenya-Wide						Net Benefits ($)		
	Coast and "Dry East"		Central and "Wet East"		Rift Valley		Nyanza		Western		Farms				(US $				
Year	Small	Large	Small	Large	Small	Large	Small	Large	Small	Large	Small	Large	Traders	Consumers	Total	Total	Maize	Beans	Total
1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0
2	1	0	4	0	12	32	3	0	7	1	27	33	167	119	346	16	5.1	1.5	6.6
3	2	0	9	0	23	42	6	1	14	1	53	44	126	127	351	17	5.2	1.6	6.7
4	2	0	13	1	35	42	9	1	21	1	80	45	100	137	361	17	5.3	1.6	6.9
5	3	0	17	1	46	42	12	1	28	1	107	45	76	152	380	18	5.6	1.7	7.3
6	3	0	17	1	46	42	12	1	28	1	107	45	76	152	380	18	5.6	1.7	7.3
7	3	0	17	1	46	42	12	1	28	1	107	45	76	152	380	18	5.6	1.7	7.3
8	3	0	17	1	46	42	12	1	28	1	107	45	76	152	380	18	5.6	1.7	7.3
9	3	0	17	1	46	42	12	1	28	1	107	45	76	152	380	18	5.6	1.7	7.3
10	3	0	17	1	46	42	12	1	28	1	107	45	76	152	380	18	5.6	1.7	7.3
Total	25	0	129	7	346	368	91	8	211	8	802	392	849	1295	3338	159	49.3	14.8	64.1

Notes: The "dry East" is the districts of Kitui and Machachos; the "wet East", Meru and Embu Districts.

Percent market savings by region:

Rift and Large Farms in Nyanza: 100%
Central, "Wet East", and Nyanza Small Farms: 77%
Coast and "Dry East:" 46%

KMDP Farm Level
Benefits (in Kshs Millions) by Farm Size and Zone

Zone	Farm Size Small	Large	Total	Percent of Total
1. Coast and "Dry East"	25	0	25	2%
2. Central and "Wet East"	129	7	136	11%
3. Rift Valley	346	368	714	60%
4. Nyanza	91	8	99	8%
5. Western	211	8	219	18%
TOTALS	802	392	1,194	100%

These results indicate that a greater than proportionate share of the KMDP farmgate benefits will flow to Rift Valley farmers, while less than proportionate benefits go to zones 1,2 and 4 above. Western Province (zone 5) is a third case that will receive benefits which are proportionate to maize production levels there. The basic logic is that traders will tend to concentrate on areas such as Upper Rift which have substantial surpluses to export to other regions and where better infrastructure and past practice give a definite advantage to the region's farmers, with benefits going most rapidly to larger farms which may have been benefiting selectively already from some of the potential benefits of liberalization, even before liberalization occurs.

When we look at the portion of Table 2.9 which groups farm-level benefits with those going to traders and consumers, we see that overall, shilling benefits from the elimination of controls are distributed as follows during the early and later years of the KMDP effort:

Percent KMDP of Benefits from Elimination of Movement Controls to:

Time Period	Producers	Traders	Consumers
Years 2-4	27	37	36
Years 5-10	40	20	40
First 10 Yrs	36	25	39

In the figures above we should note the importance of early excess profits to traders providing incentives for entry which would then increase competition and eventually contribute to higher prices going to producers and to consumers paying less for basic food supplies. It should be noted that consumers in early years of the program benefit substantially more than producers (twice as much in year 2) since they are more concentrated and easier to reach than producers.

2.6.2 Potential Longer Term Supply Responses

The importance of maize production and marketing to the individual farm family will depend on the following:

- The size of the farm family, i.e., as the family goal is, generally, to attain, at least, self-sufficiency in maize production, the larger the family the greater the commitment of land and family resources to maize production. These self-sufficiency considerations are particularly important to small scale farm families;

- Availability of land for maize production;

- Cropping alternatives available to the farm family;

- How recently the farm family has been settled on the land, ie., recently settled farm families place greater emphasis on subsistence maize and bean production and are less likely to seek alternative cropping enterprises; and, most importantly;

- The relative financial returns of surplus maize production vis-a-vis alternative crops and farm enterprises. (In an input-output sense, this involves relative input and product prices, and the productivity and risk associated with alternative production technologies for all biologically feasible commodities under consideration in a given region.)

In the short run, liberalization of the maize policy environment will have little impact on the production of maize or on changes in cropping patterns by small-scale farmers. The diversion of small-farm acres to cash crops in the long-term will be contingent upon the degree to which an open national system for maize can provide adequate supplies of maize year around in rural areas. The farm family must be confident that maize supplies will be available and affordable on a consistent basis before the decision to reallocate resources to more financially attractive crops is made. In most agro-ecological zones at present, there are some cash cropping alternatives to maize: coffee, tea, pyrethrum, fruit and vegetables, and dairy production all offer better financial returns than maize and, in some cases, offer the highly-attractive feature of a regular cash income (eg., pyrethrum and dairy). Building confidence in a freer maize market will take time and the GOK must show, unequivocally, that it has established a new direction for maize policy and that it will keep to that direction.

With growing confidence, some small-scale producers will switch to more financially attractive cash crops, although the emphasis will still be on growing enough maize for all or most of home consumption needs. This will provide enhanced maize marketing opportunities for new settlers and farms in areas, such as portions of the Rift Valley, where maize is a principal commercial crop.

In the short and long term, the response of the large-scale farmers to changes in maize marketing policies will depend, to a large extent, on the relative returns accruing to production of other commodities, particularly, wheat and dairy. If returns to wheat and dairy production are systematically higher than maize, then farmers who can will switch from maize to these alternative enterprises. In particular, if the Kenyan wheat price continues to be established by the GOK, then it must bear some close relationship with the equilibrium price of maize if present proportions of maize and wheat production are to be maintained.

2.6.3 Impacts of Reforms on Net Maize Consumers

There are twq groups of maize consumers who would be most affected by the KMDP reform program: rural producers who must purchase the majority of the maize they consume and urban consumers who generally must purchase (or receive as gifts) virtually all the maize they consume. Impacts on these two groups are discussed in more detail in the social analysis (Annex B) but there are a few summary observations which support the conclusions reached in that analysis.

Consumers as a whole benefit substantially from proposed KMDP reforms at a level equal to or greater than that received by producers. Because they are often more concentrated in more competitive market areas, urbanized consumers are likely to feel the impacts of a freer market more rapidly than widely-dispersed rural consumers. This more rapid access to the benefit stream was assumed in the results in Table 2.9.

Impacts in Deficit Areas

In the drier parts of Kenya, consumers and producer/consumers who must depend on local markets for maize arriving from distant production areas will benefit from the increased competition and lower prices resulting from wholesalers trying to take advantage of price differentials across regions. Two market factors will affec: the degree to which this competition occurs: ease of transport to the area and the size of the potential area. The easier the transport and the larger the market, the more increased competition will hold down maize prices in these deficit areas.

In addition to the market factors above, maize price levels in persistently deficit areas will depend to a great extent on national policy decisions on pricing and the extent to which the NCPB is instructed to subsidize the availability of maize in local markets in remote areas. On the latter point, as pointed out in the social analysis, maize prices in remote and small markets will depend on GOK decisions on whether to supply these markets from small depots at highly subsidized rates.

The impacts of possibly modification to the current policies of pan-territorial pricing are even more complicated and somewhat contradictory. In both the theory and practice of cereals marketing, it is important to eliminate pan-territorial pricing to allow adequate price signals from deficit areas to attract greater competition among suppliers and to maximize distributional efficiency. Depending on the quality of transport and size of market factors mentioned above, price levels in general will be higher in deficit areas than they are elsewhere in Kenya. This is an inevitable consequence of the real underlying costs of supplying remote deficit zones.

The question for policy then is: Should something be done about the higher cost of food in chronically deficit areas and, if so, how to do it in the most cost-effective manner? Pan-territorial pricing and government depots are one solution which maximizes equity at the expense of efficiency. Compensating income transfers to populations in deficit areas with a free and open market will be more efficient and less costly but this solution raises practical questions on how it might be implemented.

Urban Consumers

The impacts on urban consumers follow the same general lines as the discussion for consumers in deficit areas. However, urban consumers will receive a proportionately greater positive impact from marketing reforms since they are located in the largest and most perfectly competitive markets with the best infrastructure. In addition, the amount of subsidy to urban markets should therefore be relatively less per capita regardless of what policy direction is adopted by the government.

As has been mentioned above, in urban areas it is particularly critical to examine in conjunction with a market reform program those special targeted measures which will be necessary to ensure that the poorest groups in society have adequate access to food supplies regardless of prevailing market prices but particularly when higher market prices (reflecting relative shortages of cereals) affect these groups in a disproportionate manner. The major policy question is how to balance the greater administrative complexity (but cheaper cost) of targeted food subsidy programs with the much greater costs of general food subsidies which are administratively simpler.

2.6.4 Implications Movement Control Elimination for the NCPB

There is some perception that the elimination of the movement controls would lead to a rapid erosion of the ability of the Board to compete in a cost-effective way in the Kenyan maize market. This question needs to be addressed under three distinct market scenarios: bumper harvest conditions, average conditions (such as those described in the pages above), and deficit conditions. In order to avoid duplication, this discussion is contained in Section 2.4.2 under the general discussion of the elimination of movement controls.

2.7 SUMMARY ECONOMIC ANALYSIS OF KMDP

This summary economic analysis of the KMDP focuses on one of the unique features of the program: the linking of a market reform component to a complementary infrastructure development (market roads) component. The summary costs and benefits associated with each component are clearly identifiable in Table 2.10. This section covers the following topics:

- A brief review of the derivation and critical assumptions involved in the cost and benefit streams in Table 2.10;
- A review of the internal rate of return calculations for the two major components and KMDP as a whole;
- A summary discussion of the overall economic justification for the program and the likelihood of achieving anticipated program benefits.

2.7.1 KMDP Cost and Benefit Streams

The cost streams in Table 2.10 are described in detail Section IV.I of the PAAD. Here we note simply that costs are made up of US dollar costs (DFA and DFA TA funds) and local currency costs, part to be generated through PL 480 Title 3 sales and part to be provided by the GOK in Kshs from the national budget. In the latter category of extra administrative costs in the Ministry of Public Works and the costs of maintaining the roads rehabilitated under the KMDP market roads component. Greater detail on the derivation of the roads component costs and benefits are contained in Chapter 5.

Market reform component benefits are attributable to the elimination of movement controls, related reforms in the wider dissemination of better market information, and in the decontrol of beans and minor cereals. The largest part of marketing benefits come from liberalization of the national maize market through:

Kenya Market Development Program TABLE 2-10

Illustrative Summary Economic Analysis of Project Components (All in US$ Millions)

Cost and Benefit Categories	Years 1	2	3	4	5	6	7	8	9	10	Total
==COSTS==											
A. US Costs											
1. DFA to GOK ($)	2.0	3.0	5.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.0
2. DFA TA ($)	1.7	1.7	1.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.2
3. Support to GOK Institutions (LC)	2.0	2.0	2.0	2.0	2.0	0.0	0.0	0.0	0.0	0.0	10.0
4. Road Rehab.(LC)	5.1	8.2	7.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	20.4
B. GOK Costs											
5. Road Maint.(LC)	0.0	0.1	0.2	0.3	0.3	1.1	1.1	1.1	0.3	0.3	4.5
6. MOPW Admin.(LC)	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.5
Component Subtotals											
Mktg Policy Reform	5.7	6.7	8.8	2.0	2.0	0.0	0.0	0.0	0.0	0.0	25.2
Market Roads	5.1	8.3	7.4	0.3	0.3	1.1	1.1	1.1	0.3	0.3	25.4
TOTAL COSTS	10.8	15.0	16.2	2.3	2.3	1.1	1.1	1.1	0.3	0.3	50.6
BENEFITS (MKTG SAVINGS)											
A. Informal Mkt											
1. Maize	0.0	5.1	5.2	5.3	5.6	5.6	5.6	5.6	5.6	5.6	49.2
2. Beans	0.0	1.5	1.6	1.6	1.7	1.7	1.7	1.7	1.7	1.7	14.9
B. Formal Mkt	0.0	1.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	17.0
Component Subtotals											
Mktg Policy Reform	0.0	7.6	8.8	8.9	9.3	9.3	9.3	9.3	9.3	9.3	81.1
Market Roads	0.0	1.9	5.0	7.7	7.8	8.0	8.3	8.5	8.8	9.0	64.9
TOTAL BENEFITS	0.0	9.5	13.8	16.6	17.1	17.3	17.6	17.8	18.1	18.3	146.0
==NET BENEFITS==											
Mktg Policy Reform	-5.7	0.9	0.0	6.9	7.3	9.3	9.3	9.3	9.3	9.3	55.9
Market Roads	-5.1	-6.4	-2.4	7.4	7.5	6.9	7.1	7.4	8.4	8.7	39.5
TOTAL NET	-10.8	-5.5	-2.4	14.3	14.8	16.2	16.4	16.7	17.7	18.0	95.4

Illustrative Economic IRR's	After: 4 Yrs	10 Yrs
Mktg Policy Reform Component:	12%	59%
Mkt Road Component:	-26%	32%
Total KMDP:	-11%	44%

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Version 1.2 October 16, 1989

- **Savings in the formal maize trade**, primarily through increased efficiency due to greater direct maize deliveries by farmers and traders to the sifted flour mills. These represent a reduction in the overall marketing margin (of at least $2 million a year) between producer and mill. The detailed assumptions are contained in Section 2.5.2. It should be emphasized that these savings in the formal maize trade are largely independent of other reforms which will be necessary as the GOK further defines the future reduced role for the NCPB;

- **Savings accruing to the informal maize and bean trade** (ie., that which is outside the current NCPB/mills network) are again most directly estimated through a reduction in marketing margins at the wholesale level.

The latter savings are relatively more important in terms of quantitative savings and in the major thrust of the policy reform effort. The derivation and distribution of these benefits are covered in detail in Section 2.5.3 and in Table 2.7 through 2.9 in Section 2.6. The annual benefit streams for maize and beans in dollar terms are transferred directly form the last columns of Table 2.9 into Table 2.10.

The careful reader will note that these are net benefits to the Kenyan economy which only represent about 30 percent of the cost savings from the reduction in maize and bean marketing margins. This is because only the distributional efficiency savings (composed of reduced real costs for handling, transport, and informal rents) are considered to be net economic gains to the economy as a whole. The rest of the marketing margin reduction represents transfers within the economy, primarily from a sub-group of small market traders to producers, consumers, and wholesale level traders.[29]

Overall the marketing reforms, under very conservative assumptions, produce a stream of benefits of approximately $80 million over 10 years against costs of about $25 million, occurring largely in the first three years.

2.7.2 Program Economic Internal Rates of Return and Justification

Internal rates of return, after 4 and 10 years, were calculated for both of the major KMDP components, market reform and market roads, and for the program as a whole. The results of these computations are summarized below:

	Internal Rates of Return after:	
Components	4 Years	10 Years
Market Reform	12 %	59 %
Market Roads	-26 %	32 %
Total KMDP	-11 %	44 %

[29] One could also assume that some of the reduced margin going to traders and producers would have further secondary impacts on increased maize production and on reduced costs from wholesalers having a greater propensity to reinvest extra profits in transport, storage and handling facilities which would further reduce the aggregate costs of marketing. However, none of these secondary benefits have been included in this summary economic analysis due to the three year life of program.

It will be noted that the market roads component has a somewhat slower rate of payback but that the 32 percent rate of return after 10 years is considered very good for investment in rural roads infrastructure.

The rates of return for the market reform component are quite high but these reflect the large savings which can easily be realized through economies of scale by allowing normal private wholesaling in maize and beans to flower, unimpeded by outmoded GOK controls on cereals movement. This is the heart of KMDP: it is both the major economic justification for the program and the most difficult part of the policy agenda for the GOK to accept. The reasons for hesitation in adopting simple reforms with clear-cut benefits are partly due to the inertia of marketing system policies which have been in operation for fifty years, and partly to legitimate concerns on the part of the GOK that it be able to fulfill its critical role in assuring national food security.

The real world concerns of potential negative impacts of elimination of movement controls on the financial viability of the NCPB during a transitional period to greater maize market liberalization were addressed in some detail in Section 2.4.2. The conclusions there that:

- Under average and bumper supply conditions, the elimination of the controls would not appreciably affect the NCPB as a buyer since its harvest price would generally be above prevailing market levels;

- The NCPB faced greater financial insecurity due to the erosion of its monopoly selling position to the sifted flour mills due to the operation of the "80/20" liberalization rule under the CSRP and due to the Board having accumulated excessively large stocks, far beyond FSS needs; and

- Under mild deficit conditions, it is clear that liberalization means that the Board would have to compete on price for its needed stock acquisitions. This effect is very transitory however since, under more severe deficit and drought conditions, the Board would cease buying and begin the release of the security stock while it considers increased food aid and commercial imports of cereals.

ATTACHMENT 2.1

UNRESOLVED ISSUES IN THE DEFINITION OF THE FUTURE ROLE OF THE NATIONAL CEREALS AND PRODUCE BOARD

There are major policy issues involving the future reduced role of the NCPB which have yet to be resolved despite great effort which has been devoted to their study and analysis in the 1980s. Many of these issues are being faced by the Cereals Sector Reform Program (CSRP) as it begins to struggle with the implementation of a modified pricing system for maize. Many of these issues involve reform of the "formal" portion of the maize market and they can be grouped into three broad areas: definitional, operational, and pricing issues. These issue could serve as the starting point from which to define the terms of reference for the food security preparedness planning which is to be done under the aegis of the KMDP.

Definitional Issues

Here the overriding question is: What is the future reduced role for the NCPB going to be in a liberalized market? There is wide agreement in both written and verbal statements by both GOK and the donors that the Board will do two things:

- It will maintain a food security stock of maize (currently defined to be 6 million bags in the EEC/GOK program agreement); and
- It will intervene at "both ends" of the market to stabilize both producer and consumer prices to some degree (ie., act as a "buyer and seller of last resort").

However, it is not clear that all parties see NCPB's role limited to the two functions above. There are a number of indications that the Board, in conducting the above two operations, also intends to continue to engage in commercial transactions of maize, ones which will help to cross-subsidize the money-losing security stock and buffer functions. In the EEC program implementation agreement, there is a statement that security and buffer functions need to be subsidized, but that the regular buying and selling of the Board should cover costs. That sentiment is reflected also in statements made to us by NCPB and EEC officials.

The potential degree of reduction in Board actions is also open to question when one looks at the stated target size of the security stock, 6 million bags. Assuming that this amount must be turned over every two to three years, this implies that the Board would continue to buy two to three million bags a year for that purpose plus some additional amount (perhaps of equal size) for stabilization purposes. This would mean total purchases of 4 to 6 million bags a year which is not much less than the historical record of Board purchases which have averaged 6 to 7 million bags a year.

In addition to the definition of the future role of the Board being fuzzy, the lack of a clear strategy to meeting the many operational issues (that a reduced role for the NCPB would require) also adds substantial uncertainty to the direction that the market reform package should take. Some of these issues are highlighted below.

Operational Issues

These involve unresolved questions about how the two major components, food security stock and price stabilization operations, would operate in practice. While it is clear that it is not necessary at this point to have all the implementation details completely resolved, major decisions on the principles of operation need to be made in order to understand to what degree the market actually might be liberalized in practice.

Food Security Stock (FSS) Issues:

- How big does the stock need to be? The 6 million bag figure seems to be a very approximate one, based partly on the 1984 drought experience. However, this team has seen no analysis justifying the 6 million bag FSS target. In fact, half that amount -- if well managed -- would seem quite adequate given the 1984 rates of relief distribution and a sound system for triggering emergency maize imports;

- How will the stock operate? How and where will the stock be bought? How will NCPB dispose of part of the stock each year if it is not needed for relief? Will there be a set of prescribed outlets for the turnover of stock (mills, animal feed industry, exports, open market sales)?

- Who will be allowed to buy for delivery to the Board? Will purchasing be done as now by Board-sanctioned groups (buying centers manned by Board employees, licensed buying agents, coops?) or will there be free access to the Board for all sellers?

- Under different supply and demand scenarios (particularly those of successive bumper harvests or successive drought years), how will the FSS operations overlap and interact with the Board's stabilization and commercial functions?

Stabilization Operations Issues: A similar set of issues are unresolved vis-a-vis the price stabilization function. The general concept of a price band implies that there is a free market within the band and that the Board would intervene in favor of producers when prices dipped below a trigger level. Similarly on the consumer side, the Board would go into the market and sell in order to try and keep a freely fluctuating consumer price level from exceeding a certain ceiling price level. Pricing issues are reviewed separately below. In addition, the following are unresolved:

- Will the NCPB use the same buying and selling approaches for stabilization as those for the FSS? How does the stabilization function overlap with the FSS and residual commercial sales?

- In stabilization operations around the world, the question of financial limits always arises. What limits expenditure on producer price stabilization? A fixed budgetary subsidy amount? Is it limited to the size of the NCPB's bank account and borrowing capacity? What happens if there are two bumper crops in a row, storage is full and the bank account is empty?

- On the consumer price stabilization side, similar issues emerge: When and how to intervene? When do imports come into the picture? What tariff policies might be used to protect domestic production from international dumping? When does the Board switch to cheaper but disliked yellow maize?

Pricing Issues

Many of the above operational questions boil down to issues of who is to be allowed to operate in the market, are there any non-price (quota) restrictions which will influence the direction and volume of trade and, most importantly, what are the pricing rules and how will they be enforced?

The biggest question is: How free will the pricing system be? The classical liberal, as it would be applied to the Kenyan maize market, is that all prices will be allowed to fluctuate freely. This applies to prices for producers, millers, and consumers. This means no dictated price levels anywhere in the system. It also means that no producer price guarantee can be expected to apply to all marketed surplus and that the urban flour price would fluctuate according to market supply conditions. The Board would compete in the market for its FSS and commercial purchases and sales. It would use indicative price levels in triggering its stabilization purchases and sales, but those prices would only be binding for the Board, not other market participants. These policies would have striking implications for different groups of market participants:

Producers: In drought years, producers would sell at prices substantially above the floor price and the Board would have to pay those prices to acquire supplies, until the import trigger price is reached. In bumper harvest years, the Board would buy at an announced price above market level to the degree that its storage, budgetary, and surplus disposal limits would allow.[30] Board purchases may be able to increase market price levels by a few shillings per bag and, under these conditions, it would be necessary to allocate sales to the Board by District and by harvest period. The amounts that the Board could handle would depend on the degree of domestic supply and demand equilibrium, levels of prices in "disposal markets", and the financial resources available to the Board in that year. Guaranteed purchases of all cereal sold at current price levels will be beyond Kenya's means under average conditions.

Flour Mills would be able to buy cereal from anyone and sell flour to anyone in the country with no quantity, price and movement limits or restrictions. There would be substantial competition between Posho and sifted flour millers depending on supply conditions. Fierce competition among sifted flour millers on price and non-price grounds is to be anticipated, perhaps leading to some further increase in industry concentration. Mills should also be able to import white and yellow maize, only restricted by variable anti-dumping, producer-protecting tariffs. This would probably lead to a wider range of maize flour products on the market at different quality and price levels.

Consumers would be faced with a greater degree of variation in maize grain and flour prices since natural fluctuations in supply would be passed on to them. In times of relative abundance they would benefit as a group. In times of shortage, they would have to pay substantially higher prices for white maize flour or consider switching to cheaper yellow maize flour. The upper three quartiles of consumers by family income should be able to manage under greater price fluctuation. The biggest potential problems come with the lowest income, most disadvantaged groups. In a free market environment, they would receive some support from Board "ceiling stabilization sales" but those benefits would go to any consumer, regardless of income level. GOK budgetary limitations would require that special programs (direct distribution programs, food stamp approaches, controlled price shops, etc.) be used to channel food security support to the most disadvantaged groups. Experience has

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[30] Alternatively, the board might be allowed to buy massively at the market price to "sop up" the surplus and prevent further drastic price declines.

shown that there are substantial administrative problems to these food-aid programs but they are still cheaper than subsidizing the entire consuming public or in increasing the cost of marketing food through restriction (the current system).

The key political-economic questions on the possible future system pictured above: Is it feasible politically? If it is not, what aspects need to be modified to make it so? Potential restrictions on the free operation of the market (eg., a fixed price for urban maize since many urban salaries and wages are fixed, etc.) will define other related restrictions which will be necessary in order to keep the system operating, even if less efficiently than under completely free market conditions. Experience in other countries has should that partial or gradual liberalization is not easy to design and execute, just as total or rapid liberalization may incur some risks during the transitional period.

In addition, to the above, there are some more technical pricing issues which are also unresolved:

Producer Support Prices. There are four major issues that need to be resolved in the design of a producer support price system. First, consensus is needed on the level at which prices can be supported. Most informed observers speculate that prices would have to be lower in the average year than current guarantee levels due to GOK budgetary constraints. This raises immediate concerns about the potential impact on supply response, particularly from larger farms that are more price- responsive but generally coddled by 50 years of government support.

Second, will the floor price apply only to Board purchases (the realistic path) or will the legal fiction be maintained that this price should be followed, if not exceeded, by all farm-gate buyers (clearly impossible and undesirable to enforce). The third set of issues involves whether prices will be pan-seasonal and pan-territorial (as they are now) or whether some geographical and temporal variation be allowed to reflect cost of transport and storage. The political viability of a support price, varying over time and space, has been called into question already by some Kenyan analysts. In addition, the rationale and data needed for a variable pricing scheme are both in short supply. Finally, what sorts of quantity/budget/stock factors will limit the size of producer support purchases in coming years? In practical terms this is illustrated by the question of how much maize will the Board be able to buy in the coming 1989-90 buying season?[31]

Consumer Ceiling Prices. The key question is whether there is any realistic chance that the consumer sifted flour price will be allowed to fluctuate freely. An alternative might be to allow prices to vary within a band, giving traders a fixed percent margin (this is a pricing strategy often used by Francophone African governments). The most likely outcome in the Kenyan environment would be to maintain fixed consumer flour prices and this will have important "restriction repercussions" backwards into the maize marketing channels.

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[31] In June 1989 the NCPB has around 10 million bags in stock (10,315,000 bags in stock as of the June 9, 1989 NCPB inventory), seemingly difficult prospects in stock disposal at the moment, a reasonably good season coming up from early indications in key production areas, and a buying fund which may be inadequate to pay farmers quickly in the October-December 1989 period if not soon replenished through increased sales or exports. Low maize purchases in situation favoring wheat production (wheat prices have been increased 40 percent for the 1989-90 season while maize producer prices only increased 10 percent) could have serious consequences for future maize plantings in the surplus regions.

In addition, there is the serious question of who will set the consumer price. It is now being set by the Office of the Price Controller and this process is apparently not closely linked to that which sets the producer and mill prices. Finally, there are concerns as to the availability of mechanisms in Kenya by which direct, subsidized maize or flour could be provided to the most disadvantaged groups in the society as an alternative to giving subsidies or higher prices to all of the buying population. If there are viable alternatives in this area, then, it is easier to justify floating consumer prices, which, along with other reforms, should lead to lower average consumer prices in the longer run.

ANNEX 2.2

IMPLEMENTATION TIMETABLE FOR EEC-FINANCED CEREALS SECTOR REFORM PROGRAMME

FUNCTION	PHASE I (JAN-JUNE 1988)	PHASE II (JULY 88 - JUNE 89)	PHASE III (JULY 89 - JUNE 90)	PHASE IV (JULY 90 - JUNE 91)	PHASE V (JULY 91 - JUNE 92)
1. MANAGEMENT REORGANISATION	New structure; new staff hired, existing staff redeployed with new salary structure. Procedures updated and training plans consolidated.	In-service training, staff devt. new mgmt systems and manuals.	Reappraisal, staff evaluation, update procedure manuals	Reappraisal, staff evaluation, update procedure manuals	Annual evaluation (April), same for other functions listed below.
STATUS AS OF JUNE 89	New structure adopted but DPM/OP approval delayed. Some senior mgmt posts unfilled. Salaries upgraded, but manuals need to be revised to fit new mgmt structure.	Significantly behind schedule due to delays in Phase I.	N/A	N/A	N/A
2. NETWORK CHANGES	Close buying ctrs, reevaluate new stores. Review bulk grid silo program; TORs for studies of storage and handling, and rationalisation of transport system.	Acceptance of plan for ntwk rat'nlisn. Close surplus stores and review need for collection ctrs. Plans for new bulk handling stores.	Tendering and implementation of bulk handling grid, and EEC silo project.	Evaluate network improvements and bulk handling arrangements.	Annual review of network changes.
STATUS AS OF JUNE 89	Large decrease in buying ctrs. NCPB deferred opening addl new stores. TORs for studies delayed to Phase II.	TORs and selection of consultants for Phase I studies accomplished but none will start until second half of 1989.	No action will be taken until studies are completed and recommendations have been accepted.	N/A	N/A

ANNEX 2.2 -- Continued

FUNCTION	PHASE I (JAN-JUNE 1988)	PHASE II (JULY 88 - JUNE 89)	PHASE III (JULY 89 - JUNE 90)	PHASE IV (JULY 90 - JUNE 91)	PHASE V (JULY 91 - JUNE 92)
3. FINANCIAL RESTRUCTURING	Clean up balance sheet, write off old debts; start revolving fund for crop purchase. Followup on NCPB debts, revalue NCPB assets.	GOK Budget provision to write off debts. Study on calcn of strat resv and mkt stabilization. Funds provided for both. Develop crop pchs credit schm w banks.	Develop system for estimating strategic reserves, market stabilzn, and pricing to encourage more efficient storage and distribution.	Evaluate new systems, including crop purchase scheme and market stabilzn.	Annual review of new financial structure.
STATUS AS OF JUNE 89	Revolving crop pchs fund worked well in 88-89 campaign, but NCPB stocks are high and ?? re adequate finance for 89-90. Some progress on writeoffs and debt collections.	GOK's 89-90 budget has Shs 400 M item for NCPB's reserve & stabilization pgms. No decision yet on who bears losses from stabilization.	Program will slip due to delays in Phases I and II.	N/A	N/A
4. MARKET DEVELOPMENT	Reregister all agents. New system to monitor millers. "Modify movement permits system". TORs for studies on coops/LBAs, and on prices and food statistics.	Coops and "selected agents" to buy 20% of maize and sell to mills directly, 7/88 Review results in 4/89, "consider" further 10% liblzn.	Shift NCPB role to one of price support "if appropriate"; possible further 10% liberalization. "When feasible", begin market decontrol.	Competition between coops and reg'd pvt traders at mill gate. Possible further 10% liberalization.	Annual review, with focus on role of NCPB in liberalised formal market.
STATUS AS OF JUNE 89	Mixed results in reregistration of LBAs. New regulations set for sifted millers. Much tighter control exercised over maize movements in 88-89 season: 10-bag rule overridden @ loc level	Decision on 20% liberalisation was revoked Feb 89, with divergent views as to "what went wrong". Uncertainty as to policy for 89-90 campaign.	Degree of further decontrol remains uncertain, with no consensus among NCPB, coops, KGGCU, pvt traders on how to evaluate results.	Prospects are uncertain following experience in Phases I and II.	N/A

ANNEX 2.2 -- Continued

FUNCTION	PHASE I (JAN-JUNE 1988)	PHASE II (JULY 88 - JUNE 89)	PHASE III (JULY 89 - JUNE 90)	PHASE IV (JULY 90 - JUNE 91)	PHASE V (JULY 91 - JUNE 92)
5. INSTITUTIONAL SUPPORT	High-Level Inter-Min Cmteee plus Tech Cmtee formed to monitor pgm implementation. TOR for study of improved monitoring capacity in MSM.	Studies on food sector stats and producer prices. Strengthen GOK statistics and analysis capacity.	Overall midterm EEC - GOK review. Implement food sector statistics and price monitoring.	Review monitoring capacity in MSM, and expanded Forward Planning Unit (FPU) within the NCPB.	Annual review , same as in Phase IV.
STATUS AS OF JUNE 89	Committees are functioning as planned with support from outside consultants who do periodic evaluations.	Pricing study now underway after some delays. Food sector statistics study later in 1989.	N/A	N/A	N/A

CHAPTER 3

PRIVATE SECTOR CAPACITY ANALYSIS

3.1 INTRODUCTION

The KMDP is based on the assumption that the private sector can operate more efficiently in a deregulated environment, and expand its share of the market as the NCPB gradually diminishes its role as the principal in the maize and bean trade. A critical concern for GOK policy makers, however, is whether adequate capacity exists in the Kenyan private sector to play a more prominent role in maize and bean marketing, while ensuring food security and equity for consumers.

Many of the points addressed in the KMDP policy agenda will work directly to facilitate an efficient role for the private sector in the maize and bean trade. But there are also many issues that are not addressed in the policy agenda which can play an important part in the ability of the private sector to respond to this opportunity and challenge. These unaddressed issues include general financial, trade, regulatory, or fiscal policies, as well as deficiencies in the market which limit the overall development of the private sector.

This chapter provides a brief overview of the private sector in Kenya and then reviews the different private actors involved in activities related to the maize and bean trade, from input supply to processing and delivery to consumers. It then addresses the role of financial institutions as intermediaries, the role of price controls and fiscal policies in shaping the structure of industry, and the impact of an erratic policy environment on the private sector decision making process. Finally, it anticipates the likely response of the private sector to the reform program.

Many studies, including several funded by USAID, have already focused on constraints to private sector investment in rural areas in Kenya. These studies analyze general environmental constraints, specific constraints facing firms in the agricultural sector, and constraints to investment in manufacturing. We attempt to summarize the most relevant points from those other studies, but do not duplicate the explanations and analyses, except where particularly relevant to the maize and bean trade and to the roles of the informal versus the formal sector.

3.2 OVERVIEW OF PRIVATE SECTOR DEVELOPMENT IN KENYA

3.2.1. Structure

Of the many countries in Sub-Saharan Africa, Kenya has one of the best developed private sectors, from the size of its informal sector to the depth of its internal manufacturing capacity. The manufacturing sector is characterized by a relatively large segment of both small- and large-scale firms. Though the number of firms in the middle-size range (those with 10-49 employees) is similar to the number of larger firms, middle-size firms represent far fewer employees. Compared to more developed countries, there is a relative shortage of medium-sized firms.

TABLE 3.1

KENYA ESTABLISHMENTS BY NUMBER OF EMPLOYEES AND INDUSTRY

Industry	1977			1981			1986		
	0-9	10-49	50+	0-9	10-49	50+	0-9	10-49	50+
Dairy Products	3	8	15	1	3	7	5	13	16
Grain Milling	136	13	12	102	8	17	63	6	20
Baking	17	31	9	41	21	12	18	30	10
Other Food	20	23	34	11	19	50	17	24	36
Saw Milling	29	47	43	14	38	57	40	43	42
Wooden Furniture	167	50	16	254	53	15	99	44	22
Printing	76	60	15	68	64	19	114	84	22
Fabricated Metal	131	39	20	149	52	31	88	61	33
Machinery	32	41	15	12	53	25	30	54	15
Other	61	321	291	664	321	404	534	423	384
Total Firms[1]	672	633	470	1316	632	637	1012	782	600
Total Employment (000)	2.5	15.3	99.7	2.0	14	129.2	2.8	16	145.5

Source: Central Bureau of Statistics, Statistical Abstracts

Table 3.1 clearly shows that large-scale industry has dominated the labor market as a source of employment; this structure has not changed substantially over the past ten years. The presence of an established large-scale private manufacturing sector in Kenya since the 1950s is rare in Africa, and has had a significant effect on the development of the informal sector. It has precluded the entry of many small-scale firms because they could not compete with the larger firms. While many other African countries such as Nigeria, Ghana, Sierra Leone, and Tanzania[2] have seen a rapid development of the informal sector, Kenya's has been more gradual because of this competition. Kenyan small- scale firms did not enjoy the same de facto period of "infant industry" protection after independence.

3.2.2. Market Demand in Rural Areas

Development of private sector firms is structured by the demand characteristics of the markets that they serve. The private sector in urban areas develops differently than in the rural areas. Market demand depends on many factors which vary by region:

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[1] The number of small-scale firms, those with 0-9 employees, is undercounted by more than a factor of 10 because of recording procedures. The Central Bureau of Statistics (CBS) estimated the number of informal sector manufacturing employees to be 37,000 in 1985.

[2] World Bank, 1987.

purchasing power, the level of sophistication of customers, their perceived needs, the quality of the products the customers seek, and the availability of substitutes.

The absence of recent data makes it difficult to analyze the current purchasing power of the rural population in Kenya, but there are some important findings from the rural household survey in 1981/82 -- which are assumed to still hold true[3] -- presented in Table 3.2 on the following page.

The conclusion one must draw from these statistics is clear: the fact that 75 percent of the rural population in 1982 had an annual per capita income of less than $205/year means that purchasing power is very limited in the rural areas. This low per capita income is probably the single greatest constraint to investment in these areas. Real jumps in the level of investment in the rural areas will have to be associated with increased purchasing power and the development of consumer demand large enough to justify the presence of local formal-sector industries.

TABLE 3.2

THE STRUCTURE OF KENYA'S RURAL HOUSEHOLD ECONOMY

Income Deciles	1st	3rd	7th	9th	10th	All HH
Av. Monthly Income (Kshs)	95	297	805	1539	4028	956
% of HH owning:						
plough	3	7	17	19	22	12
sprayer	-	1	5	16	24	6
wheelbarrow	1	3	6	11	23	7
watertank	4	4	9	17	28	10
Principal Sources of HH Income (%)						
Farm Income	67	56	55	58	56	56
Self-Employment	3	6	7	8	16	11
Wages	12	18	18	16	11	15
Transfers	18	20	19	18	17	18
% of HHs with:						
No Wage Income	80	58	54	53	59	58
No Self Employment	92	83	77	77	67	80
No Transfers	49	28	24	21	21	28

Source: Central Bureau of Statistics, Kenya Rural Household Budget Survey, 1981-92, (prepared by Harvey Herr), typescript, Nairobi, 1986.

[3] There are no firm figures on per capita incomes today at different levels, but, in 1987, CBS determined that the upper monthly income category was Kshs 2,500 and up, middle income was Kshs 700-2,499, and low income below Kshs 700. This represented an increase of 75 percent in nominal terms over the 1982 figure, but shows that there have been no major changes in the categories.

3.2.3. The Role of the Informal Sector in Rural Kenya

Definition of the Informal Sector

Despite the many studies done on the informal sector in Kenya, there is no single authoritative definition: those used range across a variety of criteria, including fiscal, locational, managerial, or firm size. Some examples are: those firms which are outside of the formal licensing structure; those firms which pay no income/corporate/company taxes but simply a forfeitary tax; those firms with no post office boxes or formal place of business; and those firms which employ 0-9 persons. For the purpose of this study, we will use the size definition (0-9 employees), because it most accurately reflects many of the firms in the agricultural sector on which we concentrate.

Importance of the Informal Sector in Rural Areas

The informal sector plays a more important role in rural small-town areas than in the major urban centers. The World Bank study of 1987 on industry in Kenya presents evidence of this.

TABLE 3.3

EFFECTS OF TOWN SIZE AND FORMAL WAGE-PAID EMPLOYMENT ON NUMBERS OF INFORMAL SECTOR EMPLOYEES

Town Size (000)	# of Towns 1979	Per 100 Residents 1985	Per 100 Wage-Earners 1979	Per 100 Wage-Earners 1985
2.5 - 8.0	14	13.4	26.0	116.3
8 - 12	9	7.2	15.3	45.1
12 - 40	11	5.3	9.5	27.3
90	2	4.9	8.7	26.5
300-900	2	3.7	6.5	12.0

Source: World Bank Study on Industry in Kenya, 1987, p. 235.

Table 3.3 shows that the informal sector is more important than the formal sector as a source of employment in the smallest towns. It also shows that the smaller the town, the more important the informal sector is as a source of employment. This finding probably results from a greater demand for informal sector products in rural areas, and a preference of the urban consumer for the higher-quality, more expensive products of the formal sector.

Table 3.3 data do not reflect the current policy environment or the lack of infrastructure necessary to support larger industry in Kenya. With only a small market demand in the rural areas, there is very little incentive for larger formal businesses to start activities and for small firms to graduate.

3.2.4. Rural-Urban Imbalance

The agricultural sector was the major source of Kenya's early economic growth, and must be revitalized to serve in this capacity again. However, price and purchasing power incentives are shifting away from the productive rural sector towards urban, commercial trade functions. This reduces the incentive to produce in the rural sector, because the gains are being captured by the urban service sector. To revitalize the rural economy, this trend must be reversed and greater emphasis must be placed on increasing the value added in the rural areas. The GOK has addressed this as a priority in Sessional Paper, No.1.[4]

The key issue in the KMDP program is how to equitably increase incomes and purchasing power in the rural areas by re-establishing the proper balance between production and commercialization. Increase in production will increase rural demand throughout the system, eventually leading to a greater potential for rural investment. Rationalization of the current maize marketing program should provide substantial benefits to actors in the rural sector throughout the marketing and production channel, and will serve to achieve the goal of increased rural investment.

3.3 STRUCTURE AND CHARACTERISTICS OF THE PRIVATE SECTOR RELEVANT TO AGRICULTURAL MARKETING

There are four major industrial/commercial groups involved in the trade of maize and beans: agricultural input suppliers, maize traders, transporters, and millers. This section will analyze the structure of these different industry groups and the links between them, and highlight common characteristics. Understanding the industry groups will permit us to assess the impact of GOK policies and the existing infrastructure on the development of those structures, discussed in Section 3.5. The financial sector, which provides essential support to all four industries, is also covered in that section.

3.3.1. Agricultural Input Supply

The efficient marketing and use of improved agricultural inputs is vital to increased production in agriculture. Kenya has a well-developed input delivery system, reaching deep into the country's main agricultural areas.

Purchased agricultural inputs, other than hired labor, include fertilizers, seeds, animal feeds, veterinary products and pesticides. The structure of the industry consists of three levels of actors: manufacturers and importers, wholesalers and distributors, and retailers.

In general, Kenya's agricultural input industry is characterized by a diverse group of manufacturers and importers at the top, representing many multinationals and a few local firms. The industry narrows substantially at the wholesaler/distributor level, where 80 percent of the product passes through the hands of the Kenya Grain Growers' Cooperative Union (KGGCU). There is a wide network of stockists, primarily working for the KGGCU, but also some independents.

The considerable vertical integration of the KGGCU from importer to retailer, complete with its own network of stockists, means that Kenya's agricultural sector is heavily dependent on the KGGCU. The KGGCU receives preferential and often exclusive distributorship of agricultural inputs from a number of major manufacturers and

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[4] Republic of Kenya, "Economic Management for Renewed Growth", Sessional Paper No. 1, 1986.

importers. This arrangement has limited competition in the industry at the wholesale and retail levels. A large number of retailers, especially in rural areas, must buy from KGGCU. Such stockists are not permitted to operate in areas where KGGCU operates.

Volume and Variety of Retail Stocks.

The retail trade in farm inputs consists of the delivery of inputs as well as other advisory services required by farmers. Size and variety of stocks vary primarily by location. In the larger towns, serving wider markets, big KGGCU outlets are well equipped to serve large clients as well as their network of stockists. During field visits by the study team, the KGGCU and other full-time stockists in large market areas were well stocked by their suppliers. The only supplies in short stock were the bulky fertilizers and animal feeds. By contrast, isolated rural stockists tend to also have a functional variety of products, but in smaller volume.

The team observed that KGGCU outlets in the urban areas, as part of a distributor/wholesale relationship, are substantially cheaper than those of their stockists. With their lower prices, they are able to attract the large farmers who may live far away to come into town to fill large orders. This bypasses the many small, rural stockists, making it difficult for them to expand their businesses.

The urban KGGCU stockists and all the independent retailers purchase goods from suppliers on a continuous basis. The size of orders is usually large, and reflects trends in demand. KGGCU stockists in rural areas make frequent purchases of small quantities, often once a week, reflecting their limited working capital. This raises the cost to the small rural stockists, who have to bear the cost of the travel to the outlets and the cost of transport for the goods back to their shops. Meanwhile KGGCU outlet orders are delivered, minimizing transportation costs.

Advisory/Training Services to Farmers

As a point of contact with the farmers, retailers can play a significant role by providing advisory services on the proper use of agricultural inputs. In theory, proper training and advice for the farmers should take place in the fields by extension agents or manufacturer representatives. In reality this is difficult to achieve, placing the burden on the retail outlets to respond to farmers' information needs.

Observations during the survey confirmed that counter staff at the retail level do not provide this service to farmers. At all visited KGGCU branches, the counter staff were too busy serving the large number of customers to have time to advise farmers on the proper use of inputs. It was also observed that farmers had to wait to be served due to the large numbers of clients, especially at the KGGCU branches in Kisii and Kakamega where alternative outlets were few. Also attendants at the stockist level generally have no formal agricultural training, and thus are ill-equipped to provide advisory service to farmers.

Conclusion

Adequate stocks of inputs reach the rural areas, and Kenyans probably purchase more inputs than farmers in any other Sub-Saharan African country (perhaps with the exception of Zimbabwe). However, there is room for expansion in many districts -- stocks carried by the stockists are often limited, as is their ability to advise farmers on the proper products to use. The lack of advisory services at the retail level limits increased and proper use of farm inputs and hence limit the market expansion for inputs and the growth of agricultural production. KGGCU's vertical integration, illegal

for private firms (see section 3.4.3 on regulation), provides it with a large marketing advantage, allowing it to freeze out much competition when and where it so desires. Independent retailers need increased access to manufacturers/importers so that they can compete favorably with KGGCU.

3.3.2 Actors in the Maize Trade

Because the informal maize and bean trade is effectively illegal, it is impossible to quantify the firms and individuals involved, but several generalizations may be made. The number of actors is quite large, in the thousands, and they are fulfilling roles as distributors, brokers, wholesalers, and retailers. Chapter 2 covers many of the descriptive aspects of the industry and the links between different actors in the system. This section will simply look at the different characteristics of the actors and try to highlight the major constraints they face.

Sedentary market traders. The smallest actors in the trade are the retail market traders, usually women. Lack of cash generally prevents them from holding more than one or two bags of maize or beans at a time. They face no direct barriers to entry into the market, but must pay a substantial amount of their final margin to the market operators to bring in their product for sale (see section 3.4.3 on township taxes). The storage fees charged by town and municipal councils inside the market vary considerably by district, but provide an incentive for them to hold their stocks outside of the market.

The main regulations and taxes the retail traders face are at the town markets. Lack of clarity on these regulations allows some municipal and county council cess collectors to extort additional fees claiming that traders need a special permit to trade in maize and beans.

Wholesalers. Official traders must be licensed by the NCPB. However, circumventing the official price structure provides significant profits and is thus a good incentive to enter the illegal trade. The bulk ex-depot price at the NCPB is so high (approximately Kshs 3.56 per kilo for maize[5]) that local traders can procure it and sell it for far less through existing, albeit illegal, market channels. Even after accounting for payments to clear roadblocks, these traders usually still have a fair margin left for profit.

While there are many wholesalers who purchase only a portion of a lorryload, the majority of them deal in the lorry as their minimum size. For wholesalers this implies a working capital of at least Kshs 60,000 per load of beans or Kshs 25-30,000 for a load of maize.

Interestingly enough, the legal barriers to entry make it a profitable market to enter on the illegal side. The legal barriers raise the margins people can charge because there are relatively few official traders at this level. The primary criterion for entry is the level of adventurousness of the trader, not strictly his or her level of working capital.

Observed storage facilities were usually large rooms big enough to hold between 100 and 200 bags at a time. This small size conveniently matches the capacity of the trucks, and may reflect the fact that wholesalers are unwilling to make significant investments in storage.

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[5] This depends on the district, but the current standardized prices are fairly homogeneous. The cited price is for Nairobi.

Market information does not appear to be a constraint on the trader side. Wholesalers were aware of prices all through the channel, from the price their supplier pays at the farm gate to prices in different towns in the region.

Lorry traders. Maize and bean lorry traders function as wholesalers and distributors using their own trucks. By vertically integrating their activities they are able to capture larger margins. The consensus in the industry is that an increasing number of lorry traders are women (now about 20-25 percent) who are playing a serious role in the business (see Chapter 4). They have often worked their way up through the business and understand it very well. The explanation for the success is varied, but their hands-on management is definitely an important factor.

Agents. Licensed buying and selling agents of the NCPB enjoy a large advantage over regular traders who are not licensed by the Board. Because they are official, but with no real records, they can hold maize without any official complaints. The advantage to being an agent supposedly lies in the Kshs 6.50 commission which is paid for delivering the product to the depot, but, in reality, other costs more than absorb this fee, forcing the agents to pay below-market prices for their purchases.

It appears that typically there are a very few large agents in a district, supplying one-five lorries/day to a depot, and then a number who are much smaller, supplying one lorry every week or two. It is important to note that during peak season, the traders will sell all they handle to the board at the official price (currently Kshs 240 for a 90 kg bag, delivered), but as the season tails off, they will keep some stock (between 100 and 1,000 bags, depending on working capital capacity) for resale later in the year during the shortage period when the price would increase by 50 percent. This is still cheaper than the ex-depot price charged by the Board, which is farther away. This need to turn over the maize quickly reflects the general nature of trading: turning the product over as quickly and as many times as possible allows traders to make optimum use of their working capital. This refutes the popular view that the traders would hoard the maize.

Some other important characteristics of the informal trade include the following:

- The cost of transporting the maize to the Board (for those who need to hire transport) is greater than the reimbursement from the Board, so the agents are <u>forced</u> to pay prices below the published producer price in order to break even. Real incentive to them only comes from being able to officially buy from the farmers very cheap and then sell it back to the farmers later (the true role of commerce);

- Large agents are able to get working capital loans from the commercial banking sector, usually in the form of an overdraft;

- The most successful agents have their own lorries, so that they are able to vertically integrate activities and reap greater benefits; and

- Many agents wholesale and retail other commodities, providing other sources of income to help finance the trade.

Brokers.[6] Relatively few brokers were identified, but it seems clear this segment of the industry is beginning to evolve as traders gain experience in long-distance arbitrage. The team encountered one sophisticated enterprise which placed orders by

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[6] A broker is an actor who coordinates the purchase and delivery of maize for individual buyers. He rarely takes delivery of the product, but usually ensures that it goes directly from the supplier to the buyer.

telephone direct to large farms in Uasin Gishu, arranging for lorryload deliveries to various points in Kitui District the following day.[7] They supply the larger wholesalers directly by truck, often with no offloading between the farm supplier and the wholesaler. Because the trade is illegal and these actors have a potentially high profile, they often depend on influence and connections" to protect their investments.

3.3.3 The Maize Milling Industry

Structure

The milling industry accounts for the majority of maize processing and is the largest organized market for maize in the private sector. It comprises four major categories of operators:[8]

- Large sifted flour millers, who concentrate on selling packaged processed flour (NCPB licensed capacity of 30,000 to 110,000 bags per month);
- Medium-sized mills, which do both packaged processed flour and special order milling for individuals (NCPB licensed, capacity under 20,000 bags per month);
- Smaller mills which can produce grade one sifted flour, but concentrate on posho and are not licensed by the NCPB (capacity up to 3,000 bags per month); and
- Small posho mills, which dominate the industry in number, and primarily mill the maize of farmers (roughly 15 bags per day, or 30 percent capacity utilization).

Large sifted flour mills. The largest millers buy in bulk from the NCPB and sell their flour in 2 kg bags around the country. There are 27 mills licensed by the NCPB to process and trade flour, but only 17 of these have more than 50 employees. The industry is dominated by Unga, Ltd. which controls 40 percent of the market, followed by Mombasa Maize Millers, Mombasa Grain Milling Co., Jambo flour mills and the Milling Corporation. See Annex 3.2 for the complete list of mills and their NCPB allocations.

These mills are generally located adjacent to NCPB depots, in some cases having a conveyor belt link directly into NCPB silos. This provides them with easy access to their principal supplier, which also covers their costs for transport and storage. Competition among mills is stiff, but they are evenly distributed around the country to cover different geographic market niches. Only Unga Ltd. appears to have a national distribution network. Those in deficit areas, in particular, are able to gain leverage from the uniform delivery and storage costs provided by the NCPB to make a profit. The cost structure for the industry, dictated by the maize price schedules and the NCPB's role as principal supplier at near uniform prices across the country, heavily favors the location of the mill in the place of consumption rather than the place of production of the raw material.

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[7] The broker in this case was able to move the maize using official NCPB permits which had been issued to prominent individuals, who in turn received a share of the profit from each transaction.

[8] These categories were identified by the authors based on the observed level of investment, marketing channel and operational characteristics, and do not reflect any form of formal differentiation.

These mills have capacities ranging from 40 to 350 tons per 24 hours, and an investment beginning at Kshs 20 million (current value). Their storage capacity varies between 20,000 and 40,000 bags, which gives them one month's working stocks. This limited storage capacity is heavily influenced by the role of the NCPB as principal marketer, storer, and supplier of maize to the mills.

The major barrier to entry into the formal milling industry is the license required from the NCPB. The NCPB appears to be blocking new entrants into the system on a regular basis. It took Kitui Millers Ltd. four years to get their license, and several others who have applied have not yet received their licenses to mill and trade maize.

Medium-sized maize mills. The medium sized mills are licensed by the NCPB and have the capacity to mill both grade one sifted and posho flour. They comprise principally the ten licensed mills not included above. They prefer to mill for individuals on a fixed-fee-per-bag basis, rather than milling maize purchased from the NCPB under the official margins. Some, however, also bag and sell two kg. packages of sifted flour under their own trademark, but earn larger margins milling posho for individuals and wholesalers.

The major constraint they encounter is establishing the marketing channels to compete with the large millers. For this reason they prefer to remain in the small, personal service area, where they can respond to large milling orders from posho wholesalers and retailers on short notice. Their regular business includes large contracts to mill for prisons, institutions, schools, the army, etc., which provide their own maize for milling.

Many of these millers hold relatively large stocks of their own, on the order of 2,000 bags. They sometimes conceal additional stocks as "cereal banks"[9] for traders, which they trade during the shortage season. This peak milling season is during the end of the growing season when farm stocks are at their lowest levels. The maize which has been stored by the traders is now brought out to be milled and then marketed to the rural population.

These mills can handle between 20 and 50 tons per day with an investment worth at least several million shillings at today's rates. They are usually located in the heart of the grain growing districts where they are close to the traders who will wholesale and retail milled posho to farmers before the end of the harvest. They tend to hire 10+ employees and bring on many temporaries if the work is very heavy (during July-September).

An interesting phenomenon, reflecting the special niche market the medium-sized mills have captured, is the lack of competition. In the town of Nakuru the few medium-sized mill owners meet every year to set the price they will charge to mill grade one sifted maize meal for independent traders. However, for posho, for which there are many competitors, these mills must compete on price as well as their ability to handle high volume. Figure 3.1 on the next page depicts the advantages, under the current price control structure, to milling maize for individuals and traders (shown as "informal sifted flour" in the bar chart) rather than maize purchased from the NCPB.

Smaller mills. The smaller-sized mills also have the capacity to mill both sifted and posho flour. They have characteristics similar to the medium-sized mills, but less capacity for storage and volume. They also lack the longevity and numbers of regular clients. Their capacity for sifted flour is much lower than the medium-sized mills.

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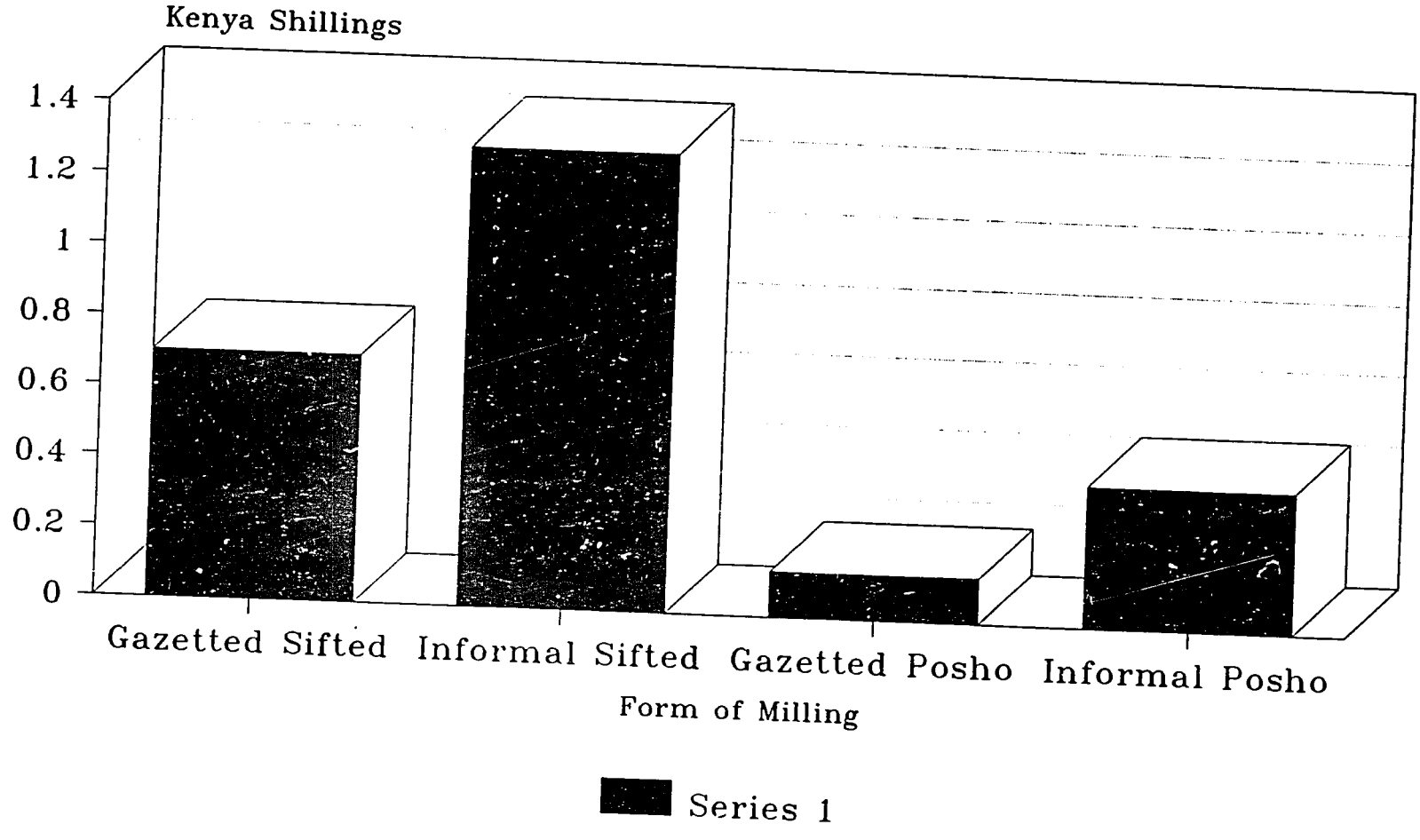
[9] Some consumers and traders store their maize with their miller. This allows the miller to control the quality of the storage, as well as have maize available for short-term use.

FIGURE 3.1
MILLING PRICES FOR MAIZE
Differential between Formal and Informal



Based on average gazetted and surveyed prices

They are located in towns outside of the major grain growing areas. There is rarely more than one small mill per town.

Their initial investment cost is between Kshs 250-500,000 with daily capacity between 5 and 20 tons. They have one small roller mill to complement their hammer mill. They do some milling for their own account, but primarily mill for farmers during the six months after harvest season, at which point they greatly increase their milling for traders; these latter have stored maize which they purchased directly from the farmers.

These mills are run by electricity. They may do as few as two-three bags/day during the off season and up to 50-75 bags/day during the peak shortage months of July-September. These mills will capture some of the smaller-scale contracts from institutions and government agencies. They generally hire up to three people, with monthly wages of Kshs 700 each. Most have graduated up from the typical posho mill, described below, in the urban areas, although Kenya Industrial Estates (KIE) has financed some to start directly at this scale.

The typical posho mill. The most numerous of all, these mills are found in small villages and around towns. They are usually spaced every few miles in the heavy producing areas, or clustered in the towns and market centers in the non-surplus areas. Their milling season run counter cyclical to the larger mills, doing their best business in the season right after harvest, when the farmers have plenty of maize. In urban areas in Western Kenya, there may be as many as five to eight posho mills in the same market. In rural areas, these are often very isolated and deal with a specific clientele which comes on a regular (weekly) basis and mills only for direct consumption. There has been a significant increase (approximately 50 percent) in the number of these mills over the past two years in the six districts studied (see Chapter 4).

Their operations drop off by 50-75 percent during the off season, just at the time when the farmers are running low on maize. This latter is the precise time that the medium-sized millers are increasing their work loads as they begin to mill for the wholesalers who will then transport to the rural areas for sale in small quantities, cheaper than the packaged sifted flour.

The posho mills are diesel-powered when the location does not have electrical service. This allows them to function in rural areas, but is far more expensive than electricity. For example in Karatina, the monthly electric bill to mill 1.2 tons of maize per day is Kshs 700; for the same size mill to do 500 kg of maize per day costs Kshs 60/day in diesel (Kshs 1,440/mo).

The mills will do two-three bags a day during June-September, but up to 10-20 bags during the post-harvest season. The owners tend to live hand to mouth, with little working capital; they consume what they earn. These mills often have trouble paying major repair costs and may have to shut down altogether when the mill breaks down.

Consumer milling costs are lower in areas with a heavy concentration of mills. Mills which are closer to the clients charge more than do mills which are located farther away (provided other mills are closer). The range of prices runs from Kshs 0.30 for mills in heavy competition areas to Kshs 1 for posho mills located far from others (usually in seasonal deficit zones).

The investment cost required to start up a small posho mill is about Kshs 160,000 (130,000 for the mill, 30,000 for the building, and licenses, etc.) so it is not that difficult a business to enter. This amount is usually available as bank loans.

Industry Involvement in the Maize Trade

As noted above, the milling industry is the dominant private commercial force in the maize market. The NCPB sells 80 percent of its purchases to large mills, with some relatively minor sales to the medium-sized mills. As the major end user of the maize, the mills would appear to be the major winners in the liberalization of trade, but this may vary among firms. It is apparent that some of the large mills presently benefit from a capacity to purchase maize directly from farmers at substantially cheaper prices than the NCPB ex-depot price. The prime example is the Milling Corporation of Kenya, Ltd., owned in part by the NCPB and under the Ministry of Supplies and Marketing, which has its own permit book to allow legal purchases and delivery of maize from farmers at prices well below those of the NCPB.

There appears to be an interesting phenomenon with relation to maize sales from the NCPB to the large firms: those firms based in the surplus areas are purchasing less maize from the NCPB than a few years ago (Milling Corporation and Unga, Ltd), while the mills located in the deficit areas (Nairobi, Mombasa, Kitui, etc.) are purchasing their maize primarily from the NCPB. This appears to reflect the differences in storage and transport costs between the areas. Despite purchasing maize at a much lower price from selected private traders, the Milling Corporation continued to sell its sifted maize meal at the officially set prices (see Section 3.4.2).

The medium-sized millers always buy some maize from the NCPB but rarely more than 20 percent of total consumption. They claim the official margins are too small for them to make any profit, but this is true only in the case of posho flour milling. Their major constraint with sifted flour is competing with the better- established large flour mills. By formally purchasing some maize from the NCPB they are able to camouflage illegal maize purchases direct from farmers. Instead, they perform the majority of their milling for the wholesale and retail traders who pay a higher price to have their own maize milled by the bag. As noted above, these mills will often hold about 2,000 bags of maize which they have purchased locally.

The smaller mills mimic the medium-sized mill behavior, but on a smaller scale. Meanwhile, the typical posho mill rarely engages in the purchase and storage of maize, relying on the local farmers to do that.

3.3.4 The Transport Sector

Official statistics on the structure of the industry are weak for the smaller-size firms but valid for the majority of the large firms:

TABLE 3.4

TRUCKING ESTABLISHMENTS BY FIRM SIZE
(# of employees)

	0	1-4	5-9	10-19	20-49	50+
1977	66	29	24	20	18	31
1981	81	17	22	21	14	39
1986	39	49	15	20	17	24

Source: Central Bureau of Statistics, Annual Statistical Abstract

These figures reflect the stability of the industry, with relatively few changes in the number of medium-sized firms (between 5 and 49 employees). Generally in larger towns where there is a greater dependence on interdistrict trade, there are more large

firms and a greater capacity for transport. In many towns, such as Nakuru, this reaches an excess capacity of transport. In smaller towns, such as Nyeri and Kitui, there is sufficient transport to meet local needs, but the majority of the services rendered are within the district or in the surrounding districts. The average distance for haulage registered by the truckers interviewed during the field work was about 50 km.

For large interdistrict hauling of maize, one tends to find the market dominated by trucks from larger towns (Nairobi, Mombasa) belonging to large trucking firms. These firms receive their instructions to transport maize from NCPB headquartered in Nairobi, allowing them to make optimal use of trucks on return trips from destinations abroad and up-country backhauling maize. This business is highly competitive and the NCPB is able to get the largest trucking firms to offer the same rates as the railroads.

It is important to note that the private trucking industry is currently handling 100 percent of the maize transported by road within the country. Along the axes serviced by rail lines, there is still a fair amount of grain transported for the NCPB by rail.

Cost of Entry

Compared to other expenses in the trucking industry, the official cost of entry into the trucking business is not high. To register, a trucker must first pay Kshs 1,650 at the municipal level for annual registration, plus Kshs 3,000 at the District Trade Office. Length of time for approval of initial application is up to two months, due to the requirement for approval by the county council.

The real barrier to entry into the trucking industry today is the cost of the vehicles. A seven-ton truck now costs in the range of Kshs 1.2 million (slightly under $60,000 at the current exchange rate). It appears that loans to purchase trucks are available; the majority of the trucking companies interviewed had received loans to buy their most recent vehicle.

Main Constraints Encountered

Profitability in the trucking industry is directly related to the efficiency of the operator in terms of downtime of his vehicles and getting optimal transport use when on the roads. The first is directly related to the efficiency of the client in loading and unloading the product, and the second is dependent on information available to the trucker on products available to be transported. The ideal situation is a truck constantly on the road carrying cargo on all legs of a trip.

The trucking industry has developed effective methods for interacting with the NCPB to meet the heavy movement needs of the organization. Large interdistrict hauling is handled primarily by big trucking companies on their return trips. The knowledge that there is a cargo to be transported several weeks in advance and the ability to contract for the transport before a truck leaves on its initial leg of a trip are very important to the optimal efficiency of trucking companies. The NCPB is able to communicate those needs to the trucking companies with enough lead time on fairly standard routes to make it economical for them to collaborate.

A major constraint noted by all the truckers who are currently hauling maize locally for the NCPB is the low rate paid of Kshs. 10 per bag by the Board, relative to time spent completing the operation. In contrast with the good information flow is the downtime the trucks must put up with while dealing with the NCPB. Because of inefficient systems, trucks often have to wait for several days to load and unload at NCPB depots, creating a serious opportunity cost to the companies. The downtime

reflects the centralized nature of the NCPB and bottlenecks in the system inherent to its structure. A more decentralized structure, or one without these bottlenecks, would greatly increase the ability of the trucking industry to move more maize at a lower cost.

In addition to the cost for the trucks under contract to the Board, small truckers hauling maize for farmers and agents pass the costs of waiting directly through to the customers, charging substantially more to move maize to the depot than the NCPB reimburses to the farmers and agents. In Kitui District, bad roads and long delays at the NCPB caused truckers to charge Kshs 15-20 per bag for transport as short as 2 km. The real cost to the transporters comes from the downtime rather than distance covered.

The following rough estimate of the opportunity cost to truckers shows just how much potential economic activity is lost to the economy by tying up resources waiting in line. This amount would find its way around the economy, most likely in the form of lower transport costs to producers.

TABLE 3.5

OPPORTUNITY COST OF WAITING[10]

Number of bags handled by the NCPB per year:		7,000,000
Size of each truck:		100 bags
Number of truck days lost:		70,000 days
Opportunity cost of truck:	Kshs	1,000/day
Total cost to industry	Kshs	70,000,000

The trucking firms and individual owner-operators have proven that they have the capacity to handle Kenya's maize trade. Their major requirement is sound information on the movement needs of their clients so that they can plan ahead. A clearly outlined liberalization of the maize trade would allow the trucking companies to enter into agreements with the major clients, allowing them to program their schedules effectively. The trucking companies have much flexibility, but cannot be expected to be able to change their plans on very short notice for long hauling.

3.3.5 Summary of Important Industry Characteristics

Barriers to Entry

Barriers to entry vary across the four industries, and also by the level of entry. At the level of the smallest firms (generally informal sector enterprises), the barriers to entry are minimal. This is shown by the large numbers of small-scale firms in all four industries.

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[10] This example is based on a series of assumptions which vary year to year. It is assumed that each lorry carrying 100 bags encounters an average of one day of down time; that the NCPB handles 6.6 million bags in a given year, and that the opportunity cost of one truck/day is Kshs 1,000. These assumptions are made based on field observations and on average figures for handling. They are probably understated, given the numerous times that each bag is handled within the system, but the figures illustrate the magnitude of the problem.

In the transport and milling sectors, the primary barrier to overcome is access to the capital necessary to purchase the equipment. In nearly all the recently established posho mill operations, credit had been obtained to purchase the machine, reflecting good access to credit plus the relatively small size of the loan required. The large increase of posho mills registered in each of the six districts over the past two years reflects the relative ease of entry. For the transport industry, the majority of the owners interviewed also acknowledged getting credit for the purchase of their first vehicle. Those who didn't get credit started at a much smaller level and with a used vehicle, rather than a new one, and added new vehicles at a later date.

For the input industry, the key barrier to entry is becoming a KGGCU stockist and having the technical expertise required to get a license. As noted, the KGGCU is the dominant force in input delivery in the maize zone. Outside of this zone, there is freer competition, but a much smaller market.

The large numbers of small grain traders, primarily women, reflect the ease of entry into this sector. The legal framework surrounding the trade discriminates against larger traders, so that the great majority of the actors in the trade remain small.

Barriers to entry at a larger scale in each of the industries differ widely from those at the lower levels, and become more complex. In the milling industry the major barrier to entry, or graduation, is the official license to mill and trade maize, issued by the NCPB. This has become much more difficult to obtain in recent years, even for people who have already purchased the equipment. The ultimate decision to grant a license/permit to mill is made by the Board of Directors of the NCPB.[11] This obviously permits a lot of political discretion in the decision process, as well as opportunities and/or requirements for persuasion.

The primary barrier to entry for the larger input distributors is access to the manufacturer/importer link. KGGCU controls most such links and, as the largest actor in the region, has arrangements with the major suppliers to remain their sole distributor, under threat of losing KGGCU's distribution network. This virtually eliminates medium-scale competition to the KGGCU, as witnessed by the lack of independent, medium sized competitors. The other actors are manufacturers or importers in their own right, giving them guaranteed access to supplies.

Barriers to entry into the large-scale maize trade vary by the specific actor. Some overcome the legal barriers through political power and ability to obtain official documents permitting them to enter the trade. This allows these actors to maximize profits in the context of a controlled industry. For the others still operating in the purely illegal sector, the primary barriers are willingness to bear the risks and rewards of an illegal activity, including payments of chai, and access to sufficient capital to purchase lorryload volumes of maize.[12]

Graduation

Closely linked to barriers to entry is the ability of actors to graduate up through the system. In the milling industry the major barriers are the NCPB licensing and marketing networks. There are a fair number of medium-scale millers, possessing a

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[11] Source: NCPB officials.

[12] The lorry load of about 100 bags appears to be the economical size of delivery based on interviews with the traders. This is reinforced by the fact that several women will group together to buy a lorry load for transport, but do not transport half lorry loads individually.

permit, who find it impossible to grow because of the domination of the trade in their region by one large miller. As noted above, each of the large millers has carved out a geographic niche which gives him the advantages of transport and marketing networks within those areas. A medium-sized miller does not have the network necessary to expand market share in his region and the transportation costs to other areas make it uneconomical to try to compete outside of one's geographical zone.

Graduation of the small posho mills to the next larger size appears to be an issue of market size and access to capital. In most of the rural areas, there is insufficient demand for sifted flour to warrant the installation of a sifted flour mill, so the small sifted flour mills must be reserved for retail demand within the urban areas. This virtually eliminates the opportunity for graduation among the rural posho mills. At the same time, the strong competition between mills has forced prices down to minimum levels of profitability. This also makes it very difficult for these mills to grow and sometimes even to cover their costs in the event of a breakdown.

As noted earlier, movement controls serve to repress the wholesaling function, with the result that graduation from retail trade and "first handling" at the wholesale level tends to be difficult. In theory, efficient smaller traders can accumulate capital that allows them to gradually spiral upward into larger operations; but the regulatory system actively discourages this, and many retail trading niches involve very small volumes (one or two bags of maize a day, often less) with margins of Kshs 0.30 to 0.50 per kg, which provides a very marginal income to the trader.

There are few constraints to growth for transport firms, other than their ability to run their businesses properly. Since they contract to transport maize and beans, the legal trade restrictions have little impact on them, affecting the owner of the maize instead. By contrast, they face the issue of market demand and overcapacity of transport in certain regions of the country and may be limited by the market niche they have selected. Growth from a district-level transporter with a few trucks to a transporter dealing with interdistrict and international hauling represents graduating into a whole different industry.

Integration

Vertical integration is a relatively minor factor in the structure of most of these industry groups in the formal sector. Government policy has mandated that firms which manufacture cannot distribute, those that distribute cannot retail, and so on. Despite the law, however, the input industry has high vertical integration, focused on the KGGCU, which imports, distributes, wholesales, and retails. This allows the KGGCU to outcompete all other actors.

In the informal sector, however, integration of one or more steps is common and increases the margins to the trader. For instance in the maize trade, the lorry traders and many agents combine transport with buying and selling maize, allowing them to capture the double margin and organize their movements to haul loads on all legs.

Horizontal integration is found primarily among the agents for the NCPB and the medium- and large-scale mills. The agents often have another retail/wholesale business on the side which they are able to leverage in the maize trade. The mills move horizontally into the manufacture of animal feeds with the waste from their sifted flour.

3.4 LINKS TO OTHER INSTITUTIONAL STRUCTURES

3.4.1 Private Trade Links to the NCPB

The NCPB is the dominant player in the maize trade and, as such, plays a very important role in shaping the structure of the trade in geographical regions. We will look directly at the impact it has on the four principal industry groups discussed above.

Agricultural input suppliers. The NCPB currently has no direct relations to this industry, though its policies could shape the industry development. By buying all of its maize at a uniform price, the Board does not encourage investment in higher quality maize breeds which may be more expensive but have better milling potential. It also prevents the mills, which have an interest in receiving higher quality maize, from contracting directly with large farmers who would be interested in making those investments.

The principal input supplier is the KGGCU, which is also a principal in wheat marketing and in the 1988-89 campaign was supposed to become a major trader in maize. Shortly after the KGGCU finally arranged financing to enter the market and had purchased only 90,000 bags, the NCPB ordered it to stop marketing, ostensibly because either the NCPB was having trouble turning over its stocks, or because it wasn't able to purchase enough for food security purposes.[13]

Traders. The Board has a significant impact on the actors in the maize trade. The traders are dependent on the Board for the issuance of their permits and must have good relations with the Board. The Board controls the licensing process for agents and the issuance of movement permits which, as discussed in section 3.5.2, are a major determinant of the structure of the trade.

The official agents who deal with the Board have institutionalized payment of chai, particularly the standard Kshs 5 fee per bag to depot clerks and produce inspectors who can accept or reject maize upon delivery. The systems within the Board are designed to promote these charges, including the location and procedure used for the moisture tests.[14]

Transport. The NCPB is a large and steady client of the transport industry. With opportunities for moving more than 6 million bags of maize a year, often more than once, over first short and then long distances, establishing regular relations with the Board can be a very profitable business, particularly for long-distance hauling.

Since the majority of the long-haul assignments are made in Nairobi, it is very easy for large transporters to arrange back-hauls which ends up being cost effective for both the NCPB and the participating firms. The centralized allocation process naturally disfavors the small local transporters who may wish to get work from the NCPB, but are not present to plead their case in Nairobi.

At the district level, transporters register with the NCPB to haul maize from buying centers to depots, but this is more of a convenience to try to ensure maximum

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[13] Though these two explanations contradict one another, both have been put forward by GOK sources. Since the NCPB held stocks of about 10 million bags as of May 1989, it would appear that the perceived threat to the Board lay in not being able to sell adequate amounts of maize to the mills.

[14] In the depots visited, the moisture meter was kept inside an office, out of sight of the person delivering the maize, so he could not verify the test procedures or even be sure whose maize was being tested.

vehicle use. However, the rates paid by the NCPB often do not compensate for the subsequent downtime caused by delays at the depot.

Milling. The large millers are integrally tied into the NCPB. They are officially 100 percent dependent on the Board for supplies of maize and for the permits to move their flour to market after processing. The dependence on the NCPB for all supplies has both its positive and negative points. On the positive side, the NCPB is presently a monopolist in the market, so the mills have a guaranteed supply of maize. Second, the NCPB must handle the storage and transport function for the millers.

On the negative side, the tremendous inefficiencies of the Board have forced an uneven price structure on the mills, with the NCPB capturing the majority of the price mark-up between the farm gate and the consumer. In addition the mills have to put up with the consistent delivery of poor-quality grain, and very uneven weighing results, due to the NCPB's inadequate weighing facilities and procedures.

3.4.2 Maize Industry Links to the Cooperative Movement

Kenya's cooperative movement incorporates a wide range of organizations with a variety of goals, from savings associations to produce and input marketing. Almost every division in the country has a cooperative of some type. Cooperatives play an important role in ensuring equitable distribution of income in the agricultural sector. The present role of cooperatives for marketing maize and beans is quite restricted, but they have the potential to play a much larger role under a liberalized marketing system.

In the 1988/89 marketing season, in view of the potential benefits to members of cooperative organizations, the GOK recommended that cooperatives should take the major share in the marketing of maize as part of the private sector participation. The KGGCU, already a principal for wheat marketing, was selected as the representative of the cooperatives to enter the market as a private intermediary, legally able to buy and sell maize from the rural areas directly to the mills without passing through the Board. This authorization was rescinded in February 1989, less than two months after the KGGCU entered the market.

In general, cooperatives have been allowed to serve as agents for the NCPB, collecting a Kshs 6.50 commission for every bag of maize delivered to the Board. However, they have encountered many problems doing this. The largest problem is on the issue of extra payments required for NCPB depot personnel. Several of the cooperatives interviewed in Nakuru district were unable to deliver thousands of bags to the Board because they refused to make the necessary payments. With these extra problems, the cooperatives have little interest in serving as intermediaries for their members, because they are not able to pay them as much as they feel they should. In a few cases, very strong cooperatives based on other products (such as milk) served as a marketing intermediary for their members, but only as an extra service. If they were able to sell directly to the mills they would be far more interested and capable of doing it well.

Financing

The Cooperative Bank of Kenya (CBK) and cooperative savings and credit societies are major agents for mobilizing savings from and lending to the small-scale farmers and entrepreneurs for investment in the agricultural sector. These institutions lend to well-managed and solid cooperatives for maize marketing and would lend for buying, storing, and transporting maize. Under a more liberalized maize trade they would, however, have to develop new systems for collection, as they are currently dependent on the Board as the principal source of reimbursement.

Loan repayment has varied greatly by cooperative. The CBK branches reported a repayment rate between 50-98 percent in the six study districts. This is unsatisfactory, but may improve with better management and expanded economic activities by the societies.

Impact of KMDP on Cooperatives

Cooperative societies and unions have played and can play a vital role in production and marketing in the rural, small-scale agricultural sector. However, cooperatives are not playing their full role in this sector. The major causes for the low levels of performance are weak management committees and staff; poor access to steady supply of working capital; and the fact that many coops are small and have no economies of scale.

The cooperative sector represents a large proportion of the private production and marketing of agricultural produce and inputs. The reform program to eliminate price and movement controls and increase the market share of the private sector will require cooperatives to assume more responsibility in marketing. The GOK believes that cooperatives have a vital role to play and has recommended that they be given preference over individual traders to buy, store, transport and sell maize in competition with the NCPB. If well managed, the cooperatives have the ability to serve small-scale farmers' interests better than private traders. However, the issue of sound management must be resolved before the cooperatives will perform better than the traders.

3.5 ANALYSIS OF CONSTRAINTS TO RURAL INVESTMENT

3.5.1 Credit

Traditionally, a major constraint to the development of local enterprises in rural areas is a shortage of capital for investment. Yet this does not appear to be the case in rural Kenya. Kenya is covered by a financial network which has branch banks in all district capitals and many secondary towns. Findings in the six districts which were surveyed showed an excess supply of capital in the rural financial system, and a net export of capital from the rural areas towards the urban financial centers.[14] Annex 3.1 presents a brief overview of the structure of the financial sector in Kenya. This section reviews formal rural lending, highlighting the existing links and interactions followed by an analysis of the constraints.

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[14] Contrasts in rates of lending are illustrated by the following examples from Kitui, Nyeri, and Nakuru (the latter a large urban area), as of June 1989:

- Kenya Commercial Bank, Mwingi (Kitui District): 20 percent of local deposits were invested/loaned by the branch;
- Kenya Commercial Bank, Nyeri branch: less than 25 percent of its deposits loaned to local borrowers;
- Standard and Chartered Bank, Kitui branch: 17 percent of deposits loaned to branch borrowers;
- Barclays Bank, main Nakuru town branch: roughly 100 percent of local savings loaned (urban location).
- Barclays Bank, second Nakuru branch: roughly 50 percent.

Structure of Rural Lending

In the six districts surveyed, commercial banks were making 20-35 percent of their loans to agriculture. The corresponding figure between 1974 and 1986 was 12-17 percent. Eighty to ninety percent of the lending to agriculture is for production in the form of short- and medium-term loans. Table 3.6 shows the degree of commercial bank lending to agriculture by size of farmer: small-scale farmers with less than 50 ha received 16-27 percent of total agricultural loans. The bulk of the lending is to commercial large-scale farmers with over 50 ha. Cooperatives also received between 9 and 24 percent of formal lending between 1974 and 1987.

There has been limited lending for maize marketing. All the banks surveyed reported a sudden increase in loan requests from NCPB agents and cooperatives to purchase maize in the 1988/39 harvest season, but this still represents a small percentage of each branch's lending. The loans were primarily in the form of overdrafts. These banks also indicated that they could finance construction of storage facilities, provided a bankable project could be presented. Commercial banks reported that they did not finance purchase of lorries. This was done by non-banking financial institutions such as United Finance Trustee.

TABLE 3.6

COMMERCIAL BANK LENDING BY SIZE OF FARMER

Year	Small Farm (<50 ha)	%	Large Far (>50 ha)	%	Coops Boards	%	Agric.	%	Total
1974	103.8	23%	235.3	52%	62.8	14%	54.7	12%	456.6
1975	167	23%	363.3	51%	94.2	13%	88.7	12%	713.2
1976	243.5	27%	432.2	47%	85.3	9%	152.1	17%	913.1
1977	307.5	23%	517.4	38%	197.9	15%	330.1	24%	1352.9
1978	302.5	19%	732.5	47%	353.9	23%	174.3	11%	1563.2
1979	317.8	17%	986	53%	399	21%	161.7	9%	1864.5
1980	380.3	18%	1053.7	51%	432.3	21%	211.9	10%	2078.2
1981	499.7	22%	1008.9	44%	462.4	20%	335.4	15%	2306.4
1982	559.2	20%	1151.1	41%	436.1	15%	674.9	24%	2821.3
1983	594.3	16%	1210	32%	592.8	16%	1414.8	37%	3811.9
1984	700.6	19%	1268.3	35%	654.5	18%	1013.1	28%	3636.5
1985	805	19%	1676.6	39%	603.9	14%	1253.2	29%	4338.7
1986	922.9	20%	1787.7	39%	595.2	13%	1270.4	28%	4576.2
1987	940	19%	1881.7	38%	1204.9	24%	949.8	19%	4976.4

Source: Central Bank of Kenya, Quarterly Report, June 1988.

Lending to middle-sized firms seems to be missing, reflecting the discussion in Section 3.2. This is confirmed in the recent ILO-sponsored "Strategy for Small Scale Enterprise Development in Kenya", which also concludes that the "missing middle," those firms which are too large for NGO support but too small to receive bank loans, are often the ones with greatest potential to succeed and grow in the rural areas. The evidence from other studies[15] shows that most rural microenterprises are not generally established or expanded with debt financing. The major credit constraint is felt at the

[15] See "Kenya: Industrial Sector Policies for Investment and Export Growth", World Bank 1989, for further elaboration of this point.

slightly larger-size firm, which surpasses the ability of family savings to provide the start-up capital and is constrained by lack of access to working capital.

Lending for microenterprise projects has been mainly covered by the NGOs. In general, microenterprise start-up capital needs in the rural areas are covered from savings and family members, but the presence of more than 400 NGOs provides for the rest. Unlike the financial institutions discussed in Annex 3.1, NGOs do not require "bankable projects" and security, but depend more on the reliability and personal credibility of the individual. Instead, the NGOs assist individuals and groups to identify, evaluate, set up and finance projects. NGOs then monitor the performance of the projects, providing them with training and technical assistance.

Constraints to Rural Financial Intermediation

The process of financial intermediation is performed when institutions collect funds from a variety of sources -- funds that are too small to be viably invested -- and offer those funds in a larger quantity for use as investment or working capital. Obviously, the financial system is collecting funds in large quantities, but this money is not being reinvested in the rural areas. Instead, it is being transferred to Nairobi and Mombasa.

The banks argue that there is a shortage of bankable loans in the rural areas, based on their knowledge of the local market and opportunities for investment. This assessment has been reinforced by poorly evaluated loans in the past which have high default/arrears rates, running between 20 and 50 percent of their portfolios. This, plus the fact that more than 33 percent of several banks' portfolios are more than five years overdue, leads to risk aversion for rural lending. While this timidity accurately reflects the relative scarcity of "bankable projects," several other conditions contribute to this situation.

Branch managers tend to **stay in rural branches for relatively short periods of time.** During the survey, more than 50 percent of the managers interviewed had been in their branches for less than six months. Other interviews confirmed that it is only recently that branch managers have begun staying in one branch for as long as two-three years. They are often transferred before they have a chance to really learn their client base, understand the economies of their districts, identify target markets, and develop and implement strategies for improving performance.

Branch managers generally have **very low credit authorization ceilings.** This depends on the manager and his seniority, but ceilings ranged from no credit authorization at all (the Cooperative Bank) or only Kshs 50,000 (for secured loans at many KCB branches) up to Kshs 500,000. This forces approval for any substantial loan up to a senior level, where delays become a problem and other internal political factors can lead to discrimination against the approval. Local banking experts acknowledge that relatively few loans are made which surpass the branch manager authority, and that local borrowers are advised not to try to surpass it.

The low ceiling on approval authorities presents a clear bias toward lending for the urban areas. Given the knowledge that greater options for lending exist in the urban areas, the greater numbers of borrowers with established credit ratings, plus the option to buy government bonds at a rate which surpasses the lending rate, it is logical for regional bank managers to try to keep as many of the resources available as possible at their level, rather than give approval for increased loans at the rural level. In addition, bank managers complain about the difficulty of monitoring and managing large numbers of loans in the rural areas.

The **lending criteria for financial institutions are very complex** and often difficult to fulfill from a rural area. Principal criteria, besides a "bankable project", are security worth 120 percent of the value of the loan; proven ability to repay (credit history);

ability to contribute 20-40 percent of the initial investment; and a current bank account. Because so many people don't know how to prepare a loan dossier, they are sent to an advocate to do it. Of the criteria, the most difficult to overcome is the collateral, which is considered the single biggest obstacle to obtaining credit.

Length of time for processing a loan. Loan approval delays for commercial banks, from the time when a client applies for the loan to the time he receives it, were reported to be between two weeks and three months. The major delay arises from registering the security.

The cost of processing a loan. It was estimated that the cost of processing a loan (stamp duty, feasibility study report, travelling costs and advocates fees) amounted to 4-10 percent of the loan value.[16] This is a substantial up-front cost to the borrower.

3.5.2 Infrastructure and Services

Infrastructure in the rural areas must be analyzed in light of the appropriate scale of industry and investments which are economically viable. Section 3.2 has argued that, in the face of the relatively well-developed industries in the urban areas, the most viable economic activities in the rural sector will tend to be on a small-scale, and those more consistent with the purchasing power of local consumers.

Interviews with District Trade Development Officers, merchants, small businesses, specialists in small-scale enterprise (SSE) development based in Nairobi, and general observations revealed a series of different infrastructure constraints to the development of and investment in productive enterprises. These include reasonable access to industrial land, land ownership, suitability of manufacturing structures, electricity, and, to a lesser extent, water and roads. As these constraints are often related to a scarce resource, there are benefits to be gained from controlling those resources, a factor which plays a large role in their allocation. For more specifics, the Kenya Association of Manufacturers and the ILO have published reports [17] on constraints encountered by the firms of varying size for making investments in the rural areas.

Industrial Zoned Land

Many of the local authorities with jurisdiction over market towns and smaller urban areas have not considered the issue of zoning industrial areas in their development plans, allocating the available land to residential zones instead. Particularly in densely populated and highly productive agricultural zones such as Nyeri and Kisii, it is very difficult to gain access to land which is reasonably close to town with power and water.

Appropriate Structures and Ownership of the Land

As discussed in Annex 3.1, lack of recognized security for collateral is a serious constraint to obtaining loan capital from the banks. Programs such as the Kenya Industrial Estates (KIE), which have been developing and renting land and structures to

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[16] Costs associated with processing a loan include (1) Stamp duty in rural areas - 4 percent of asset value; in urban areas, 5 percent of asset value; on a house, 6 percent of value; (2) Registration fee - Kshs 200-500 and advocate's fee, 0.5 percent of the value of the loan or asset pledged as collateral; and (3) other expenses: Kshs 750. (Source David Kimbui, loan processing advocate).

[17] See KAM 1988 and ILO 1989.

small businesses, encounter two major problems in stimulating investment: the inappropriateness of the physical structures and the constraint of getting securable collateral for the entrepreneurs.

The KIE sheds observed by the team were usually too large for the scale of enterprise or were improperly laid out for the particular enterprises they housed. Rather than building the sheds, it would to be better to develop a site, with electricity and water, and then provide loans to the individuals to build their own workshops, on a scale and design to fit their needs.

If this latter program were integrated with a rent/purchase scheme, it would also eventually achieve a solution to the other constraint: secured land. With buildings and land of their own, small businessmen would have much better access to financial resources necessary for expansion and graduation into the formal sector.

Access to Utilities

Almost all viable locations for business development in Kenya are on a power grid or can get relatively easy access to electricity. The real barrier lies in getting a transformer installed to draw on that power supply. The current price for dropping a line and installing a transformer, in rural areas, is in the range of Kshs 150,000, more than the investment in most of the machinery required to actually operate the business. This presents a clear barrier to entry for most small-scale entrepreneurs wishing to switch from diesel-powered machines to more efficient electrically powered ones.

Access to water is a constraint in some rural areas, such as Kitui, but affects larger rather than smaller companies. Water is available in nearly all towns from boreholes; the main problem is access to clean piped water. Many of the water requirements of small firms can be met by hand-carried water.

Once again, as with the appropriateness of scale and type of structure, the preferred solution would be to make these resources available through site development, letting the entrepreneurs provide their preferred structures.

Roads

Kenya has a well-developed road network, by developing country standards. Almost all major towns and districts are connected by macadam roads, with good murram roads running between divisions within a district. By and large the roads pose less of a problem to the development of businesses than they do to restricting the markets these rural enterprises would serve. Since the major trunk roads are good, a firm's ability to get raw materials and ship goods back to the major urban centers is not seriously constrained.

The issue of poor roads reaching into the countryside is an important factor for the urban-rural imbalance, the source of disproportionately large intermediary costs between farm-gate and the end consumer in the urban areas. Increasing efficiency by improving access to these regions and reducing intermediary costs would likely lead to increased margins for the producers, raising their purchasing power. This is covered in much greater depth in Chapter 5.

Physical Market Infrastructure

Of particular interest to the team was the impact of improved physical market infrastructure on the trade of maize and beans as well as on overall equity in the

system. Several observations were made about use and allocation of space which may be pertinent to the upcoming evaluation of the AID-financed Karatina market and bus park.

In Karatina the construction of the improved market facilities with lock-up stores around the inside wall has had a multiple effect. The market appears to be neat and orderly but close analysis also shows that the market now appears to hold fewer traders than before because of space lost to the shops and lock-up storage. This apparent contraction of the physical market size can be confirmed by the development of a new open-air market a few hundred yards away where there is a lively trade of maize and beans, thus far untaxed by the municipal council. Reducing the number of participants in the market also restricts competition, by simply offering fewer choices.

Analysis of cost to bring goods into the market shows a differential favoring the larger traders over the smaller ones, which keeps the smaller ones on the outside until they can aggregate enough of a product to make it economically feasible for them to enter the market. This reduces the benefits of the market to the farmers bringing their maize in for sale.

Because the new shops and storage spaces around the inside of the market can be locked up, the market has now taken on a new function: one of storage rather than one of trade. This raises the question of whether it is more efficient to keep large quantities of stored goods outside the physical infrastructure rather than take up limited space within the market.

Another point which needs to be verified is the ownership/rental of the new stalls which were constructed. In Kitui, demand for spaces in the new marketplace built with an AID loan was greater than the supply. The town council had already allocated all of the new spaces, even though the market wasn't open yet because the electricity was not connected. The people who had been allocated the scarce resource, however appeared not to be traders, but people with connections who would sub-lease the space to a real trader. When a project creates a situation of scarce resources, care must be taken to arrange an equitable allocation which does not hinder market efficiency.

3.5.3 Maize Storage

There is virtually no independent grain storage industry in Kenya. Rather, storage is performed by commercial actors as an element of doing business and a source of revenue. The issue of who holds the commodity and where it is stored is an extremely important one in the liberalization of the maize and bean trade.

A discussion of storage facilities must be differentiated by the purpose of the storage. Then the form, the location, the size of the facilities required and the length of time the maize is to be stored will make more sense. Three major purposes of storage are for family food (on the farm), national food security (handled by the NCPB), and holding for marketing (farmers, traders, NCPB, and millers). While roughly half of maize storage actually takes place on the farm,[18] our focus in this study is on storage for the latter two purposes.

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[18] Maritim (1980), Table 9, estimated the total storage capacity on farms and in the trade in Kenya to be 43 million bags, of which more than 20 million bags was on farms.

NCPB Storage

The major commercial maize storage function is carried out by the NCPB. Under the current legal structure, the NCPB is the only institution that has the power and incentives to store maize for marketing and for strategic reserves and food security. It handles roughly 50 percent of the total maize marketed, with the majority of its current stores at any point in time used for food security, and the rest for marketing purposes.

Of the national capacity of about 20 million bags (90 kg) of formal storage for grains and pulses, the NCPB has a total capacity of 13.2 million,[19] divided between two major kinds of storage: bulk (silo and cyprus bin) and bag. The vast majority of this is in bag storage (11.5 million bags), with the rest in silos (about 1 million bags) and the underground cyprus bins (700,000 bags). The NCPB rents storage for an additional 5.8 million bags[20] from the private sector.

Because the NCPB has had the official maize marketing monopoly, with an installed system of controlled prices and movement, the large mills have had little or no incentive to store. They have developed only 1.3 million bags of storage, enough to meet the three-week working stock requirement demanded by the Board of the licensed mills.

An important note on NCPB storage capacity is that it is so overloaded with a variety of crops held in uneconomic quantities, gunny bags, etc., that in many of the smaller depots, NCPB is achieving less than 40 percent utilization of capacity before being forced to move stocks outside. This was not the case in maize surplus area depots which handled only one crop and were able to achieve 80-90 percent of their official capacity.

Private Sector Storage

Despite official restrictions on marketing and, by association, storing maize, the private sector has played an important role storing substantial quantities of maize. In the informal trade, maize and bean prices reflect the costs of storage and treatment. Thus, even under the current system the private sector still performs an important storage role.

Farm-level storage. Under the current system -- with a fixed price regardless of time of year or quality of maize (within reason) -- producers are not rewarded for storing maize, so have developed only limited storage capacity, focused on meeting home consumption needs. Under a liberalized system, the large farmers, who account for over 55 percent of the total marketed maize and who have access to credit for investment, will have a strong incentive to construct their own storage facilities. Small farmers, who account for 75 percent of total production but under 45 percent of marketed maize, will be less likely to invest in much new storage in the short run.

Trader storage. Few private traders, cooperatives and institutions have the incentive to store maize for sale to NCPB. Most of these actors store maize temporarily, waiting to ship the maize to the NCPB. However, evidence in all the districts surveyed showed that large amounts are being stored in small quantities in many shops and warehouses in local market centers. In addition there is a large amount of additional, small-

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[19] From NCPB official statistics.

[20] Technosynesis study on Reorganization of NCPB, January 1988.

quantity storage space available at this level (for example, dukas with 150 cubic meters of storage space). Thus, traders and cooperatives could rent such premises for short-term storage. While not ideal, in the short term they will suffice until the incentive structure is correct to build better storage.

Storage at the mills. The mills have invested in the minimum amount of storage necessary (the three-week working stock requirement of the NCPB). However, a precursor of their desire and capacity to invest in storage under liberalized market conditions was witnessed in 1988, with the rapid investment in storage shortly after the short-lived announcement of a 20 percent liberalization of the market.

Unga Ltd. has committed to bulk storage, like most other large mills. Unga estimates that it saves Kshs 5 per bag[21] that it handles through a bulk storage system rather than the multiple handling of bag storage. Price incentives from the mills will influence large-scale farmers' decisions on their investments in storage and handling facilities.

Therefore, it appears that there is ample storage capacity for maize between the private sector and the NCPB. In addition, in case of economic incentives and restored confidence in government policy consistency, the private sector will invest in improving present storage facilities or/and construct new storage facilities. Surveyed financial institutions indicated a willingness to finance such construction.

3.5.4 Access to Market and Legal Information

Access to good, reliable information is a necessary component for achieving efficiency within any marketing channel. It is clear from the analysis of the transport sector how transporters are able to use their knowledge of existing supplies of maize and their destinations to develop efficient movement schedules. The same is true for knowledge of the price of maize and beans around the country. Interviews with wholesalers and distributors showed that they are actually in possession of very good, recent market information from different parts of the country, but especially along their normal delivery channels. They know the price that each actor is paying, from the farm gate through to the retailers they supply.

The existing market information is in the hands of the few people who have been active in the trade for the longest time, and have developed networks to gather the information, either through local market contacts or over the telephone with suppliers in distant districts. It is not yet, however, common knowledge and is not necessarily in the hands of other large traders and millers who may be interested in entering the trade. If the maize trade were to be liberalized, the actors who have been in the trade for the longest period of time will have a great early advantage, but this would gradually erode over time as new actors developed their own sources of information.

The greatest information gaps appear to be at the extremes of the system, affecting producers, and consumers. These actors would definitely benefit from increased knowledge of prices in other areas, either to force better prices, or to seek new suppliers and consumers. They would need time to develop such a system. This suggests a role for the government to provide market information which would assist actors at all levels of the trade to compete on an even basis.

Market information on the distribution network. Currently, the majority of farmers, traders, and cooperatives are selling to the NCPB and millers. Increased

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[21] Bag storage for the mills means handling the bags an additional three times after purchase (at Ksh 1 each time), plus there is greater loss due to poor bagging and quality control by the NCPB.

privatization of maize marketing will necessitate providing information to farmers, new traders, and cooperatives on the available alternative distribution channels in their areas and in other regions in Kenya. The establishment of the distribution network and contacts will be essential for increasing competition in the marketing sector. In the long run, the network will sustain itself.

Market information on trends in supply and demand for maize. Closely related to market contacts, there is a need to provide information on the quantities of maize available in a given area and nationally and the quantities demanded. This forecast market information in the short run (3-6 months) and long run (over one year) will facilitate decisions on investment in production of maize and storage facilities.

Market information on national stock levels. Currently the NCPB provides information to the GOK and planners on national stocks of maize. Increased private sector participation creates some risk that the GOK would have less knowledge of its food stock levels in the country. A market information network that can monitor and report on stock levels and its whereabouts will be essential.

Market information on price trends. Maize prices are fixed by the GOK, but still enormously between different areas of the country at certain times of the year. The GOK often reports on spot prices in some townships. However, short (3-6 months) and long run (two years and over) price trend information will assist farmers and traders to make appropriate investment decisions on the production and marketing of maize. Such information should be available to farmers early enough to guide their decision making process. In addition, most traders are aware of prices around the country, but this information might be difficult for new traders to obtain.

Responsibility for market information. The Ministries of Supply and Marketing, Agriculture, Cooperatives and Commerce are directly in contact with the private sector with respect to agricultural production and marketing. The staff of these ministries advise on financing, management and production in the private sector. Evidence available from literature and the team's field survey indicates that there is very little advice to the private sector with respect to market network, market trends and price levels locally and nationally. These four ministries should collaborate and provide comprehensive information to facilitate full private sector participation in maize and bean marketing.

Access to Correct Legal Information

Government rules and regulations in all areas, from permit controls to licensing, are complex and confusing. Rules are changed frequently and different authorities claim jurisdiction over the same controls. This lack of clarity, added to low levels of literacy among certain trader groups, especially rural women, and general difficulty is getting access to correct information, makes it difficult for entrepreneurs to operate within the official system.

Inconsistent intervention from officials claiming that they have the right to make policy decisions complicates proper enforcement of the rules. In maize marketing, the District Commissioner will often intervene when the district's food security is thought to be at risk. It is difficult to countermand the "authority of the locale," so instructions are often carried out even though the instructions may not be legally binding. The District Trade Development Officer often thinks that maize trade falls within his or her domain, whereas NCPB officials know that they really have jurisdiction. In addition, the police are charged with enforcing the laws, often based on their own interpretation of unclear instructions from above.

This complicated legal structure can be bypassed with relative ease, reducing the incentive to learn the complex rules and regulations. One factor which makes it easy to escape from the immediate penalty facing an infraction is the ability to "buy" one's

way out of any problem. This is often simpler than trying to learn and follow the rules, but the correct rules are never learned when this option is used.

Chai payments are often the preferred method of problem resolution, because of the lack of recourse available to a regular trader or individual when confronted by an "official" problem. When accused of an infraction against movement controls, for example, there are the options of an indefinite delay, or actual confiscation of the goods, or the payment of rent. These factors generate additional transaction costs and make traders wary of investing in activities which might attract attention and cause problems.

The most effective way to resolve such problems is to greatly simplify the regulatory system. By removing policies and opportunities where intervention can take place, they will not be abused. Even the decision to simplify the system is not enough by itself; it needs to be complemented by an education and publicity campaign which reinforces desirable behavior by both the authorities and the general public.

3.5.5 Policies Specific to Maize and Bean Markets

Price Controls

Price controls imply that firms must buy or sell commodities at a predetermined price, one which may have no relevance to the cost structure or pricing/marketing strategy of the company. Kenya's price controls cover numerous commodities, including maize and beans.

The figures in Table 3.7 present the gazetted prices for maize sold ex-depot from the NCPB and on down the line for posho (No. 2 grade maize meal) and for sifted flour (No. 1 grade maize meal). The ex-depot prices have since been changed, in May 1989, but were not yet gazetted as of June 30, 1989. For purposes of this report, we will assume that the other prices in the schedule remain unchanged.

Impact on the Milling Industry. Looking at the margins allowed for milling posho, we see that millers are only allowed Kshs 12 per 90 kg bag (a margin of about 3.8 percent). By contrast, when milling directly for individuals, either by the kilogram or by the bag, millers never charge less than Kshs 0.30 or 27 respectively, and often go as high as Kshs 0.50 and 45. In outlying zones, in districts such as Kitui, the price reaches one shilling per kg. The price structure for milling therefore provides a severe disincentive for millers of posho to use maize purchased from the NCPB, the single largest source of maize for the milling industry.

The margin allocated for sifted maize meal (allowing for a 20 percent loss in transformation) yields a margin of between 18.5 and 20.8 percent. Granted, there is a greater investment and more operations performed in the milling and packaging of the maize meal, but the mills are also left with a significant by-product which can be used for animal feed, bringing in additional revenue. Figure 3.2 depicts the higher returns to sifted flour mills over posho mills, and shows the effective competitive advantage that the sifted flour mills possess.

This bias in the pricing regime within the formally sanctioned maize trade provides a direct price advantage to those firms licensed to mill sifted maize meal by limiting the amount of formal sector competition from other large millers. This involves a direct cost to the urban consumer who may actually prefer the cheaper (and sometimes perceived to be tastier) posho over sifted maize meal, but in periods of scarcity will not be able to find any posho.

TABLE 3.7

SCHEDULE FOR MAIZEMEAL PRICES (AS OF APRIL 1989)

Sifted Maizemeal

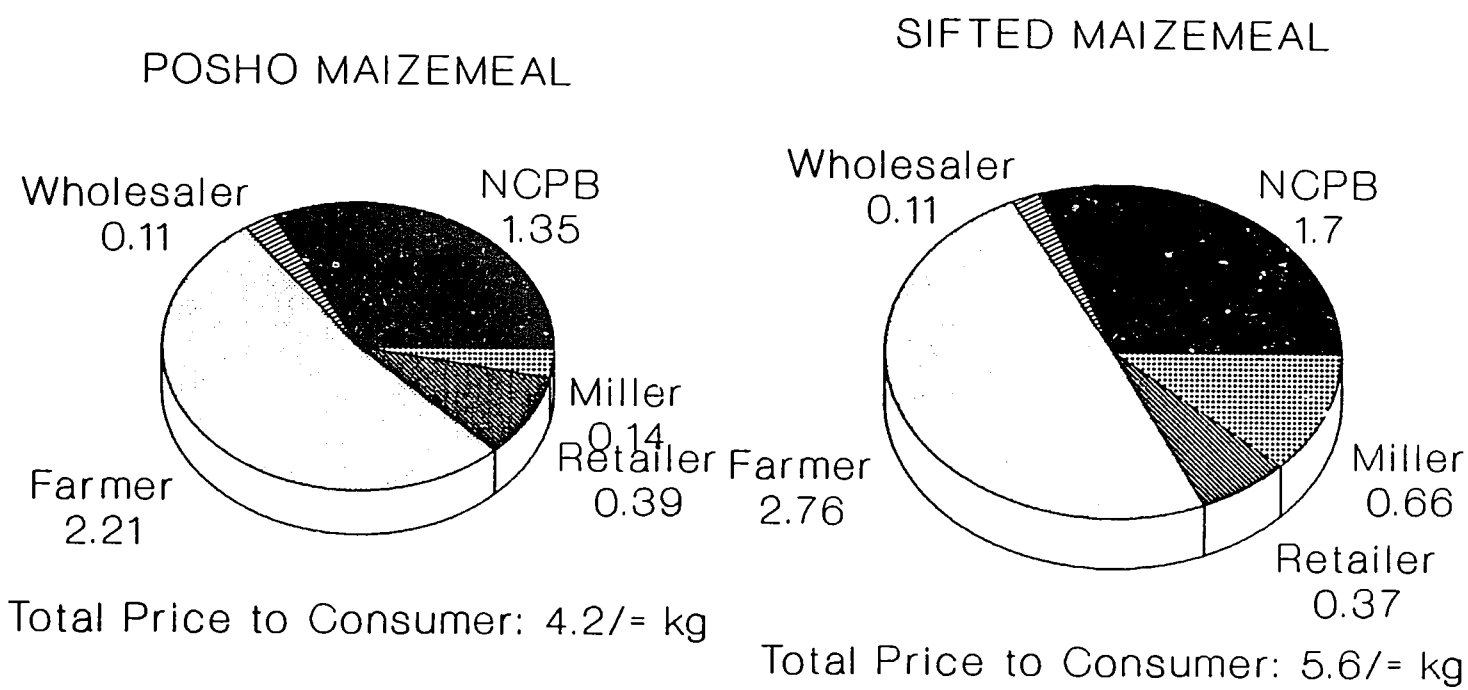
District	Ex-depot (90 kg)	Sales ex-mill (24 kg) *		Ex-Wholesale (24 kg)		Retail Sales to Consumer 1 kg		Retail Sales to Consumer 2 kg	
Nakuru	317.2	121.55	19.3%	124.35	2.3%	5.55	7.1%	11	6.2%
NK Mun.	317.2	121	18.7%	123.8	2.3%	5.5	6.6%	11	6.6%
Nyeri	320.8	124.55	20.8%	126.25	1.4%	5.65	7.4%	11.3	7.4%
Kitui	325.4	125.75	20.3%	128.55	2.2%	5.75	7.4%	11.45	6.9%
KT Town	325.4	124.75	19.3%	127.55	2.2%	5.7	7.3%	11.4	7.3%
Kisii	313.6	122.05	21.1%	124.85	2.3%	5.6	7.6%	11.15	7.2%
Uasin Gishu	313.1	120.35	19.6%	123.05	2.2%	5.5	7.3%	10.95	6.8%
El Doret	313.1	119.1	18.4%	121.9	2.4%	5.45	7.3%	10.85	6.8%
Kakamega	313.6	121.45	20.5%	123.85	2.0%	5.55	7.5%	11.05	7.1%
KK M	313.6	121.05	20.1%	124.35	2.7%	5.55	7.1%	11.05	6.6%
Nairobi	320.8	122.8	19.1%	125.6	2.3%	5.6	7.0%	11.2	7.0%
Mombassa	320.8	122.8	19.1%	125.6	2.3%	5.6	7.0%	11.2	7.0%
Mandera	329.65	129.75	22.5%	147.15	13.4%	6.4	4.4%	12.45	1.5%
Price/kg* no.1 sifted	4.43	5.12		5.23		5.60			

* The conversion factor of 80% has been used to convert the amount of maize into grade one sifted. The income from the sale of the remainders for animal feed, etc., are not added into the calculation of margin, so they will be an additional source of revenue to the mills.

Maizemeal (Posho)
(90 KG Bag)

District	Ex-Depot (90 kg)	Ex-mill with bag	% Margin	Ex-Wholesale with bag	% Margin	Retail Sales to Consumer 1 kg	% Margin
Nakuru	317.2	329.2	3.8%	337.45	2.5%	4.15	10.7%
Nyeri	320,8	332.8	3.7%	343.3	3.2%	4.2	10.1%
Kitui	325.4	337.4	3.7%	348.2	3.2%	4.25	9.9%
Kisii	313.6	325.6	3.8%	327.7	0.6%	4.15	14.0%
Uasin Gishu	313.1	325.1	3.8%	336.2	3.4%	4.15	11.1%
Kakamega	313.6	325.6	3.8%	327.7	0.6%	4.15	14.0%
Nairobi	320.8	332.8	3.7%	343.3	3.2%	4.2	10.1%
Mombassa	320.8	332.7	3.7%	343.3	3.2%	4.2	10.1%
Mandera	329.65	335.9	1.9%	351.3	4.6%	4.4	12.7%
Price/kg posho	0.39	3.68		3.78		4.21	

FIGURE 3.2
OFFICIAL MARGINS FOR MILLED MAIZE TRADE
Shilling Mark-up/kg by Different Actors



Assumes official 1989 gazetted prices for Nairobi or Mombasa

The impact of direct maize purchases on lowering costs to the mills is not considered in the official pricing schedule for sifted flour. The Milling Corporation, Unga Ltd., and other large millers were officially allowed to purchase maize directly from farmers during the 1988/89 harvest period. Prices per bag delivered to the mills were approximately Kshs 60 cheaper than the NCPB price, ex-depot, providing a large margin for windfall profits to the large millers who had access to this privilege.

Impact on Wholesalers and Retailers. The charts in Figure 3.2 depict the different margins allocated to each actor in the trade, from the farmer to the retailer.[22] The fixed margins for posho and sifted maize meal are higher at the retail than wholesale levels, with the assumption that wholesalers do a larger volume of sales, so need to earn a smaller margin per bag. It is interesting to note that the gazetted prices in Table 3.7 for Kisii and Kakamega wholesalers were far lower than the rest, providing them with an insufficient margin to cover their costs.

TABLE 3.8

EXPECTED VS. REAL COSTS FOR AGENTS

	Anticipated	Actual
NCPB Purchase Price	240.00	240.00
Price Paid to Price	199.00	180.00
Gross Margin	41.00	60.00
Agent's Costs		
New gunny bag (purchased from Board)	21.90	21.90
Transport (Kshs/bag)	10.00	15.00
Tips to NCPB depots	--	6.00
Tax for county council	2.00	2.00
Cost of capital[23]	0.57	
Total costs	34.47	45.42
Net Profit	6.53	14.58

The fixed price presents constraints to many of the retailers selling the sifted flour in the rural areas. The farther out a retailer is, the lower his final margin. Particularly on some of the bad roads, shops would have to pay more than 75 percent of their allowed margin in transport costs just to get the goods into the shop. This provides a disincentive to isolated rural shopkeepers to carry supplies of maize meal.

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[22] The margins used, for consistency purposes, are those for maize meal sold in Nairobi and Mombasa.

[23] The calculations are based on average turnover of one lorryload (100 bags) every two weeks, with interest at 15 percent on the "anticipated" purchase price of Kshs 199 and the "actual" price of Kshs 180, respectively.

Controlled Producer Prices for Maize and Beans. The NCPB has standard prices around the country for the purchase of maize and beans which all agents and depots are supposed to respect. Since the NCPB and its agents are the sole official buyer of these products, these become the official producer prices for the country. Unfortunately, the fixed prices and a monopoly with a single consolidated handling system have a serious impact on the price to the producer, often pushing it well beneath the official price. Most agents are forced to pay prices below the official price set by the Board because the margins are too slim to even cover their costs. Table 3.8 provides the comparison of expected costs versus real costs. It clearly shows that the expected margin is negative under real costs, if the agent were to pay the official price to the producer. Given this, the agents generally pay Kshs 15-20 per bag below the official price in order to earn a meager margin for their time and effort.

Many of the agents surveyed accommodate the NCPB by delivering only a portion of their purchases, and hold on to the rest at the end of the season to sell directly to the farmers at prices well below the official price per kg of maize. In spite of the elevated operating costs associated with working with the NCPB, the agents still make a profit while charging less than the NCPB. This restriction of margins and forced illegal activity dampens the desire of agents and traders to invest in fixed resources devoted to this trade. Instead, they will attempt to maximize profits on short-term investments.

Regulation of Maize Movements in Kenya

The impact of movement controls on the private sector is covered in depth in Chapter 2. In general, the permit process presents many opportunities for intervention and favoritism. It also limits the free flow of maize between surplus and deficit areas causing artificial price distortions, often over short distances, since stocks cannot move freely. This provides incentives to circumvent the law and opportunities for exploitation by traders rather than free competition. The impacts of this long and uncertain procedure cover many areas, outlined below:

- Increased costs to traders at all levels;
- Opportunity for extraction of favors;
- Opportunity for development of an illegal maize trade;
- Maize is kept in the hands of many small traders; and
- Opportunity for a select few to gain economic rents.

In summary, it is clear that the movement controls make it extremely difficult and expensive for legal traders and farmers to participate. In addition, they provide an incentive to develop an illegal maize trade, keep the trade limited to many small scale actors, and provide excess rents to officials, police and people with connections.

Market Share

The issue of allotted market share of maize to be sold to the mills is covered thoroughly in Chapter 2. An important question is how the government can control the free market trade of maize to the mills, should it decide to gradually open the door, because once the door is open, there is a possibility that prices will tend to be so attractive to both the mills and the private sector that there will be dramatic jump in direct sales. This causes concern to the GOK for several reasons:

- The mills are the NCPB's best client, purchasing 80 percent of the stock at artificially high prices, and the NCPB does not want to lose that client;
- There are fears that an early rash of private sector buying and selling directly to the mills might prevent the NCPB from purchasing sufficient maize for food security purposes; and
- Some influential farmers and private traders currently benefiting from privileged relationships with the NCPB and the mills would lose their special advantage in the face of increased competition.

TABLE 3.9

PURCHASES FROM NCPB
(OOO bags)

Company	City	1985/86	1986/87	1987/88
Unga Millers	Nairobi Eldoret	1,296	347	459
Milling Corp	Nakuru	202	34	15
Jambo Flour	Nairobi	242	53	314
Mombasa Grain Milling	Mombasa	453	253	425
Mombasa Maize	Mombasa	623	491	658
United Millers[24]	Kisumu	90	291	291
Kitui Millers	Mwingi	--	--	112

Source: NCPB 1989

The GOK had agreed to free up 20 percent of the maize trade to the private ctor in 1988/89, but before the 20 percent amount was reached, the NCPB "officially" ıded the free trade in maize. This announcement meant little for some of the actors ch as the Milling Corporation of Kenya and Unga, Ltd., which continued to purchase aize directly from select private traders at prices between Kshs 260 -- 270 per bag.

In fact, Table 3.9, which analyzes the purchases from the NCPB for many of the rgest millers over the past three years, shows that there has been a dramatic drop purchases from the Board by select mills, primarily in the maize surplus zones. eanwhile, those mills operating away from the producer zones and closer to consumers flour have depended on the NCPB for their major supply.

[24] United Millers was suspended from NCPB sales because of past due accounts. This has not stopped them from milling, however.

3.5.6 Summary

The regulatory framework established around the maize trade has distorted the structure of the milling and maize trade sectors. The overall economics of the milling industry are out of tune because the incentive structure has favored building mills close to their customers instead of closer to the producers. It has created a large market for small maize traders. These latter, while operating at very inefficient sizes, are still far more efficient than the NCPB. Their growth is constrained by the system of movement controls, while a few selected traders have been able to capture additional rents because of special permission received to sell directly to the mills.

3.6 GENERAL POLICY ISSUES FOR RURAL INVESTMENT

The previous section focused specifically on policies directly related to maize and bean marketing and on the impact of those policies on the private sector. The following section identifies key policy issues which have a more constraining effect on the private sector and rural investment in general. It is far from all-inclusive, but presents an overall impression of the policy environment.

3.6.1 Fiscal Constraints

Kenya has a straightforward fiscal system which presents some constraints to the investment in and growth of existing businesses. Kenya's taxes cover four main areas: income taxes, sales taxes, a "presumptive income tax" on agricultural production, and local authority taxes on market transactions. The overall tax framework is not onerous and is undergoing a series of substantive changes. Reflecting this, sizeable tax reductions were announced in the June 1989 Budget Speech. The purpose here is not to review the entire tax program, but to raise a few points in the tax system which may work to constrain investment.

Income tax. One major disincentive in the tax structure is the fact that the four main categories of income (farming, rent, employment, and business) are treated as separate entities in the tax calculation. Losses in one cannot be offset against earnings in another. This is a severe disincentive to diversify one's activities by entering into a risky new venture. The absence of a capital gains tax on real estate provides a strong incentive to invest in non-productive assets, rather than providing an incentive to invest in productive activities such as agriculture.

Taxes on interest and dividends. Though cited by many as a disincentive to savings, the government tax on bank interest is only 10 percent. This is low in relation to income tax, which should provide an incentive to larger firms and individuals who fall into higher tax brackets to deposit their money in savings accounts rather than invest in other activities on which they would pay the higher tax.

The tax is deducted at the bank, for payment to the government, so it is impossible for depositors to escape from paying it. This policy could have equity implications for the rural areas where farmers may have savings to put in the financial system, but don't want to pay the tax, so avoid the system. In addition, because earnings are lower in the rural areas, this 10 percent tax places a greater burden on the rural savers (representing their full tax load) than on the savers in the urban areas, who are generally in higher tax brackets.

Taxes on agricultural products. The 1989-90 Budget Speech announced a 5 percent "presumptive income tax" on all sales of scheduled crops, to be collected at the point

of sale. This provides one additional disincentive for farmers to produce more or to market it through the formal system. Margins for agricultural production are already very low, and this tax virtually wipes out any profit to be gained from the commercial production of maize. This also produces an incentive for formal sector operators who are purchasing agricultural products to try to avoid the formal recording procedures.

The same speech also eliminated export tariffs on Kenya's major cash crops, including coffee and tea. While elimination of tariffs on agricultural production is generally a sound procedure, it can have only a marginal impact on investment in coffee since Kenya's sales are limited by quota, and Kenya is already at its quota ceiling. It should, however, increase returns to the coffee producers.

County and township taxes on market activities. Counties and townships receive much of their revenue from taxing users of public markets. The fees vary by township and district, based on the perceived importance of the market, but are in the range of Kshs 2-10 per bag of maize. If one assumes that a retailer is making a margin of Kshs 20 per bag of maize (see Annex A), this represents a 10-50 percent tax on the retailer at the market level. Since the majority of the people operating in the markets are informal sector operators, earning well below the floor of the 10 percent tax assessment, they are paying a very high price to operate.

Tax assessor's capacity to tax firms. The Kenyan tax assessors have a very limited information base from which to operate. This causes two problems: first in their identification of taxable persons and, second, in their ability to assess the taxes owed. For example, the Rift Valley province has 90 agents who are currently monitoring the earnings of more than 12,200 companies, individuals, and partnerships. Without the benefit of good data processing facilities at their level or the use of good accounting systems by most of those being taxed, it is difficult to determine the actual amounts these people owe. This provides opportunities for small businesses to escape the tax system, by staying small and not growing. It is difficult to document such behavior, but the incentive is there.

On the second point, because the tax assessors do not know what the real earnings of most small companies are, they tax them on an arbitrary basis. For larger posho mills and medium-sized mills, transporters, and stockists, the tax assessors must make a best guess on their earnings. This may be either too high or too low, and it creates an atmosphere of uncertainty, suspicion, and distrust.

3.6.2 Financial Market Policies

As noted above, Kenya's financial sector is well developed. Most financial policies are in line with current theory on measures to promote financial intermediation, particularly with the new higher interest rates charged on long-term loans.[25] The deposit rate floats at a positive real rate[26] and presents a fair return to investment. However, other policies present constraints to rural investment.

Interest rates. The fixed ceiling rates for lending, regardless of location or type of business borrowing, penalize smaller rural firms. The cost to analyze and administer a loan to a small enterprise is greater, shilling for shilling, than for a large enterprise in an urban area. This should be reflected in the cost to the borrower in the loan. Given the preponderance of small enterprises in rural areas, this ceiling constrains access to credit for rural investment.

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[25] The Central Bank recently allowed banks making loans of over four years to charge a rate two percent higher than for short-term loans.

[26] In other words, greater than the rate of inflation.

Government credit ceilings. In an effort to limit inflation, the Central Bank has set a limit on credit. This hampers rural investment because, as discussed in Section 3.5.1, the majority of lending decisions are made in Nairobi and tend to favor the urban areas. Therefore, scarce available funds will tend to go to loans in the urban areas.

Government borrowing and crowding out. The current proportion of government borrowing as a percentage of total debt has varied between 35 and 40 percent over the past few years. The interest rate on government bonds is now higher than the legal rate of interest for a short-term loan (17.5 percent versus 15 percent) so the government is squeezing liquidity out of the economy, leaving less money for lending to the private sector in general, let alone to the rural area.

3.6.3 Regulatory Policies

The regulatory environment provided by the GOK is designed to be supportive and to provide smooth development of the private sector. The GOK has recognized the importance of such regulations and is providing the necessary framework in the form of:

- Licensing of all business, formal and informal, by providing annual licenses or daily licenses to open-air market actors;
- Keeping a minimal import duty on a number of essential items or eliminating it altogether; and
- Encouraging competition and prohibition of restrictive trade practices, and yet protecting consumers by controlling prices of essential consumer items.

Despite these measures, there are certain regulations and policies that could constrain the rapid growth of the private sector in the context of the KMDP. The biggest problem is always the way regulations are applied, either for personal gain or to serve a political agenda, rather than the purpose for which they were created. Creation of regulations, such as the movement controls and permit allocations, provide opportunities for intervention by individuals to collect rents. Often, the only way to prevent abuse is to eliminate the grounds for intervention altogether.

There are specific government regulations which appear to hamper the sound development of a private sector based on economic efficiency, or to disfavor certain sectors of the economy over others.

Commercial licensing. Licensing requirements work well for large private enterprises which operate throughout the year. They know the licensing process. In addition, medium and large entrepreneurs can visit and submit proper documentation for licensing. For small-scale enterprises, however, especially in seasonal maize marketing, annual licensing may not be appropriate. The use of on-the-spot licensing of small-scale enterprise on a daily, monthly, biannual or annual basis should be strengthened. For maize traders a quarterly or biannual license may be more appropriate.

Last year the GOK introduced a new licensing category in the commercial marketing link: the distributor. The process is now officially segmented into four separate stages: the manufacturer must sell to distributor, who takes the product to the wholesaler, who then sells it to retailers. The regulation has three purposes: to limit vertical integration of firms (particularly aimed at Asian-owned firms which have switched into manufacturing), to create an additional source of revenue for the government, and to create additional employment. Obviously, it is not economically efficient for all products to have a four-step marketing chain, but the law is on the books for each District Trade Development Officer to apply at his or her discretion.

If it is applied uniformly, then it will raise the cost of goods to consumers. Otherwise it just adds one more opportunity for arbitrary application.

Transport licensing. Annex F discusses the existence of regulatory laws for the transport sector which are not always consistently applied, but which could provide opportunities for confusion and intervention by the government.

Legal Code. Portions of the legal code have not been updated since 1948. The ILO and Ministry of Planning have developed a matrix of out-of-date or discriminatory policies for SSE development, including the Vagrancy Act, Factories Act, Registration of Business Act, and the Public Health Act. These obscure laws tend to be called upon in extreme cases to justify an intervention by an official body.

Banking regulations. Current regulations preclude financiers from providing non-banking services to the private sector for a fee. These regulations limit investment in the private sector, especially the small-scale enterprises.

3.6.4 Summary of the Impact of Overall Policy Environment

The lack of confidence in the consistency of government policies constrains private sector investment. This is particularly true for industries where the GOK has historically made policy changes quickly and arbitrarily. The best recent example was the abrupt government decision to end the participation of the private sector in the maize trade, just after the principal firm (KGGCU) had finally gotten geared up to participate in the trade.

A critical companion to consistency of government policy is lead time to communicate important information. Last-minute announcements of changes in policy do not allow sufficient time for the private sector to prepare for economic activity. For example, the recently announced increase in the wheat price came after the beginning of the planting season; the 1984 request for vehicles for the transport of maize during the drought to distant destinations did not leave enough time for the private sector to prepare schedules; and the 1988 announcement of private sector involvement in maize marketing was so late that KGGCU could not get financing until late in the season, missing the most important buying period.

This inconsistent environment fosters a wait-and-see attitude in the private sector and favors short-term profit maximization rather than longer-term investments in the economy. It is often difficult for governments to understand the rationale of the private sector, which is one of risk aversion in a highly uncertain environment. n order for liberalization of the maize trade to succeed, the GOK must follow through on its commitments and not change course in midstream. The GOK must also be aware of the implications for properly organizing an effort in the private sector, and ensure that enough time is allocated for the market to respond to the opportunity.

3.7 IMPACT OF LIBERALIZATION ON THE PRIVATE SECTOR

The impacts of liberalization of maize and bean marketing, under the right conditions, are clear for some of the actors, but less certain for others. If reform is done with enough advance notice and clear signals to allow the private sector to plan and prepare, the major beneficiaries would certainly be consumers in some urban and rural areas who would benefit from the lower flour prices, and producers at all levels (obviously rural) who would receive higher farm-gate prices (see the matrix in Annex B forecasting probable "winners" and "losers"). The question we will examine more thoroughly is the impact on the behavior, and subsequently the structure, of the private businesses involved.

3.7.1 Agricultural Input Suppliers

The response will largely be determined by the demand functions of farmers. With higher prices for surplus staple crops, and lower future prices for consumed maize, farmers may react in either of two ways:

- Produce more maize through intensification of production technologies; or
- Gradually switch out of surplus maize production, using increased earnings from the first years, into greater production of higher yielding cash crops or dairy products.

Under either scenario, the agricultural input supply sector will have a larger role to play supplying the farmers. Given the existing network, from manufacturers down to stockists, there is no question about the industry's ability to provide the goods. The question focuses on which level of the structure will supply the goods and benefit from the increased demand.

We conclude that in the densely populated regions, where there is already a network of small stockists, the major increase in utilization of agricultural inputs will come from small farmers. These farmers do not currently have the means to make frequent trips into the urban centers to reach the wholesalers, as do the larger farmers. Therefore, greater demand will be placed on the smaller rural stockists, who should be able to gradually increase sales as the increased local purchasing power leads to greater input utilization.

Closely tied to the question of increased use of inputs is the perceived economic benefits from their use, which is a result of proper application. The small stockists currently have very little capacity to analyze technical problems and needs, which would allow them to better market their products. There is room for improvement, which cannot be solely met by agents of the manufacturers or the agricultural extension services. This will affect the speed of adoption of improved production practices.

The potential for increased domestic production of agricultural inputs is uncertain. This team did not look at the effects of current trade law (import licensing and tariff structure) on the practicality of local production versus importation of agricultural inputs. As demand increases, there may be greater economic grounds to justify a larger role for input manufacturing in Kenya. This deserves further study.

3.7.2 Maize Traders

Consistent with the analyses in Annexes A and B, our principal findings are that:

- Small retail traders will continue to fill their function, breaking down larger quantities and selling to consumers;
- There will still be an important role "first handlers" of maize and beans in rural marketplaces who will accumulate stocks from small farmers and then sell them to larger wholesalers;
- The advantage will shift in favor of lorry traders from small-scale wholesalers who do not have motorized transport and cannot realize economies of scale; and
- Entry into the wholesale trade will become more competitive, and extra profits earned by wholesalers in the first years of the reform program will be progressively reduced (favoring producers and consumers) as a result of competition.

3.7.3 Transport Sector

The impact on the transport sector will reflect the new channels of marketing which will become much more direct (farm to mill, market to market, and in some cases, farm to town), requiring greater flexibility. One specific impact will be increased efficiency in the haulage of maize, leading to less down time by truckers waiting in NCPB depots. The savings to the economy on this reduction of downtime are about Kshs 70 million (see analysis in section 3.3), which will be reflected in increased capacity of the transport sector and lower costs for transport of other commodities.

The average distance covered by a district-level transporter will increase to reflect the demand for maize at greater distances and the replacement of the very short hauls to the NCPB depots. In addition the NCPB will be transporting less maize between its depots.[27] These two factors will tend to favor district-level transporters over the large Mombasa-based international transporters currently transporting for the NCPB on backhaul loads, leading to an expansion of the trucking industry in the regional areas, particularly in the provincial capitals.

The transport industry will still need to have good information on potential markets for transporters to plan their haulage efficiently, which is critical for optimal vehicle usage.

3.7.4 The Milling Industry

Under the reform program, the milling industry will probably face the largest transformation, perhaps shakeout, in its structure. Many millers may be expected to oppose the program initially, especially those which have major investments near the Mombasa and Nairobi markets. As described in section 3.3.3, the spatial structure of the milling industry has been largely determined by the price structure of the NCPB, which has heavily favored urban consumers in the cities most distant from the grain producing areas over consumers in the producer areas. The incentives in Kenya have been to construct the large mills closer to the consumer than to the supplier, as is the case in the United States.

With liberalization of movement controls and increased private trade, mills would be able to purchase more maize directly from local traders at prices which accurately reflect the different costs associated with delivering the maize (farmgate, storage, and transport) rather than the artificially set NCPB prices which distort costs across time and space. As seen in the section on price controls, the NCPB captures by far the largest portion of the cost of flour delivered to the consumer. Under a liberalized system with direct purchase, the mills would be able to compete more heavily on price and quality, which would have an impact on the optimal use of the different mills. The likely impact would be:

- Greater advantage to those large-scale mills located in the producer zones (e.g. Nakuru and Eldoret), leading to increased utilization;
- A continued dependence of the Mombasa and other deficit-region mills on NCPB maize in the latter part of the season when the subsidized transport and storage costs of the NCPB provide the greatest advantages;

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[27] There are several reasons for this: (1) The Board will be handling less maize; (2) its depots will be less overloaded, so not as much maize will have to be trucked from one overstuffed depot to another with excess storage capacity; and (3) the maize the Board controls will simply be handled fewer times.

- A shift away from much institutional contracted milling (for schools, the police and army, etc.) by medium-sized mills, because the change in comparative advantage will force those mills to shift target markets. Only prisons or other institutions which grow their own maize would continue to contract directly with the niche millers;

- Medium-sized mills in maize producing areas will have to switch markets from contract milling to competing on a cost basis with less cost-competitive mills in urban areas;

- Smaller mills (50-75 bags/day) will lose most competitive advantage in the urban areas where they compete with medium-sized mills and probably will be forced to reduce activity;

- By contrast, small mills in the areas without competition from medium-sized firms but still within relative proximity to maize-producing areas (such as Nyeri), will have opportunity to expand operations and compete for local market share; and

- Assuming that small farmers continue to produce maize, the typical posho mills will continue to operate as at present, with very limited opportunity for upward expansion.

The net long-run impact will be a gradual shift of milling operations and new mill and facility investments to the rural, maize-producing areas. Because of economies of scale and reduced price differentials, there will be a gradual shift in firm size to reflect a bimodal structure (dominated by very large mills and with many very small mills) reflecting the disappearance of the incentives for contract milling and loss of niche milling markets.

3.7.5 Storage and Infrastructure Investment

All of the large- and medium-sized millers that were interviewed expressed an interest in assuming storage functions from the NCPB in order to reduce their dependence on the Board, and take advantage of spatial and temporal cost savings. The savings to the mills in handling costs alone from investing in bulk storage are more than Kshs 5 per bag,[28] providing the incentive to invest.

If the private sector is convinced that the reforms are permanent, the large millers will begin investing in bulk handling facilities, driers, and calibrators which will enable them to exercise these competitive functions. The issue of confidence is still the critical one constraining these investments, because a reversal of government policy would eliminate most returns to newly developed storage facilities.

Liberalization of trade would also allow the mills to make purchases based on quality (particular grain, dryness, etc.), methods, and time of delivery. A higher price would be paid for higher quality, dryer grain, with a price differential included for time of year the grain is purchased. This will provide incentives to the larger farmers to invest in on-farm bulk handling, now completely lacking under the uniform NCPB purchasing policies. The major issue again would be confidence in the investment climate. There is even the potential of a small storage industry developing which would dry and hold grain for the millers.

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[28] These are handling costs which will be saved by the mills assuming the maize is delivered by bag to the mill gate. Larger savings would be garnered if the grain were delivered to the mill in bulk.

In the short run, until private sector confidence has reached the level necessary to take the risk of investing in additional storage, millers will continue to depend on the NCPB, on the substantial storage available for rent in the major towns, or rent storage from the NCPB.

3.7.6 Delivery of Credit

The GOK, lending money to the NCPB through the Cereals and Sugar Finance Corporation, has always financed the official maize trade. Under the reform program, the private financial sector will have to provide much of the working capital.

The milling companies have, in recent history, provided prompt payment to the NCPB, allowing them to pay the traders and the farmers who deliver maize to them. The NCPB has collected cash from the mills upon delivery, but paid the agents and farmers only after a substantial delay. If the mills assume the direct end-purchaser role from the traders, in lieu of the NCPB, the mills will provide working capital to their most reliable suppliers.

As noted above, there will be a gradual shift towards increased large traders in wholesale marketing. These traders currently get working capital loans from the commercial financial sector for the maize trade. It is expected that by building on their already established credit history, they should continue to obtain the working capital necessary to finance the trade.

The districts which will provide the greatest difficulty, in the short run, are the heavy producing areas currently dominated by NCPB buying centers, such as Nakuru. No agent relationships have been established yet in this region, and one cannot expect the financial sector to simply provide the working capital necessary on short notice. Agents will need time (advance warning) to develop access to funds and perhaps a couple of years to fully develop the network. In the short term, however, it is well within the capacity of the mills to provide the working capital to their trusted traders and to essentially contract out the procurement and storage of maize.

In addition, large producers will put less of their maize on the market right at the beginning of the season when normally the biggest buying campaign is going on. These producers have had no incentive under the NCPB structure to store, but will store for longer periods and sell directly to the mills as the price goes up.

3.7.7 Impact on Overall Rural Investment Climate

Based on the economic analysis which forecasts annual savings of about $17 million to the economy as a whole, a large portion of this can be expected to go to the rural sector, and specifically to producers. Allowing the natural incentives to prevail to build agro-processing plants closer to the supply of produce rather than the market will stimulate some high level rural investment, but the more important source will be the increased purchasing power in the rural sector which will be the largest stimulus to local investment.

3.8 MAJOR CONCLUSIONS ON CONSTRAINTS AND IMPACT OF POLICY

3.8.1 Constraints Related to Policy Agenda

Movement Controls

Movement controls and permits. The system of controls and permit requirements causes delays in the movement of goods, and the expenditure of scarce resources to acquire the permits (lost time, often coupled with payments of chai to "gatekeepers"). In addition, frequently rents must be paid at checkpoints along the road, which may equal the margin to be earned by the trader who has handled the whole transaction. Alleviation of this constraint is fully addressed in the policy agenda, and forms the heart of the proposed reforms.

Random police checks on the roads. Even with removal of permit requirements, the continued presence of numerous roadblocks is likely to be a source of additional transport and transaction costs. Even without movement permits to control for, many private traders assume that the police will continue to find something wrong with most vehicles, and threaten to detain them. The policy agenda does not address this issue head-on, but it remains a serious one for all commercial actors involved in transport. The market information campaign, discussed below, will be critical in gradually increasing the transparency of agricultural marketing and reinforcing the legitimate rights of private commerce.

Liberalization of Maize Trade

Controlled prices for maize and beans -- farmer to NCPB. These controlled prices, originally intended to help producers, are actually hampering them. Because of the inefficiencies and extra costs levied within the NCPB system, the fixed price at the NCPB depot does not cover agents' costs, forcing them to pay farmers below the gazetted producer price in order to make some money. This hurts rural purchasing power significantly. The KMDF policy agenda, complementing ongoing reforms under the Cereals Sector Reform Program financed by the EEC, will be addressing this issue indirectly. A key element in the latter program is the definition of a floor price that the Board can defend under bumper harvest conditions, without undue demands on Kenya's Treasury.

Price controls for maize -- NCPB onwards. The price structure for the sale of maize, whether in grain or as flour, is heavily lopsided to subsidize NCPB operations and provides significant advantages to the large mills for the milling of grade one sifted maize meal over posho. With the liberalization of trade the whole structure of prices must be changed, preferably to a market-led system, to ensure that the benefits are passed on to the producers (farmers) and the consumers, rather than kept in the hands of the large mills and the commercialization process.

The policy agenda does not cover the issue of price controls from the mills to the consumer. Liberalization of price controls would change the entire economic structure of the milling industry, heavily favoring mills located in the producer surplus zones, and hurting mills located closer to their clients. These latter mills may remain cost competitive simply by getting NCPB-supplied maize delivered to them at subsidized prices.

Internal reform of the NCPB. Weak management controls and the overall structure of the consolidation process within the NCPB have led to: significant downtime for private transporters (estimated opportunity cost Kshs 70 million) while waiting in lines; poor overall quality of maize delivered to the mills; and large losses of maize to insect

and water damage. These issues, of great cost to the economy, are the focus of the CSRP. In particular, the liberalization program would remove much of the grain marketing from the hands of the NCPB, making it easier for them to manage their reduced stocks.

Market Information and Food Security

Limited network for market information. Poor market information for farmers, new traders and government officials will make it difficult for new actors to get started and for the local government officials to release their controls. As free trade develops, traders will develop sources for market information and marketing contacts will be established. However, this will be more difficult for the farmers and government officials.

The ARMES program, which is complementary to the market information program, can be designed to provide much of this information on differences in price around the country, levels of national stocks, and trends in supply and demand.

Access to correct information. Poor access to correct information relating to the marketing of maize and beans creates confusion for the private sector on its rights, allowing many opportunities for self-seeking intervention by government officials. Simplifying the system by removing policies and places where intervention can take place and improving publication and diffusion of relevant legal information to everyone would help alleviate the problem.

The KMDP poiicy agenda emphasizes the need to increase transparency in the system, and recognizes that prior efforts - spotty, inconsistent implementation of the 10-bag for maize shipments is a case in point - have not been successful in communicating policy decisions throughout the market system. Resolving this constraint should be partially achieved by use of local currency funds to develop an advertising campaign broadcast repeatedly over Voice of Kenya for several months at the beginning of each major maize harvest period, to clarify the "rules of the road".

Lack of private sector confidence in government policies. The GOK has announced certain policies in the past and then rescinded them within a few months. If the private sector is to pick up the majority of the marketing and storage functions for maize and bean marketing, it will need to make significant investments in storage and develop lines of credit. Based on the GOK's past performance, many private firms will be wary of making such large investments until they are convinced that liberalization is "here to stay".

Poorly timed release of information. Closely tied with the point above is the issue of timing for announcements of government policy changes. The private sector needs time to prepare for a major new economic activity. If the announcement is too late, it may mean that the private intervention will be more chaotic and less successful than hoped. Another bad attempt at liberalization, like the one this year, might provide additional ammunition to critics of the program to veer away from it.

3.8.2 Additional Constraints to Rural Investment

Rural Purchasing Power

The single biggest constraint to increased investment in rural areas is the lack of purchasing power. By focusing on more efficient marketing channels, the KMDP

program is addressing the issue of increasing rural purchasing power along with the longer range issue of rural-urban imbalance.

Finance

Low levels of lending by rural financial institutions to their clients. Though there is a capital surplus in the rural areas, evidenced by the export of capital towards the large urban areas by the financial institutions, little of this is being reinvested in the rural areas. Banks claim it is because of a lack of bankable projects, proven by their poor performance in the past. While this is true in large part, structural problems, such as rapid turnover of branch managers and low credit authorization ceilings for branch managers, may also be hampering their ability to lend in those areas. With most major decisions being taken in Nairobi, it is natural for urban-based clients to be the major beneficiaries.

Complexity of lending process and high collateral requirements. One constraint to bringing "bankable projects" to the banks is the relatively complex procedures for applying for the loan, causing an up front investment of time and money. In addition, banks require fixed collateral worth about 120 percent of the loan as security. Only by developing improved, streamlined, uncomplicated systems for evaluating small loans to simplify the process and finding other criteria besides collateral (i.e. cash flow) as project evaluation criteria will the banks resolve this issue.

National credit ceilings. Even though the rural bank branch managers have surplus funds and feel little constraint for funds to lend, the nationwide credit ceiling imposed by the Central Bank has an impact on their superiors in Nairobi, who prefer to use the rural savings for loans in the urban areas. Closely tied to the issues in (a) above, loans in the rural area will always be squeezed out by demands from the urban borrowers under constrained credit ceilings.

Fixed interest rate ceilings. Fixed interest rate ceilings discriminate against loans to smaller businesses which are more costly to administer and manage. Many small businesses are ready to pay the higher rates of interest, but are squeezed out of the whole process because there is no incentive to the bank to lend to them.

Licensing and Regulations

Slow and expensive licensing process for small businesses. The current registration process is steady but slow. It is apparent that the rules are designed for more sophisticated businesses, rather than for the small microenterprises encountered in the rural areas. The GOK could streamline the system by allowing one authority to handle the whole transaction/process, rather than have it pass through at least three sets of approvals and two separate payments.

Overregulation of marketing channels. Licensing laws on the books require a separate license for manufacturing, distribution, wholesaling, and retailing activities, each one mutually exclusive of the others. These are designed to generate employment and raise revenue for the government, but they also create an uneconomic marketing channel for many products, raising the cost to the consumers where these laws are obeyed. The fact that many trade officers ignore them shows that there is potential for discretionary decisions in the process, and also opportunity for abuse or intervention by other officials who wish to take a different decision.

ANNEX 3.1

STRUCTURE OF THE FINANCIAL SECTOR

The various categories of financial institutions providing credit to the rural and agricultural sectors include: commercial banks (with substantial lending to agriculture); the Cooperative Bank of Kenya (exclusively lending to agriculture); financial houses (lending for investment); GOK financial institutions; and non-governmental organizations.

Commercial Banks

Commercial banks are widely represented across Kenya. In the six districts surveyed, Kenya Commercial Banks (KCB) and Standard and Chartered Bank were present in each districts. KCB had a wide network not only in major towns, but also sub-branches and mobile banking vans in a number of the major trading centers. The number of banks in a district was closely related to the economic activities of a district and town. The large network of KCB is also reflected at the National level by the fact that KCB has 240 banking outlets, between branches, sub-branches and mobile units, which account for 53 percent of all commercial bank outlets in the country. Barclays Bank accounts for another 12 percent of the total outlets.

The commercial banking network is the principal source of funds for businesses' working capital needs and should be looked to as the principal actor for rural investment in the years to come. Officially, they currently make between 20-35 percent of their loans to agriculture at interest rates of 15 percent for short-term loans and 18 percent for long term loans (more than 4 years). However, in all the districts surveyed, the commercial bank branches had loaned only between 20 and 60 percent of their total deposits,[29] and less than 20 percent of that for agriculture. This indicates that commercial banks in the areas surveyed had excess funds for lending.

Cooperative Bank of Kenya (CBK)

This is a commercial bank under the Cooperative Act, unlike commercial banks which operate under the Banking Act. The Cooperative Bank operates 14 branches throughout Kenya. In the six districts surveyed, three had branches and one a field office. The current trend is to increase the number of branches and lending activities.

The CBK funds activities at a rate of 15 percent with their own funds and lower rates with donor funds. The bank channels all its loans through cooperative unions and societies. It was estimated that about 90 percent of their lending goes to short term agricultural production and marketing of produce, with the remaining 10 percent to investment. In 1988/89, there was a rapid increase in lending to cooperative societies in Kisii, Kakamega, Uasin Gishu and Nakuru for maize buying. It is expected that the cooperative bank will be a major source of working capital if cooperatives are allowed to buy and sell maize.

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[29] This was in the face of often disadvantageous conditions for the local branches to be sending their deposits to regional branch offices: The Standard and Charter Bank pays branches 6 percent on deposits they hold with the regional offices, in the face of 12 percent rates paid on savings deposits by the branches. The branches therefore have a distinct incentive to find borrowers for their funds at the branch levels at 15 percent interest rates which are then sufficient to cover their cost of capital and their administrative costs (estimated to be around 1 percent).

Besides lending, the CBK is a key actor in mobilizing savings from urban/rural areas through the saving and credit societies. This role ensures that not only do urban and rural people save, but that funds from urban and rural areas are channelled into more productive activities within the economy.

Government Financial Institutions

The GOK finances the Agricultural Finance Corporation (AFC), Kenya Industrial Estates (KIE), Industrial and Commercial Development Corporation (ICDC) and the District Joint Loan Board (DJLB) to lend to the public for agricultural, industrial and commercial activities.

The AFC lends 85-90 percent for agricultural production 10-15 percent for agricultural development and land purchase. It has had significant repayment problems over the past six years and has decreased its lending significantly. Most of the production lending is for maize and wheat production. It has no facilities to accumulate savings, nor does it provide any loans for agricultural marketing.

KIE and ICDC provide substantial sums for medium- and long-term loans to the industrial and commercial sectors. In the surveyed districts, these institutions loaned funds for posho mills and animal feed manufacturing. KIE has also been involved in financing small projects in the region of Kshs 5,000-50,000, especially in the informal sector. Since independence, these agencies have loaned less than Kshs 800 million for rural investments, the equivalent of 2 percent of one year's commercial bank lending.

District Joint Loan Boards provide limited lending to small businesses. The DJLB is operated by the District Trade Development Officers. This scheme lends at eight percent interest, but is constrained by limited funds, made worse by a (poor) 30-50 percent repayment rate.

Non-Bank Financial Institutions

Non-bank financial institutions in Kenya have grown rapidly in the last few years. These institutions are involved in lending to a wide range of activities such as construction and mortgages, purchase of vehicles and other long-term loans. They lend primarily for commercial purchases, with very limited direct interaction in the rural areas for investment and agricultural production and marketing besides finance the purchase of lorries.

Non-Governmental Organizations (NGOs)

Current estimates are that about 500 non-governmental organizations (NGOs) are operating in Kenya. Most of the NGOs are church or donor supported and are involved in a wide range of commercial, industrial and agricultural production activities. Thus, NGOs have a wide network and coverage in Kenya. The National Christian council of Kenya (NCCK), Partnership for Productivity (PFP), Kenya Rural Enterprises Program (REP) and Kenya Women Finance Trust have performed well in the last few years.

Other Financial Groups

There are many additional sources of finance for investment from individual savings, individual lending to family members and friends and private associations. Although the extent of this financing is not known precisely, this financial group plays a vital role in financing investments. Relatives and friends and personal savings were the main sources of start-up capital for informal sector firms. Savings accounted for between 69 and 83 percent of start-up capital in four districts of Kenya. Loans from friends, relatives accounted for 6-19 percent in the same districts.

ANNEX 3.2

NCPB Licensed Millers

Sifted Maize Millers	Allotment of 90 kg bags/mo.
1. United Millers	45,000
2. Maize Ltd.	36,000
3. Nairobi Flour Millers	100,000
4. Dandora Millers	45,000
5. Kitui Millers	49,333
6. Jambo Flour Mills	66,000
7. Kitale Industries	30,000
8. Golden Grains	50,000
9. Mombasa Maize Millers	100,000
10. Milling Corp. of Kenya	110,000
11. Umoja Flour Mills	3,600
12. National Unga Industries	12,000
13. Machakos Millers, Ltd.	15,000
14. Simba Posho Mills	6,000
15. Swan Millers	40,000
16. Pisu and Co.	3,333
17. Bonanza Millers	15,000
18. Kibos Industries	20,000
19. Unga Maize Millers (Eldoret)	60,000
20. Unga Maize Millers (Nairobi)	120,000
21. Mombasa Grain Milling Corp.	110,000
22. Atta (1974) Ltd.	10,000
23. Kenya Grain Mills	19,440
24. Meru Central F. C. Union (now defunct)	
Monthly Total	1,066,70a
Annual Total	12,800,000

CHAPTER 4

SOCIAL SOUNDNESS ANALYSIS

4.1 INTRODUCTION

This chapter contains (1) a summary of the socioeconomic characteristics of Kenya's maize and bean commodity systems; (2) an analysis of the roles of particular social groups and geographic regions in the current production and marketing systems; and (3) an analysis of the potential impact of proposed market system reforms on those social groups, with a forecast of probable "winners" and "losers".

The information from which this analysis is derived was obtained from three principal sources. First, the study team reviewed secondary socioeconomic data, technical reports, and publications on Kenya's maize and bean marketing systems, which have been studied extensively over the past two decades.[1] Second, during May-June 1989 the team interviewed farmers, traders, millers, and transporters during short, intensive visits to the six sample districts of Nakuru, Nyeri, Kitui, Kisii, Kakamega, and Uasin Gishu. The number of respondents in this rapid reconnaissance survey effort, which averaged five working days per district, ranged from 30 to 40 individuals across those four categories in each district. Finally, a substantial amount of information was obtained from Government of Kenya statistical sources in the districts, and from interviews with officials of the National Cereals and Produce Board, the Ministry of Agriculture, and other government institutions.[2]

This discussion utilizes the same three-tiered classification of production and marketing areas as was used in the Economic Analysis:

- Densely settled, high-potential smallholder areas (e.g., Kisii, Nyeri, and most parts of Kakamega District);
- Large farm areas that are interspersed with resettlement schemes containing land units of medium size (8 to 20 hectares) and smallholdings (less than 8 ha). In the field study, these were exemplified by Nakuru and Uasin Gishu Districts, and Lugari Division of Kakamega District; and
- Grain-deficit areas (seasonal and chronic), with generally low population densities, of which Kitui is one example.

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[1] Most important in this respect has been the earlier work of Schmidt (1979); Casley and Marchant (1979); and Maritim (1982); and numerous recent, local-level studies in Kisii, Nyeri, Kitui, and Kakamega Districts. While coverage is generally good, in-depth socio-economic studies are lacking for certain districts (notably the large farm/resettlement areas in Nakuru and Uasin Gishu), nor have the activities of particular social groups (especially women traders and small-scale millers) been fully described and analyzed in the literature.

[2] The team is grateful for the assistance and interest displayed by GOK officers in all of the areas visited in the course of the field study.

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This classification system permits the results of fieldwork in six sample districts to be related to the principal features of the national system for marketing of maize and beans. Much of Kenya, perhaps with the exception of the Coast Province, can be grouped into these three general categories. Many of the production and marketing characteristics of Kisii, for example, can be found in Nandi and Kericho, two prosperous agricultural districts that were not included in the sample; while large parts of Machakos and Baringo districts possess similarities to Kitui District. Within each of these general socio-economic regions, the important characteristics and groups involved in the maize and bean economies are discussed (see Table 4.1).

4.2 PROFILE OF SOCIOECONOMIC GROUPS IN DENSELY-SETTLED, HIGH POTENTIAL SMALLHOLDER AREAS

4.2.1 Population and Land Use

These areas are representative of the classic highland production systems of Kenya, where high-value export crops (e.g., coffee, pyrethrum, and tea) are grown on landholdings of less than 8 hectares (ha). Rainfall (in excess of 1300 mm annually) and population densities (250+ per square kilometer) are generally high. In Kisii District average farm size tends to be between 1-2 ha; in southern Kakamega District farm size averages only 0.7 ha; and in most of Nyeri, it is below 1.2 ha.

Household incomes in these areas are characterized by significant earnings from non-farm sources, and women make many of the important farm management decisions. In all three districts visited, non-farm sources account for more than 35 percent of annual household revenue; and in Nyeri, they comprise over half. A number of these households have people in salaried or wage employment, whereas others obtain cash through various non-farm enterprises such as trade and artisanry (Economic Survey of Kenya, 1988).

Because of the heavy involvement of males in wage labor activity, femaie-headed households account for a significant proportion of domestic units in these districts, sometimes more than 40 percent (see Table 4.1). High rates of seasonal and permanent wage labor migration are a response to land pressure, and result in women playing major roles in farm management and marketing. Farm-related trading activities, particularly with vegetables and maize, are an important source of income and part-time self-employment for women.

A study carried out in Mbogoini, near Karatina in Nyeri District, demonstrates the importance of women in agricultural activities in the densely settled areas (Safilios-Rothschild and E. Mburugu 1987). In this community, 90 percent of the women cultivated all of the land on their holdings, and the husbands were primarily or exclusively occupied with other economic activities. In 40 percent of the cases, Mbogoini husbands resided on the farm, since they worked within commuting distance. Women who contribute the labor to coffee growing and other agricultural activities have control over the income derived from sales. About a quarter of the women complement their on-farm income with work as casual agricultural laborers.

TABLE 4.1

SELECTED SOCIO-ECONOMIC FEATURES OF THE SIX STUDY DISTRICTS

Characteristic	Densely-Settled Districts			Large-Farm Districts		Grain Deficit District
	Nyeri	Kisii	Kakamega	Uasin Gishu	Nakuru	Kitui
Pop. Density (per sq km)	266	604	434	120	120	21
Mean Farm Size (ha)	1-2	1-2	1-2	15	15	7
Reliance on Non-Farm Income (1-5)	4	3	4	2	3	5
Female-Headed Households	45%	25%	41%	13%	39%	44%
Mean Monthly Income in Kshs (1982)	950	965	600	886	618	795
Importance of High-Value Crops (1-5)	5	4	3	2	3	1
Maize Net Supply Position	Importer due to cash crops	District feeds self + exports	Variation within district	Major surplus producer	Major surplus producer	Chronic deficit area
Importance of NCPB (1-5)	2	3	3	5	5	4
Role of Open Air Markets (1-5)	5	5	5	2	2	3

4.2.2 Maize and Bean Production Patterns

Virtually all farmers in these areas grow some quantities of maize and beans. On a national level, smallholder production of maize and beans accounts for 70 to 75 percent of Kenya's total production (Agriconsult 1988:20). In contrast with the large farm areas, however, approximately 70 percent of production in the densely settled smallholder areas is for home consumption with only 30 percent ending up on either the informal or formal (NCPB) market.[3] In its field interviews, the study team found that annual sales of maize among farmers in the three districts averaged 10 to 12 bags (0.9 to 1.1 MT), with the exception of those in resettlement schemes where landholdings were larger. Over the course of the year, most small-scale farmers in these areas are both sellers and buyers of maize, which confirms the earlier findings of both Schmidt (1979) and Casley and Marchant (1979). They sell soon after the harvest to meet immediate cash needs, as well as to avoid storage losses, and buy maize later in the year. In some of the more heavily populated areas of Kisii and Kakamega (notably Vihiga Division), where farms are especially small and export crops important, farmers are particularly dependent on the local market as net consumers in the rainy season, when stocks have been exhausted.

Because volumes are small, the sale of maize is usually not the major source of cash income for households in the densely populated highland areas. In Kakamega, tea, horticultural produce, and sugar tend to be the principal sources of farm income; in Nyeri, tea, coffee, and vegetables are most important; while in Kisii tea, bananas, and, in some cases, pyrethrum, are the most significant on-farm income activities. For women farmers especially, sales of vegetables and fruit are considerably more important sources of cash income than sales of other food crops. In short, maize and beans contribute much to subsistence in these areas, but are not the most important sources of cash (see Orvis 1986; Safilios-Rothschild and Mburugu 1987).

The importance of high-value, non-traditional crops varies in the sample districts of Nyeri, Kisii, and Kakamega. While in each district there has been some transition to high-value crops, it is clearly most accelerated in Nyeri, which has become a food-importing district, while the shift away from maize into cash crops is less far advanced in Kisii, and even less so in Kakamega. This variability in cropping patterns is likely to affect production responses to liberalization of the maize and bean markets.

4.2.3 Characteristics of the Marketing System

Maize and bean marketing in these areas is only partially integrated into the formal market system. While the National Cereals and Produce Board (NCPB) has a network of agents, depots, and Primary Marketing Centers (PMCs), they account for less than 40 percent of the maize entering the market, and only 10 percent of the bean trade. The small volume of maize and beans marketed by each farmer results in a highly disaggregated pattern of purchase, assembly and resale through informal, unauthorized channels. This system is characterized by important roles for small-scale retail traders and open-air marketplaces, and a relatively minor

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[3] For data on which these generalizations are based, see the report of the FAO Smallholder Marketing Study, Casley and Marchant 1979.

role for larger-scale wholesalers and lorry traders plying long-distance routes. Although some traders are active at a medium scale, they are less in evidence than small-scale traders.[4]

In Kisii, some small-scale traders collect maize at the farm gate and then sell it to medium-scale traders, who also serve as NCPB agents. Much of the maize that is marketed, even for such relatively large towns as Kakamega, Kisii, and Nyeri, is channelled through the towns' open-air marketplaces. The market of Darajambili in Kisii town is a good example of this, where as many as 50 small-scale women traders sell maize daily to urban consumers. The maize trade in such districts is almost always transacted in grain rather than flour, with the consumer then processing the grain into unsifted flour at small posho mills.

NCPB agents are numerous in some of the highland districts: for example, there are 172 agents in Kisii. However, for much of the year they buy and sell on their own account rather than as agents of the Board. They often sell much of their purchased maize to the NCPB during December-February after the main harvest. At this time the Board's price is usually higher than the informal price, providing a more lucrative outlet, especially if the agent has bought the product below the official farm gate price of Kshs 199 per bag. Later in the year the agents tend to buy from farmers or small traders and sell privately at local marketplaces. The price they pay is well above the official price (in Kisii District it had reached Kshs 250 a bag in June 1989), but they usually sell to local consumers or small traders at markups of 10 to 20 percent. This dual role of NCPB agents reflects the generally low level of integration with the formal market in these areas. An important distinction between NCPB agents and the small-scale retail traders, however, is that most of the former are men (over 90 percent), while most of the latter group are women (more than 80 percent).

The scale of the maize and bean trade is relatively small. The vast majority of traders (especially women) are handling less than one to two bags of maize per day and small-scale wholesalers often buy less than four bags. Entry to the market for small-scale traders is relatively easy, with working capital requirements at the one- to four-bag level ranging from Kshs 200 to 1,000 (US $9.50 to $47.50). Small-scale traders (mainly women) include two distinct categories:

- Sedentary retail traders who sell small amounts of maize and beans in open air markets; and

- Itinerant traders who buy at the farm level or at markets in surplus areas and then move maize to markets in deficit areas, usually within a radius of 50 to 100 km. They frequently utilize donkeys and/or matatus to move the commodity, and fulfill the function of small-scale wholesalers.

In practice, however, there are many traders who collect the commodity at the farm gate and then deliver it to a medium-scale trader. The distinction between wholesaling and retailing is especially blurred in these areas, and very few-large-scale wholesalers or lorry traders are found. An exception are the lorry traders who occasionally come to Kisii to purchase beans or bananas. Most small-

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[4] A medium-scale trader can be defined in this context as one who handles at least 100 bags of maize/beans monthly; rents transport, and rents or owns permanent storage facilities; and has some involvement in inter-district trade. Many NCPB agents should be properly classified as medium-scale traders when they trade on their own account rather than for the Board.

scale wholesalers sell directly to consumers or to smaller market women, the latter buying less than one bag for retail sale. The small-scale trade in maize reflects:

- The disaggregated production base for maize and beans;
- The small amounts of maize sold and bought by individual smallholders; and
- Government controls on movements of maize and beans, even within the same district.

Exemplifying the constraints posed by movement controls, the study team observed a woman wholesaler buying four bags of maize on the Narok/Kisii border, an important surplus area in Kisii District. She spent the better part of one day breaking the bags into portions of 45 kilograms each, so as to transport the maize to Kisii town in small loads on several different matatus. While the amount of maize purchased was well within the legal 10-bag limit for intra-district movement, the trader sought to avoid direct encounters with the police, who would be likely to challenge her right to move the commodity. The smaller the quantity of maize moved within the district, the lower is the probability of being stopped.

4.2.4 Transport and Transporters

In general, access to transportation is good in the densely settled areas. Buses, matatus and larger vehicles are available on the classified roads as well as many of the unclassified rural access roads. This is attributable to the upkeep of roads for coffee cooperative societies and for the factories of the Kenya Tea Development Authority (KTDA); continued maintenance of the roads improved under the Rural Access Roads Program; and the generally dense and complete rural road network (for more detail, see Chapter 5 on the transport sector). Most farmers travel only short distances before they sell either maize or beans. In the western districts of Kisii and Kakamega, for example, the average distance farmers travel to sell their maize is 2.5 km. Because of the good access to transport and numerous market centers in these districts, farmers rate market availability as a low-priority constraint (Bahemuka 1985:VII-20).

Traders in the high-potential, smallholder districts utilize a range of means of transport. Matatus and small buses are important in moving small amounts of maize and beans between local markets, being utilized by approximately 60 percent of the small-scale traders (those handling less than 2-3 bags of maize daily) who were interviewed in Kisii and Kakamega. Donkey transport, on the other hand, is also very important in these districts, both in terms of moving produce from farm-to-market and from market-to-market. Approximately one-third of small-scale traders, particularly in Kisii District, utilize donkeys to move maize between small market centers. Donkeys are relied on heavily along hilly gradients, such as between the Nandi escarpment and eastern Kakamega and between the highlands of Kisii and the lowlands of Kisii and South Nyanza Districts. In these areas roads are few and often in very poor condition during much of the year.

Because the densely settled zones generate only small amounts of surplus maize, most lorry transporters are involved in the private movement of nongrain agricultural commodities (e.g., vegetables, fruits, tea, and coffee) or the haulage of maize and beans for the NCPB. Transporters contracted by the NCPB tend to be those with two or more lorries. These individuals, almost exclusively male, have usually been in the transportation business for 10 years or more, and are over 45

years old. They also may be NCPB agents, or have other business enterprises. Most were able to secure bank loans which they used to purchase their first lorries. Partnerships as well as sole proprietorships are common, especially among those who have more than one lorry.

4.3 PROFILE OF SOCIOECONOMIC GROUPS IN LARGE FARM AND RESETTLEMENT AREAS

4.3.1 Population and Land Use

Almost all of these areas consist of land that was reserved for European settlement during the colonial period. The field study included Uasin Gishu and Nakuru Districts, as well as the northeastern parts of Kakamega and Kisii Districts, where post-Independence resettlement schemes were established. Many of the original large-scale farms have been purchased by cooperative societies, land buying companies or directly by the Government (notably in the Million-Acre Scheme of the 1960s), primarily for subdivision and settlement. Some societies and companies sought to operate these farms as large commercial enterprises, but due to management difficulties encountered, these are increasingly being subdivided and settled by the shareholders.

In the 1960s, a number of the large farms in the northern Rift Valley were sold to African purchasers directly as entire holdings, or were divided into units of 10-50 ha. Since then many of the first generation settlers have subdivided their farms to family members, and/or sold off parcels of 2 to 5 hectares in Nakuru and 4 to 10 hectares in Uasin Gishu and the resettlement zones of Kakamega and Kisii Districts. Land registration and titling are still in progress in some of the resettlement areas.

The average population density in these areas ranges between 75 and 125 per square kilometer, representing the middle ground between the densely settled highlands and the drier grain deficit zones. The highest population densities in the sample districts are found in locations of Nakuru that were part of the GOK's Million-Acre Scheme. In Bahati, Njoro, Elburgon, Molo and Mau Summit, for example, densities exceed 200 people per square kilometer, and most of the farms are under 2 ha. By contrast, average farm size in the resettled areas of Uasin Gishu is more than 10 ha, and approximately 8 ha in the resettled zones of Kakamega and Kisii Districts (Utrecht University 1988).

Both Nakuru and Uasin Gishu still contain significant numbers of large-scale farms and ranches where population densities are much lower. In 1979, Nakuru District contained 717 units over 8 ha, with about 475,000 ha being farmed on a large-scale basis and 5,200 ha in ranching. As mentioned above, in the last decade many of these have undergone subdivision and settlement, but more recent data are not available to indicate the extent. On the other hand, data from Uasin Gishu show that large farm units remain an important segment of the agricultural sector. In this district, approximately 5 percent of total farms (1,635 units) are between 20 and 40 hectares; and 1 percent (362 units) are more than 40 hectares in size. Farm units of less than 20 hectares comprise 94 percent of total units, with the largest concentration of smallholder settlement schemes being in Turbo and Soy Divisions. Moiben Division, the northernmost in the district, has the highest number of large-scale units.

Many, if not most, of the small farming households depend on income from sources other than the farm. The developed urban areas and even those centers classified as rural centers offer good employment opportunities. In addition there are opportunities for casual and full-time work on large commercial ranches and farms, although the number of jobs has been dwindling over the past decade.

The average net monthly income in cash and kind for Nakuru rural households is relatively low, approximately 25 percent below the average for Uasin Gishu (see Table 4.1). According to data from the 1981/82 Household Budget Survey it was Kshs 618, placing the district in the low income category along with nine other districts where income was under Kshs 830. On average, 60 percent of the household income was derived from farming, 22 percent from salaries and wages, 10 percent from non-farm enterprises, and 6 percent from other sources.

In Nakuru the proportion of female-headed households is relatively high (39.2 percent), while in Uasin Gishu it is only 12.5 percent. The discrepancy can be partially explained by the greater proportion of Nakuru heads of household in wage employment, and by the smaller average farm size. At the same time, however, the sex ratio of 105.8 (1979) in Nakuru shows more males than females in the district. This is a result of in-migration from other districts for employment, and the relatively urbanized nature of Nakuru District. In 1979, 26 percent of the district's population lived in urban areas, making this one of the most urbanized districts in Kenya. Because more men are employed in salaried and wage jobs than women, and because wage rates for lower paid workers are not based on the cost of providing basic maintenance for a family, more men than women reside in Kenya's urban areas, although the gap has been lessening in recent years.

4.3.2 Maize and Bean Production Patterns

Maize and beans are grown by virtually all farmers in the large farm/resettlement areas, but are significantly more important for small farmers in locations where dairy and/or wheat production is not feasible. Some maize farms of more than 100 hectares were observed in Uasin Gishu, but they were few and restricted to the western part of the district. By contrast, large-scale wheat farms of more than 100 hectares were more numerous in both Nakuru and Uasin Gishu districts. The large-scale wheat producers who were interviewed did not regard maize as a viable alternative, even if prices were raised and other marketing constraints were removed. A major consideration is that wheat production is mechanized and is much less demanding in management terms than maize. Even the small-scale farmers who have to rent machinery for land preparation and harvesting of wheat, and who have a small household labor force relative to land size, have a distinct preference for wheat under the current input and product pricing regime. On the larger units of land individually held by African farmers, maize is grown primarily for domestic consumption, although a small proportion also produce maize for feeding their cattle. The fact that the official wheat price increased more than 40 percent while the maize price rose only 10 percent during this year, suggests the situation is unlikely to change in the near future.

Maize and bean production, however, are a dominant feature of the smaller settler holdings in western and southern Uasin Gishu and in most of Nakuru. Initially the households are concerned about food for domestic consumption, and aim to have a surplus to sell. In Nakuru District, smallholdings around Rongai and Bahati, in the area south of Lake Nakuru, and in parts of Njoro Division are almost entirely devoted to maize and bean production, with some households

keeping a few livestock. In the higher elevations of Njoro, Elburgon and Molo, many of the smallholders have small parcels of pyrethrum and often grow potatoes, as do those around Mau Narok.

In northern Uasin Gishu District and in the settlement area (Lugari Division) of Kakamega District, on the other hand, where holdings are larger, maize production varies in its importance for medium-scale farmers. Among farmers with more than 8 ha, dairy production often showed up as a more important income earner than did the sale of maize. The high cost of inputs for maize production relative to returns discourages many medium-scale maize producers. The exception is among settlers in the Lugari Division of Kakamega District, where road infrastructure is poor and dairy markets only minimally developed. Here more than 50 percent of household income among medium-scale producers is derived from the sale of maize and beans (Utrecht University 1988:45-46). In general, as one moves toward larger landholdings, aggregate production of maize increases but its significance, vis-a-vis farm income, declines relative to dairy and wheat.

An important recent development that was observed as early as 1980 is small-scale production of wheat in parts of the Rift Valley (Little 1983). In parts of Njoro, Rongai and the greater Nakuru area, as well as in much of western and southern Uasin Gishu, smallholders grow wheat on 1-4 ha of their own land or lease small plots of 1-2 ha from neighbors for wheat growing. Their main constraint to increased production is lack of access to farm machinery. They usually hire equipment from large farmers, but have to wait until the latter group have completed their planting/harvesting.

4.3.3 Characteristics of the Marketing System

In contrast to the densely populated areas, the large farm/resettlement areas are major suppliers of maize to the NCPB market system. More than 80 percent of farmers interviewed in these areas sold their maize directly to NCPB depots or Primary Marketing Centers, or to cooperative societies which then resold it to the NCPB. Among medium-scale farmers of Uasin Gishu District, it is more common to market through a cooperative society than to deliver maize directly to the Board. By contrast, direct deliveries are the norm for large farmers, who generally own their own means of transportation, and can either sell to the NCPB or to the large mills -- with or without official authorization.

In Nakuru District, the market situation is more varied, in part because there are no NCPB agents. The choice of marketing options is largely governed by the amount available for sale and the accessibility of potential purchasers:

- Where 10 bags or more of maize are available for sale, options include selling directly to the NCPB through a local cooperative society;[5] seeking out a trader or transporter willing to purchase and collect maize at the farm gate; or arranging one's own transport for direct delivery to the NCPB depot or Primary Marketing Center.

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[5] Although participation by cooperatives in the official marketing system was officially encouraged in the 1988/89 season, only one society in Nakuru District delivered significant amounts to the NCPB. In such cases, society members must usually rent transport for delivery to its collection points; in very inaccessible areas this may involve the use of donkeys, with or without carts.

- Generally when smaller amounts are being offered for sale, the main options involve selling directly from the farm to neighbors at a late point in the season when their stocks have run out; carrying maize by the bag or smaller unit to the local open marketplace by headload, bicycle, or donkey, for sale to other farmers or local retail traders; or less commonly, selling directly to a local shopkeeper or posho miller.

Families with small landholdings, who generally supply perhaps 10-12 bags of maize to the market, tend to use more than one of the second set of options, depending on the season and their need for cash. In contrast, most large-scale producers in Nakuru, as well as Uasin Gishu, arrange their own transportation, either in lorries they own themselves or in hired vehicles.

Open-air marketplaces play a minor role in the large farm areas, as compared with the trade pattern of the densely populated, highland zones. Only a minimal amount of small-scale trade in maize and beans is found in the large farm/resettlement areas, and this is mainly limited to the larger markets (e.g., Turbo, Eldoret, Naivasha, and Nakuru town). There is, however, some degree of wholesaling here that is of a considerably greater scale than is found in the densely-settled areas. In both the Nakuru and Eldoret urban marketplaces, wholesalers were observed selling up to 10-20 bags of maize per day in June 1989. Of particular interest, and performing a key function, are those traders who purchase bags or smaller quantities from farmers or open air marketers, assemble the purchases into a number of bags, and then transport the bags to another locale. Amongst this category of intermediate traders in Nakuru District the following patterns are discernible:

- The trader buys and then wholesales the maize within the district to small-scale retail traders, for onward sale to consumers; or

- The trader sells upward in the marketing chain to larger traders/wholesalers within the district, or rents transport and markets upward to larger traders/wholesalers outside the district, often operating without an official movement permit.

Both types of traders pay cash upon receipt of produce and receive cash directly upon sale. In Nakuru District, women traders are active in both of the above marketing patterns, although men are more commonly found. By pooling labor and resources, women are often able to enter the second and third tiers of the marketing chain. A good illustration of this is a woman trader in Naivasha market who travels to Maera, a three-hour ride by matatu. There she purchases maize from small-scale farmers who have transported their produce to the local marketplace by donkey or headload. She buys in any quantity and assembles the purchases into 90 kg bags. Then she and other traders from Naivasha hire a lorry to transport the maize back to the town. The amount that any individual trader buys depends upon her own cash situation. By cooperating, they are able to hire and fill a lorry for the return trip. They are charged Kshs 40 per bag for transport.

In another case, a young woman recently began trading in maize, together with her mother and a friend, using a small market on the main Nakuru road as their base. They travel to local markets to purchase the maize, in any quantity, assemble it into bags, and usually transport it by matatu to their base of operations. At times, though, they have to carry it by headload to the nearest point to get a vehicle. Since their intent is to sell the maize where they can get a good profit, the three women are quite willing to travel outside the district.

One will ride in the rented lorry and the others will travel by matatu to the point of sale. Recently they sold 48 bags to a larger wholesaler in Nairobi. This operation began with an initial investment made by the friend of Kshs 2,000 (just under US $100).

In general, men who own lorries dominate the trade when it comes to moving maize between major buying and selling points in both Nakuru and Uasin Gishu Districts. Men trading without the capital resources to own a vehicle tend to work in groups of three to five, moving with the time of harvest in Rift Valley and Western Provinces. Those traders/transporters who do own lorries in Uasin Gishu frequently transport maize to deficit areas 100 km or more away in Kisumu, Siaya, and Kakamega Districts. In the Vihiga Division of southern Kakamega, two or three lorry traders were arriving every day in early June 1989 from Uasin Gishu or Trans Nzoia at each major marketplace (Chavakali, Mbale, Majengo, etc.), and the maize was then sold at wholesale to open-air women retail traders. This trade goes on for about nine months of the year and is most active around May-July. Lorry traders either from Uasin Gishu or the settlement zone of northeastern Kakamega also supply maize to markets in Mumias Division of Kakamega District, where reliance on sugar cane as a cash crop has substantially undercut local food production.

4.3.4 Transport and Transporters

For the most part, people residing in the large farm/resettlement areas have access to a relatively large fleet of vehicles, based primarily in Nakuru, Naivasha, Eldoret, and the other large towns. Whereas a decade ago there were very few sources of transport around Nakuru town, farmers report that nowadays there is much competition and prices can be negotiated. In contrast, relatively few vehicles service the areas south of Njoro and Lake Nakuru, where relatively recent dense settlement has occurred. Often donkeys carry goods to the main roads and there are some donkey carts for hire, although relatively fewer than in the grain-deficit areas. Very little donkey transport was observed in Uasin Gishu District.

Several owners of large-scale farms are also owners of commercial lorries and haul maize for the NCPB. Some, especially those owning more than one lorry, are engaged in inter-district hauling for the Board. Those not specifically licensed by the Board do not specialize in transporting a particular commodity, and primarily move within their own district. Most of these transport owners, because of their other economic enterprises, were able to secure loans with which to purchase their first lorries, which were usually bought new. Most have less than a complete secondary school education, are over 35 years of age, and employ drivers and turn boys to operate their vehicles.

One distinct category consists of those who are both transporters and traders, with this being their sole or principal occupation. These people tend to own one vehicle, a lorry or a pickup usually purchased from their own savings, with the first vehicle generally used rather than new. This is also true of those who work solely as transporters, hiring out their services. They provide services mainly to the small-scale settlers in their district and often specialize in servicing a particular geographic area to haul any type of commodity. Many are registered with the NCPB, although they do not haul regularly for the Board.

Farmers in the large farm/settlement areas frequently travel a greater distance to sell their maize than those in the densely settled zones. Because they often are selling their maize to either a cooperative or the NCPB, they must transport it as much as 5-6 kilometers to transaction points. In these areas where formal

marketing channels are dominant, transport costs (including labor) from farm to depot or the cooperative society can be as high as Kshs 5-8 per bag, or as much as 4 percent of the sale price. Large farmers usually have their own transport to move maize to the point of sale, but small and medium-scale farmers must hire lorries, pickups, or tractors with load trailers.

In virtually all of the resettlement areas visited by the study team, the role of the NCPB had undergone major changes in the 1980s, with new Primary Marketing Centers having been opened -- and in the past year, often closed as a result of the Board's reorganization program. Prior to this, lorry traders were prevalent in these areas and would buy maize directly from producers at their farms, eliminating transport costs for the farmer, while taking maize at a discount to the gazetted price.

4.4 PROFILE OF SOCIOECONOMIC GROUPS IN GRAIN DEFICIT AREAS

4.4.1 Population and Land Use

Approximately 82 percent of Kenya's total land area is classified as arid or semi-arid, receiving less than 650 mm of rainfall annually. These lands support about 20 percent of the country's population, and about 50 percent of the nation's livestock. The population in these areas consists of crop cultivators, agropastoralists, semi-sedentary pastoralists, and nomads, with the importance of crop production generally declining in direct relationship to the amount of annual rainfall. The economic and social differences are probably greater among populations in these areas, than is the case for the highland smallholder areas and large farm/resettlement areas. For those exclusively reliant on livestock activities, milk is considered the most important and desirable food. However, especially during the dry seasons when milk yields are low, maize (in the form of posho flour) is a major ingredient in the diet. Without access to maize and other grains during the dry season, many pastoral groups in Kenya would literally not be able to survive (Little 1983; 1987).

Drought is common in the arid and semi-arid areas, creating chronic grain deficits, in contrast to the pattern of seasonal grain deficits that occurs in some of Kenya's non-drought areas such as Siaya and Busia in the Lake Victoria basin. Regional drought, with a duration of one to two seasons, affects maize growers every three to four years and growers of millet, which is more drought-resistant than maize, every five years. The impact of droughts, and the evaporation of low rainfall, combined with poor soils, lead to great fluctuations in the supply and demand for maize in areas where maize or millet is produced. Overall these areas are importers of maize, even though in some of them, surplus production is possible in years with excellent rainfall. They suffer from the most serious food-security problems during periods of drought, such as 1980 and 1984.

The arid and semi-arid areas of Kenya have relatively low population densities, although with the increasing population pressure in the highlands, lower rainfall areas are increasingly being brought under crop production. Farmers of the higher potential areas have moved down and settled along the fringes of the semi-arid areas, where marginal maize production is possible.

Kitui District is illustrative of an area where agropastoralism and crop production are undertaken on semi-arid lands. The district also contains marginally productive crop land and large ranches. In general the agricultural potential of

the land has determined the distribution of population and farms in Kitui District. In comparison to the other five study districts, Kitui has the poorest agricultural land and the lowest population density. An intradistrict analysis shows that the fairly well-watered areas of Central and Mwingi Divisions have the highest densities. Nevertheless, in 1979 even these divisions had fewer than 70 people per square kilometer. None of the land in Kitui is classified as high potential: 36 percent is of medium agricultural potential, with 500-800 mm of rainfall per annum, and the remainder is of low potential, with less than 500 mm. Even in the medium agricultural potential areas, however, crop failures are common due to lack of moisture (Kitui District Environmental Assessment Report, 1986).

The average farm size is larger in Kitui District than in the much more densely populated smallholder areas of western Kenya. However, the land is of poor quality, and much of it is only suitable for grazing livestock. Shifting cultivation is widely practiced. About 25 percent of the farms in the most densely populated and better crop area, Central Division, are over 6 ha, while 50 percent are less than 2 ha. In comparison, in the drier zone of southern Kitui only 20 percent of the farms are under 4 ha acres and about half exceed 8 ha.

The average net monthly income among rural households was Kshs 795 in 1981/82, placing the district among the lower income category for all districts. On average, 55 percent of income in cash and in kind was generated from farm enterprises. Off-farm enterprises, salaries and wages, and other sources represented 14, 15, and 15 percent respectively of the mean monthly income. Kitui households are known for diversifying their sources of income seasonally, and in times of drought for switching quickly to non-farming sources. At the same time the range of opportunities is limited and the level of income low. People will gather and sell firewood, make charcoal, and serve as laborers and petty retail traders. In addition a large portion of women make sisal baskets to sell.

Men also migrate outside of the district for employment (Akong'a 1988). This results in a sex ratio of 86 men to 100 women (1979 census data) for Kitui. Of some 91,000 rural households, 44 percent were headed by women in 1981/82. National level information about such households helps to illuminate the phenomena. About two-thirds of the female headed households are under women who are unmarried. Most are widows living on land that belonged to their husbands and are guardians of this land for their sons. In households headed by married women, the husbands are usually working elsewhere.

4.4.2 Maize and Bean Production Patterns

The range of crops is limited by climatic conditions. The principal food crops are maize, beans, cowpeas, pigeon peas, green grams, cassava, sweet potatoes and millet and sorghum. Fruits such as guavas, oranges, bananas, onions, tomatoes and cabbages are grown on a small scale by farming households, and primarily for sale. Export crops are cotton, sunflower, castor, sisal and to a lesser extent coffee and tobacco. However, only a small proportion of all farming households grow these crops.

Kitui farmers primarily grow maize, beans, pigeon peas and green grams for both household consumption and sale. In some regions due to climatic factors, millet rather than maize is grown. Livestock provide a major economic activity. While a large proportion of farmers sell some maize, especially to meet immediate cash needs, beans are produced more for sale than consumption. Although sales of maize are not an important source of cash income for most farmers, sales of legumes (including beans) play a larger role in household support.

The short rain crops are planted in Kitui District during October-November and harvested during January-February, while the long rain crops are planted during March-April and harvested during July-August. Drought and poor harvests are common. In the dry livestock-millet zones, only one out of every two long rain cropping seasons is expected to yield an adequate harvest and the short rains are equally unreliable. Thus partial or total crop failure in two or more successive cropping seasons lead to serious food shortages among the population (Kliest 1985). This is particularly the case where maize is cultivated in areas of low rainfall, where drought-resistant varieties of millet and sorghum are more adaptable. In the more pastoral areas of the grain-deficit zones, herders have attempted to grow maize, often with disastrous results, because of the unreliability of the formal maize distribution system (Little 1987).

4.4.3 Characteristics of the Marketing System

Most Kitui farmers sell their maize and beans to NCPB agents who operate in many of the market centers. The farmers will transport bags by donkey or the women will carry small amounts by headload in baskets. Less often, the farmers will sell their produce to shop keepers or small posho mill owners, or sell directly from the farm to a neighbor. The amounts of maize transacted are very small.

In Kitui there are more than 250 registered NCPB agents[6], almost all of whom are male. (This appears to be due to the need for significant amounts of working capital in order to purchase grain in quantity for the Board.) Most of these agents have small stores in market centers located along main roads. They purchase in any quantity, pay cash immediately upon purchase, and assemble on site. Often the traders combine the function of buying maize, beans, grams and pigeon peas with running a general retail shop, or duka. Less frequently they combine this function with being a wholesaler of sugar and other food items. An agent usually transports the produce to a Board depot when he has enough to fill a lorry. Those who do not have a cash flow problem, however, often store some bags of maize and beans which they sell later to schools or other consumers when the price rises. Also, some general shop and posho mill owners often engage in purchasing maize on a small scale. They usually store some to 15 bags of maize and subsequently sell the maize directly to consumers or to small retail stores.

In the deficit areas the smallholder's role in the maize market is more important as a consumer than as a seller. In the national market system the chronic deficit areas are at a strong spatial disadvantage. These areas, including the eastern parts of Kitui District, are far away from major maize producing zones, such as Uasin Gishu or Nakuru Districts. The distances and costs of moving maize to the deficit areas restrict market entry for many small traders. Lorry traders and long distance trade, in turn, are important elements of the system, and in remote areas near monopolistic conditions can prevail. More recently, NCPB maize depots have been established in the strongly deficit areas for distribution and as a hedge against famine. These depots were established in the past few years, following the grain shortages of 1984. From the perspective of the consumer and local retailer, the depots have had an important beneficial impact.

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[6] A number of traders in the district who described themselves as agents to the study team appear to use the label to legitimize their activity even though they do no business with the NCPB.

Retailers now can buy maize directly from the depot and are less affected by supply problems than in the past.[7]

Traders moving small amounts, such as 2 to 20 bags, appear less frequently in deficit areas than in other districts, although they do exist. For example, a female trader living in the eastern part of Kitui reports buying pigeon peas from local farmers at Kshs 270 a bag. When she has five bags, the maximum a bus will carry for fear of difficulties at road checkpoints, she transports these to the Board depot in Kitui, paying Kshs 25 per bag for transport and Kshs 70 per round trip for her own transport. She sometimes transports the pigeon peas to local markets to sell, but often she encounters difficulties about movement of this controlled item even when moving an allowable amount.

During times of scarcity, Kitui female traders are reported to travel outside the district to bring back maize or maize flour. Some of the prosperous large-scale traders will use their own transport to buy maize flour in Nairobi. Some residents, however, speculate that the relatively recent mill in Mwingi combined with the four new grain stores in the district will lessen Kitui's vulnerability to scarcity and hence there will be less of a role for those who have previously brought maize into the district.

The wholesaling and milling of maize in most deficit areas differ strongly from the other two production areas described above. Unless it is an unusually favorable agricultural season (e.g., 1988/1989) most mills are processing grain imported from outside (primarily through the NCPB's distribution network) rather than locally-produced maize. They buy the grain at anywhere from Kshs 280 to 316 and resell it as posho flour at around 335-350 (official prices) per bag to retailers. The price varies according to the area of deficit, with the highest official prices in remote districts, such as Mandera and Tana River. In most years much of the trade and sale of maize is in the form of maize flour (particularly the coarser flour, posho). Wholesalers in these areas often own both a mill and transport. They buy their maize, either from a lorry trader or an NCPB depot, process the grain, and then wholesale the flour to small retail stores in the outlying areas. The consumer, in turn, buys maize flour rather than grain at the retail level. Some of the larger wholesalers in the deficit areas have lost market share to the recent NCPB depots that sell directly to the retailer.

4.4.4 Transport and Transporters

Road conditions are generally poor in the deficit zones, and consequently, vehicle availability is limited. Because of these factors access to markets is a constraint in parts of Kitui District. Floods and sometimes even normal rains result in different parts of the district being isolated because the roads are impassable due to bridges being washed out. This has even led to food having to be airlifted into some areas. Currently there are four main grain storage facilities: Kitui with a 50,000 bag storage capacity, Mwingi with 30,000, and newer ones in Mutito (50,000) and Kyuso (80,000). Due to the repeated occurrence of drought, the District Development Committee has recommended that grain storage branches be opened in all major market centers.

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[7] Note, however, the observations recorded in the Economic Analysis, that private traders were more effective at reaching Kitui's remote communities than the NCPB's own distribution network, even after the latter was expanded.

While matatus and smaller vehicles operate in these areas too, they are considerably less important for movement of maize and beans than lorries. As noted above, long-distance trade (in large volume) is the norm, and unless a transporter/trader has access to a large vehicle, his/her role is unlikely to be significant in the maize movement business. In a relatively poor area like Kitui it is common to find corporations, partnerships, and family business ventures engaged in commercial transportation and owning more than one lorry or pickup truck. Sole proprietors usually only have one vehicle, unless they are older and have been in the transport business for more than 10 years. Many are lorry traders or own shops, and hence the latter often secured bank loans with which to buy their first vehicle which was usually new. Other traders from Machakos District and in some cases the Central Province are active in the transportation business in Kitui, although usually not in the maize and bean trade.

4.5 BENEFITS AND COSTS FOR DIFFERENT GROUPS UNDER THE CURRENT SYSTEM

Maize and bean marketing activities in all three production areas are heavily influenced by three elements of the official system: (1) enforced controls on movement of the commodities; (2) uniform, controlled prices; and (3) the degree of penetration by the NCPB's network of buying centers and licensed agents. The system affects each of the major social groups participating in the market for maize and beans; but the costs and benefits accruing from the system are differentiated among these groups. This section lays the groundwork for Sections 4.6 and 4.7, which assess probable "winners" and "losers" under a program of market development based on policy reform and investment in the transport network.

4.5.1 Status of Small-Scale Producers

Small-scale maize and bean growers in the densely populated, high-potential districts -- and in some of the resettlement zones (e.g., Bahati and Rongai Divisions of Nakuru) where extensive subdivision has begun to occur -- derive certain benefits from the current marketing system, insofar as the NCPB's purchasing network provides a measure of price support and an assurance of timely payment. Most of these producers market no more than 10-12 bags of maize annually, with many selling considerably less, and depend on other crops for most of their cash income. In Kisii, for example, tea, bananas, and pyrethrum are all much more remunerative than maize on a per-hectare basis. Maize is grown primarily for home consumption, and farmers tend to sell it in small quantities almost immediately after the harvest, because of cash needs and storage constraints.

In the post-harvest period, the gazetted NCPB price (currently Kshs 199 per bag) is significantly higher than the farm-gate price offered by traders in the informal system. In the 1988/89 marketing campaign, the informal market price dropped to as low as Kshs 150 per bag in surplus areas of Kisii and Kakamega, and stayed there for as long as two months. Although sales to NCPB agents or Primary Marketing Centers (PMCs) involve a discount to the gazetted price (as documented in Chapter 2), and bear the risk of delayed payment (in the recent past, sometimes as long as six months), farmers with ready access to the NCPB system prefer it to the informal trade when disposing of their harvest to raise immediate cash. The Board's network of agents in Kisii and PMCs in Nakuru provides this type of access; in Nyeri and Kakamega, NCPB coverage is much thinner. Later in the season, when informal maize prices rise above the official price, those smallholders who stored grain can sell it to the same agents, who are now trading (illegally) on their own account.

The availability of alternative market channels, formal and informal, serves the interests of smallholders moderately well when they deliver only very small quantities of grain into the marketing system. The areas do not produce enough maize surplus to attract large numbers of wholesalers and lorry traders. It is likely that if the densely settled, high potential areas were integrated into a reliable national food distribution system, farmers would gradually convert more of their land from low-value (i.e., maize) to high-value crops and depend more heavily on the market for food purchases. The continually increasing price of land (already Kshs 50-60,000 per ha in parts of Kisii and Nyeri) creates a powerful incentive to shift toward cash crops. But this shift would only occur gradually, perhaps over a five- to ten-year time horizon, as farmers satisfied themselves that food supplies were indeed available from other parts of the country, and at reasonable prices relative to the opportunity costs of maize production on their own land.

As noted earlier in this annex, it is generally more appropriate to characterize the role of smallholders in deficit areas under the current system, as net consumers, rather than as producers (see section 4.5.7 below). Nonetheless, in occasional years bumper harvests are achieved in the dryland areas, resulting in a surplus for sale to the Board. In the recent past, the increasingly active role taken by the Board and its agents has resulted in Kitui farmers receiving a relatively good price when a surplus exists in the district and the nation at large. For example, Kitui farmers reported in June 1989 that private traders were offering only Kshs 1.50 per kg for maize (Kshs 135 a bag), whereas in areas closest to the depots or where competition existed among agents, the price was Kshs 2, a discount of only 10 percent to the gazetted NCPB price. It is doubtful that such competition would exist if the local traders did not have a secure outlet nearby for the maize, beans and other items. Because almost all the main roads in the district are in very poor condition, the cost of shipping maize out of the district would inhibit potential buyers, particularly with surpluses already available elsewhere in the country.

4.5.2 Status of Medium-Scale Farmers

Medium-scale producers in the large farm/resettlement areas, defined as those with holdings between 8 and 20 ha, appear to incur the greatest costs under the current system among all producer groups. Examples were noted during fieldwork in Soy Division of Uasin Gishu; Lugari Division of Kakamega; and in the Molo and Njoro areas of Nakuru. These are prime maize-growing areas, where farmers earn a substantial amount of their household income from maize sales. Sales of 100 to 200 bags per annum are not uncommon from this group. The quantities sold are large enough to attract clandestine private traders from as far away as Kitui and Machakos Districts; moreover, important seasonal deficit areas (e.g., Busia, Siaya and southern Kakamega District) are also located nearby. Yet these producers lose revenue because of the above-mentioned controls that restrict their access to favorable markets via informal channels. Most medium-scale farmers, therefore, sell their maize either to an NCPB depot or to a cooperative society that later delivers it to the Board.

Disadvantages under the current system also include the following:

- Farmers who produce maize in bulk, and who are dependent on the Board because of its monopoly, generally pay Kshs 5 or 6 per bag in chai to have their deliveries accepted at Board depots[8].

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[8] One cooperative society that was visited in Nakuru District deducts this amount as a routine cost of doing business with the Board, when paying out proceeds to its members.

- Many medium-scale maize growers would probably time their sales according to seasonal price differences if market alternatives were available. Because these farmers usually have adequate storage and less cash constraints, they would be able to hold onto their maize until later in the season when prices have risen well above the official price. Because of movement controls, farmers in the Uasin Gishu/Kakamega border areas with maize in stock were receiving Kshs 2.50 per kg in June 1989, while less than 100 km away maize was being sold at retail for Kshs 5.50 per kg.

These farmers are "captives" of the current system. They produce enough that they must depend on lorries, rather than matatus or donkeys, to move their commodities into the informal market. (There are cases, of course, when these farmers do sell small amounts to small-scale itinerant traders, but these account for a minor percentage of their sales). The fact that they reside in a major surplus area means that the Board's presence is widespread. In fact the majority of NCPB depots, buying stations and storage facilities are in the large farm/resettlement areas. The medium-scale farmer's principal options are either to deal with the Board -- almost always at a discount to the gazetted price -- or to sell clandestinely to lorry traders or informal market wholesalers. The latter also discount the price paid to farmers -- although it remains well above the official NCPB price -- to make allowance for the substantial costs that will be incurred in circumventing or clearing road checkpoints.

4.5.3 Status of Large-Scale Farmers

Large-scale farmers (those with holdings of more than 20 ha) are much less constrained by the current system than other producers, because they have more options for marketing their crop and alternative sources of farm income. Many of them focus predominantly on wheat and dairy production, and only produce maize as a supplemental crop.

In the 1988-89 campaign, a number of large farmers in the northern Rift Valley exploited the opportunity to make direct deliveries to the major mills in Eldoret, where they received a premium price of Kshs 240-260 per bag, 20 to 30 percent above the gazetted NCPB price. This practice, which appears to have existed on a much smaller scale in previous years, occurred during the brief "experiment" with liberalization, in which the NCPB authorized the KGGCU and other cooperative societies to take up 20 percent of the formal maize market, and deal directly with the mills. Even after the authorization was revoked, certain prominent farmers are reported to have continued making direct deliveries.[9]

Many of the large-scale farmers produce such quantities of maize that it is probably easier for them to have one transaction with a large miller or the NCPB, rather than multiple transactions with traders. At this point it is questionable as to whether any enterprise other than the Board or the large mills could absorb their output (often as much as 2,000 bags) at one time. Their transport costs per unit are also lower than those incurred by small- and medium-scale producers, because in almost all cases, they own lorries. In addition, both the NCPB's larger depots and the railway line are located strategically near the large farms.

The traditional function of Kenya's grain marketing boards in serving large-scale farmers, dating back many decades, has been effectively preserved for the relatively small

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[9] See the discussion of millers' sources of supply in the Private Sector Analysis, Annex E, for evidence that the NCPB's role in the formal system has slipped well below 80 percent in some areas of the country.

number of African farmers still operating large land units. The Board absorbs the large bulk of grain produced by these farmers; it reduces the need for large farmers to store massive quantities of grain; and it minimizes their transaction costs. As an alternative, entry into the informal trade -- particularly inter-district arbitrage -- is open to those farmers who are willing to absorb the risks and realize substantial returns from moving at least some of their grain to deficit areas where it will fetch higher prices. Either way, they benefit greatly under the current system -- most conspicuously when they have been allowed direct access and delivery to the mills.

4.5.4 Trade Patterns and Behavior Under the Current System

Locally-based retailers and small-scale wholesalers. Those private traders with the most clearly developed "niches" in the current system are operating on a very small scale, either on a sedentary retail basis or on an itinerant basis, moving small quantities of maize between localized surplus and deficit areas. Unlike the medium and large-scale traders, they move such small quantities that they can pack it on matatus or donkeys, avoiding movement regulations. But there are serious limits to growth in this type of trading activity. Donkey traders in Kisii, for example, indicate that individuals are usually limited to moving no more than 3-4 bags of maize at any one time on donkeys within the district. Above this level they are likely to be stopped, questioned, and perhaps detained by the police. Because of the restrictions on movement, small-scale traders are often able to play both a retail and small-scale wholesale function, which would be unattractive to a larger trader. The number of traders involved in the movement of small quantities of maize generates considerable employment, especially for women, in the high population/high potential areas. But as emphasized in the Economic Analysis, the modes of assembly and transportation are relatively inefficient, and they are an important component of high marketing costs.

Unauthorized lorry traders. Lorry traders who engage in clandestine wholesaling absorb the highest risks and potential costs, but if they are able to avoid road checkpoints -- or talk their way through with chai as an inducement -- they can reap the highest returns. The risks and rewards that lorry traders incur are clearly a function of the current system of regulation: to be successful, they must be skilled at maneuvering through that system. But few can afford the visibility that would be associated with expansion to the point where they rely on large fleets of vehicles to realize economies of scale. The Board is designated as the sole legal wholesaler, and virtually no large wholesalers are found in the densely populated, highland areas, while only a relatively small number are found in the deficit areas (usually associated with milling) and in the large farm/settlement areas. Once again, the smaller the scale, the fewer problems one is likely to encounter in the current environment, but at a measurable loss of efficiency.

Implications for women traders. As noted earlier, trading is an important supplementary income source for large numbers of rural women who are primarily engaged in farming. A more specialized group of traders, forced into this livelihood because of the predominant male rights to land, includes women who are widowed or divorced and many younger women who have never married, and who are effectively excluded from farming. While women are found as lorry traders in Kisii and Nakuru districts (approximately 20 percent of lorry traders interviewed were female), their numbers are limited. Very few women serve as NCPB agents, and though there is no official policy discouraging their appointment, most lack the collateral (usually a building) and licensed status in retail trade that are needed. Because of structural and capital constraints, women mainly fill important niches at the retail and intermediate levels. They play a critical role in moving about small quantities of maize and beans to meet local areas of demand. Under the current system they dominate the open-air selling of small quantities of maize (more than 90 percent in the marketplaces visited), small-scale wholesaling and brokering, and the itinerant trade that utilizes matatus and donkeys.

Because of current government restrictions, they have been able to fill roles that are unattractive to larger traders.

Their trading practices are characterized by inefficient handling and transportation methods that are used to maneuver within the current regulatory system, most obviously by having to break bags of maize into small quantities to avoid movement controls. Small-scale traders, even those utilizing donkeys for transport, spend considerable amounts of time devising ingenious ways to clear the hurdles, but in so doing they sacrifice economies of scale, and pass on higher costs to the ultimate purchasers. Nor do they earn large amounts of money. Typical trading margins range from Kshs 0.30 to 0.50 per kg for maize; daily turnover varies substantially according to the season and available supply in a given area, but on an average basis would be well below one 90 kg bag for sedentary retailers and the majority of itinerant women traders.

4.5.5 Impact of the Current System on Millers

The focus in this section is on the small-scale posho (unsifted flour) millers, who are found in most rural and many urban areas of Kenya. As described in the Private Sector Analysis (Chapter 3), the large-scale sifted flour mills derive substantial benefits from their links to the NCPB, from the existing gazetted price structure, and in the most recent marketing campaign, from their proximity to large-scale producers who found ways to make direct deliveries of maize.

Until quite recently, most posho mill owners were men, but there are increasing numbers of cases where women's groups, as well as individual women, have purchased new mills and opened for business. In five of the sample districts taken together[10], women and women's groups, respectively, own 13 and 3 percent of the mills currently licensed to do business. There has been a dramatic increase in the number of posho mills in the past two years. In the districts where time-series data were collected, trends show a greater than 50 percent increase in the number of mills, with Nakuru District showing an 80 percent jump. There is a slightly higher increase in mill ownership among women than among men.

In most of the densely populated smallholder areas and in the large farm/resettlement areas, posho millers usually only process locally-produced maize, while in the deficit areas they are frequently milling imported maize. In the former districts virtually all of the maize trade at the retail level is in grain, with consumers then taking the grain to posho mills to process it. The consumers clearly prefer to buy grain and process it themselves to ensure that it is fresh. In deficit areas, on the other hand, the option of milling their own grain is not often available to consumers. In these areas, especially for the chronic deficit districts (e.g., Turkana and Marsabit), retail maize trade is in posho rather than grain.

Investment options in Kenya's rural areas are relatively limited, and with the exception of retail shops (dukas), the purchase of a posho mill is one of the most attractive opportunities. This is particularly the case where rural electrification has taken place, which significantly reduces the costs of operating a mill. At least part of the explanation for the expansion of posho mills in the deficit districts, such as Kitui, relates to recent activities of the NCPB. By establishing distribution depots in the deficit areas, the NCPB has allowed small traders to purchase grain on a retail basis, rather than unsifted posho flour. In the past, the demand for small-scale milling was especially low in deficit areas during droughts, when local production is near nil and imports were in flour, not grain. The substantial amounts of grain now kept in these areas have allowed small millers to capture a part of the market that was not

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[10] Data on this subject were not collected in Kisii District.

always there prior to the establishment of distribution depots. Near Lake Baringo, for example, the number of small posho mills has more than doubled during the past year, partially in response to the establishment of an NCPB distribution depot. In the past, retailers had to buy maize in flour form from large wholesalers (who owned their own mills), but now have the option of buying it as grain and processing it into flour themselves. The small mills have emerged to handle this new need for processing flour locally. Thus under the current system, small millers in the deficit areas seem to fare well in most production scenarios.

4.5.6 Impact on Urban Consumers

Middle and Upper Income Groups. As a rough approximation, about 75 percent of the maize purchased by the NCPB eventually reaches consumers in urban areas, where about 20 percent of Kenya's population resides. The major primary customers of the Board are the large millers who process sifted flour predominantly for the urban markets, particularly those of Nairobi, Mombasa, Nakuru, and Kisumu. While there is some smaller-scale sifted flour milling in the large cities, particularly Nakuru, and some informal transfers of grain between rural and urban areas, most consumers in the large cities (especially Nairobi) are dependent on the formal NCPB system. The strong relationships between the Board and the large millers ensure that maize flour is available in urban areas. In past drought years, such as 1984, most of the available white maize has been channelled to urban consumers via the large mills, while the rest of the country received varying proportions of white and yellow maize. Urban consumers, particularly of the middle and upper-income groups, clearly benefit more than other consumers under the current NCPB market system. Although during a bumper harvest year, the gazetted price system keeps the price of maize flour above market levels, they are guaranteed access to this staple food during normal and drought years.

Low-Income Consumers. Consumption of sifted flour is income-responsive among urban consumers, with perhaps the poorest 25 percent of consumers still depending on grain to be milled as posho when they can obtain it. Under the current system of controls, low-income urban consumers often do not have the alternative of consuming the cheaper posho product, rather than sifted flour. (Storage and sale of grain in urban areas by entities other than the NCPB is subject to government intervention, as was demonstrated in late June 1989 when the police confiscated maize held by small-scale grain traders who were accused of undercutting the Board.) The high- and middle-income urban consumers clearly prefer the consumption of sifted flour and can afford to do so. The gazetted price for the latter (Kshs 5.60 per kg, or US $ 0.27), is 33 percent higher than for posho (Kshs 4.20,or US $0.20). While an in-depth comparative analysis has not been undertaken, it appears that the current system impedes the development of competitive small-scale milling and trade in posho in the largest cities.[11] If this is the case, it works to the disadvantage of low-income consumers. Data on urban expenditure patterns show that up to 40 percent of total food purchases are allocated to maize flour among low-income families (Casley and Marchant 1979), which implies that considerable budget savings could be attained if coarser flour were available.

4.5.7 Status of Consumers in Rural Deficit Areas

Seasonal Deficit Areas. The current system especially disadvantages those consumers in seasonal deficit areas that are spatially quite close to the major surplus areas of the northern Rift Valley. These include many of the outlying areas of the Lake Victoria

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[11] Annex E contains an explanation of the incentives, on economic grounds, that lead large millers to concentrate on production of sifted rather than coarse flour.

basin, such as Siaya and Busia Districts. Consumers in these areas pay high retail prices for maize grain (up to Kshs 6 per kg, or Kshs 540 per bag in the pre-harvest period of May-June), while maize is available in nearby districts (e.g. western Uasin Gishu) at half the price, or less. The type of arbitrage involved between these areas is conditioned by the inefficiencies involved in assembling wholesale quantities, and the probability of paying "rents" along the route. The large price spread between these areas, across distances of 50 to 150 km, is perhaps the most striking market distortion resulting from the existing system: retail prices in the importing areas reach levels substantially higher than those paid by urban consumers 400 km away in Nairobi, let alone Mombasa.

Chronic Deficit Areas. The number of lorry traders willing to move grain illegally into the more remote, chronic deficit areas (e.g., Marsabit and Isiolo Districts) is clearly limited. Roads are often poor in these areas, and traders are reluctant to go into them, especially since effective demand/population densities are relatively low and transport costs are high. Njiru notes, in the case of northern Kenya, that "distribution problems due to the large distances involved make posho shortages at Isiolo and Meru, the main supply centers for northern Kenya, common even in good years" (1982:14). The added burden of movement controls further discourages lorry traders from working in these areas. These are the districts that suffer particularly severe consequences in drought years. The NCPB has countered the food security problems in some of these areas by establishing distribution depots. These have been established in Baringo, West Pokot, Samburu, Turkana, and some other chronic deficit districts. As noted earlier, those consumers who reside in such districts where the Board has opened a depot have benefited under the current system.

4.6 IMPACT OF PROPOSED POLICY REFORM MEASURES IN TERMS OF "WINNERS" AND "LOSERS"

4.6.1 Introduction

This section provides commentary and supporting argument for Table 4.2, which characterizes probable "winners" and "losers" from proposed policy reforms and complementary transport system investments that would be undertaken through the KMDP. Here, the main focus is on the consequences for different socio-economic groups of policy measures which are aimed at reducing the costs and raising the efficiency of maize and bean marketing. Because the concept of an "average year" masks very serious fluctuations, where applicable the table differentiates results that would occur in three different situations: drought years, normal years, and bumper harvest years. The impact of infrastructure investments, primarily in the rural road system, is examined in section 4.7. In conclusion, section 4.8 offers suggestions on how to monitor the results of the program, and mitigate potential negative impacts on vulnerable groups.

The heart of the KMDP policy agenda, as argued in the Economic Analysis, is the elimination of movement controls on maize. Two complementary items on the agenda, which form part of the conditionality for U.S. dollar DFA funding, involve a public information campaign to clarify Kenya's internal trade policies and regulations for agricultural commodities, and the descheduling of beans, sorghum, and millet. Implementation of these policy changes promises to have far-reaching consequences for almost all of the market actors who handle the affected commodities, especially maize, from producers to consumers.

Ultimately, the prospects for a stable policy environment that allows free movement of maize throughout the country are closely linked to the market role that will be played by the NCPB. The reductions in costs and improved efficiencies targeted by the KMDP rely on an already vigorous private sector, whose market share can be

expected to grow while that of the NCPB shrinks. But the rate at which this will occur depends in large measure on the timing and content of decisions -- outside the framework of the KMDP -- that will determine the future role of the Board, and on the emergence of a comprehensive, well defined national strategy for food security.

This analysis confines itself to the specific impacts which can be anticipated from the DFA policy agenda items negotiated between USAID and the GOK. The data collection and analysis functions of the ARMES unit should be designed to monitor these impacts and to more rigorously analyze the links between changes in market actors' behavior and the policy changes introduced under the KMDP. These changes can be expected to enlarge opportunities for some actors, while constraining them for others. As shown in Table 4.2, the major beneficiaries are likely to be medium-scale producers, rural consumers in seasonal deficit areas, low-income urban consumers, and large-scale wholesale traders. The NCPB, for reasons spelled out above, has not met the needs of these groups very effectively, and the repression of private trade has limited their access to more efficient, lower-cost marketing channels.

4.6.2 Smallholders in High-Potential, Densely-Settled Areas

In the short term, the effects of market reform on this group are likely to be quite small, because of the disaggregated nature of the existing informal maize trade, and its relatively insignificant contribution to farmer incomes. While increased market transparency (resulting from publicity on the "rules of the road" and dissemination of price information) should promote a freer flow of trade, opportunities for wholesaling large surpluses will be scarce, and most transactions in maize will continue to take place in the post-harvest season, when the Board (assuming its network of agents and PMCs remains intact) offers convenience and attractive prices relative to the informal trade.

- Under conditions of a normal year or a bumper harvest, maize and beans not purchased by the Board for eventual shipment outside these areas will continue to circulate in localized, retail channels.

- With a freer flow of trade in deficit years, however, farmers in the highland districts of western Kenya (historically much less susceptible to drought than the rest of the country) are likely to benefit from enhanced competition among traders in a situation of rising prices elsewhere in the country.

In areas of Kakamega and adjoining districts where improved storage technologies have been introduced under the USAID-financed On-Farm Grain Storage Project, it is possible that some farmers will begin to time their maize sales during the year so as to attain favorable prices under a liberalized market. But adoption of improved storage is not yet widespread; immediate cash needs at harvest time tend to be substantial; and up to now, these areas have not produced large surpluses of maize.

In the medium to longer term, one could expect that some of the land currently under maize would be shifted to higher-value crops, as the reliability of food distribution improves between different districts and provinces of Kenya. On the small landholdings of Kisii and southern Kakamega, a shift of only 0.1-0.2 ha into horticultural crops would have a measurable impact on aggregate farm income. But the transition from being net producers of maize, or at least self-sufficient, to being net consumers (with income from other crops providing a basis to purchase grain) will take time, even under the most favorable market conditions. Given the history of policy and institutional uncertainties in the cereals sector, a 5 to 10 year time horizon appears reasonable for anticipating production responses based on stable patterns of efficient trade, and sustained confidence in the quantity and price of grain that is available.

TABLE 4.2

PROBABLE IMPACT OF PROPOSED GRAIN MARKETING REFORMS ON DIFFERENT MARKET ACTORS

Category	Type Year	Benefits and Costs of Current System	Probable Impact of Reforms	Comments
Smallholders in grain-producing areas	Bumper Normal	Slight advantage (access to NCPB assures market)	Modest gains in farm income resulting from lower marketing costs	Most sell small amounts soon after harvest when prices are low.
	Deficit	Costs-moderate	Farming income would rise as prices affected by scarcity	In highload areas they are less prone to drought, would benefit as prices rise.
Medium-Scale Farmers (8-20 ha)	Bumper Normal Deficit	Disadvantaged (only one outlet for their surplus)	Significant gains in income for those who concentrate on maize production	Produce enough grain to attract large traders/long operators. Opening of market channels would allow them to time sales until prices are until prices are favorable.
Large-Scale Farmers (over 20 ha)	Bumper Normal	Can deal with NCPB efficiently and use influence to enter unofficial trade.	Higher produce price would make maize a more attractive crop.	Still likley to deal with NCPB for bulk sale, but direct sales to mills would also be attractive. Alternative crops (esp. wheat) cushion risk of maize price fluctuations.
	Deficit	Restricted from moving surplus to deficit	Large financial benefits would accrue.	Would have direct access to drought-affected areas.
Small-Scale and Medium-Scale Traders	Bumper Normal Deficit	Small traders can take advantage of low-volume trade under current system. Medium-scale operators are disadvantaged since they can't move maize legally across district boundaries.	Some would be displaced from current employment as large trading volumes and lorryload shipment methods are permitted.	Would retain niches in retailing and in "first handler" assembly. Smaller-scale wholesales likely to be squeezed out unless they shift to more cost-effective means of transport.
Large-Scale Traders/ Wholesalers	Bumper Normal Deficit	Disadvantaged since cannot operate with economies of scale.	Lifting of movement control would make this profitable and attract new entrants.	Would expand wholesaling operations and realize greater efficiencies.

TABLE 4.2 -- Continued

Category	Type Year	Benefits and Costs of Current System	Probable Impact of Reforms	Comments
Posho Millers	Bumper Normal Deficit	Incur slightly higher costs due to restrictions on grain movement.	This sector of milling industry would continue to grow.	Would have no difficulties in obtaining grain. In urban areas, members of small mills likely to grow.
Large Millers	Normal Deficit Bumper	Can't lose: either assured supply from NCPB or able to buy cheaply through back door.	Current advantages would be reduced.	Would have to compete for their supply vs private traders and smaller millers.
Middle/ High-Income Urban Consumers	Normal Deficit	Benefit significantly from fixed price for flour and dependable supply.	Only minor impact, except in drought years when grain is scarce.	Prices impact for sifted flour dependent on millers' response to few trade conditions and CRSP pricing policy decisions.
	Bumper	Product price not adjusted to supply conditions.		
Low-Income Urban Consumer	Normal Bumper Deficit	Disadvantaged because cannot have good access to cheaper posho flour.	Beneficial impact on this group.	Food expenditures should be reduced done to increased supply of grain and availability of posho flour.
Consumers in Seasonal Deficit Areas	Normal Bumper Deficit	Disadvantaged because prices distorted due to restrictions on trade.	Very positive impact as supplies increase and "hungry season" maize and beans prices fall.	Seasonal price swings should diminish as supplies move more freely.
Consumers in Chronic Deficit Areas	Normal Bumper Deficit	NCPB distribution network has improved food security in some areas.	Impact is likely to be small in most of these districts.	Not currently served by competitive private trade. NCPB is likely to remain major supplier.

4.6.3 Medium-Scale Farmers

As compared with their "captive" status in the current system, producers in the 8 to 20 ha range[12] in the resettlement areas of the northern Rift Valley and western Kenya stand to benefit directly from increased market transparency and elimination of movement controls. They are attractive customers for wholesalers. because their output (typically 100 bags, often considerably more) can be efficiently moved by lorry without time-consuming, intermediate assembly on a bag-by-bag basis. Even in the first year of the proposed program, when the "rules of the road" would legitimize the current 10-bag rule, there would be incentives for smaller- and medium-scale traders to purchase and transport pickup-loads of grain from producers in these areas to market destinations where prices are higher. Subsequent relaxation to a 100-bag level, and eventual unrestricted movement, would further accelerate this trend.

Given the importance of maize as an income source for producers at this scale, the opening of alternative market channels would be highly advantageous. Most of them have enough cash resources and storage capacity to be able to time their sales for optimum returns under a liberalized system. As described in the Economic Analysis, one of the most striking indicators of inefficiency in the current system is the 2:1 price ratio between surplus areas in the northern Rift Valley (where medium-scale producers predominate) and seasonal deficit areas in the Lake Basin in the May-July period. As this price distortion is reduced through a freer flow of trade, people in both areas stand to gain (see section 4.6.8 below).

Depending on their location relative to NCPB facilities, their volume of production, weather and harvest conditions, and other factors, many of these farmers will continue to do business with the Board. They key point here is that doing so would no longer be an obligation, but rather, one of several options available to these producers. The attractiveness of the Board as a purchaser would doubtless be greatest under bumper harvest conditions when it is able to provide a guaranteed price above free market levels. But this capacity, of course, depends on the financial resources available to support a specific floor price for producers.[13]

4.6.4 Large-Scale Farmers

The impact on this category of producers is likely to be quite modest in the short term, given their already advantageous position in the maize industry. They have benefited from NCPB's bulk buying and storage and transport facilities (including access to the railway system), and many of them also enjoy privileged access to private markets and to large millers. In bumper and normal harvest years, they are likely still to sell most of their output to their existing customers (the Board and/or the flour mills), regardless of liberalization of the market. They produce such large quantities of grain that private traders are unlikely to be able to absorb more than a portion in most

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[12] Farm size is not the sole determinant of market opportunities, however. In areas where smaller holdings are interspersed with 8-20 ha plots (e.g. Lugari Division of Kakamega District, parts of Bungoma District, and most of Kericho and Nandi Districts), the size and accessibility of the overall maize surplus will be the main factor in attracting private trade.

[13] As noted in the Economic Analysis, a pricing study has been commissioned under the EEC-sponsored Cereals Sector Reform Program, but as of September 1989, the findings and recommendations from that study have not been submitted to the GOK, let alone adopted.

years. During deficit years, however, those large-scale maize producers not seriously affected by drought are likely to benefit from a liberalized market. Most own lorries and could transport their grain to deficit areas, fetching a price that should be above what the Board will pay them. As noted in the previous section, most large-scale farmers earn substantially more income from wheat and dairy production and, thus, any reform in the maize market is likely to only minimally affect their overall incomes. They have the resources to easily adjust production and investment patterns according to market conditions.

4.6.5 Impact on Trade Patterns and Behavior

Locally-based retailers and small-scale wholesalers. Thousands of people presently derive self-employment from the informal trade, handling small quantities of maize and beans. As noted earlier, this category includes sedentary retailers attached to specific localities and marketplaces, and itinerant traders who assemble quantities for transport between surplus and deficit zones to exploit price differentials. At the retail level, sedentary traders will continue to serve an important function in rural areas where small quantities of maize and beans circulate throughout the year. Changes in the policy framework, in movement regulations, and the status of the road network are not likely to have a direct impact on their trading activities.

The situation is likely to be different for itinerant traders who operate as small-scale wholesalers under the current system. Much depends on whether their "niche" is based on spatial advantages (proximity to disaggregated, remote production areas) or on maneuvering through the system with labor-intensive but inefficient methods of shipment. To the extent that they operate directly at the farm gate, off the road network, collecting maize offered for sale where the NCPB and larger-scale private traders do not operate, the terms of trade are unlikely to change. Reliance on donkeys, bicycles, and headloads for relatively short hauls will continue to offer the most efficient means of transportation in these conditions. This form of first-stage wholesaling, which moves the commodity into local market centers from scattered sources of supply, is unlikely to experience heightened competition as a result of policy reforms.

At the next point in the marketing chain, however, where wholesaling functions involve shifting the commodity between market centers, often over distances of 50 km or more, a significant restructuring of the trade can be anticipated. Initially, with unrestricted movement by the pickup-load (10 bags) under widely publicized "rules of the road", economies of scale will become feasible which cannot be realized under current conditions; with subsequent adjustment to lorryload volumes (100 bags) and then unrestricted movement, this will be reinforced. The use of accompanied shipments in half-bags on matatus and buses, for eventual reassembly at a distant market center, will become obsolete, and the chain of transactions between producer and eventual consumer -- as argued in the Economic Analysis -- will typically be reduced by at least one intermediary.

Lorry traders. This category of actors will obviously benefit once the movement control limit is raised to 100 bags through implementation of the policy agenda. Haulage by lorry between market centers, and over longer distances between major surplus and deficit areas, is an essential attribute of more efficient wholesaling. Although this form of trade and transport exists at present, it depends on privileged access to permits, payment of "rents", or a combination of the two. Traders who are already engaged in this trade would have incentives to expand their activity; and equally important, increased competition can be expected as current underutilized haulage capacity (a phenomenon noted in the transport sector study, Chapter 5) is brought into the legally sanctioned trade. Those who have the financial resources to invest in storage facilities and tap the enormous Nairobi and Mombasa markets stand to benefit the most.

For the benefits of more efficient wholesale trade to be fully realized, however, improvements in the road network are needed: as argued in Chapter 5, the critical segment for investment appears to be classified C and longer D roads, those not covered by existing Ministry of Public Works programs. Reduced operating costs for lorries, resulting from road rehabilitation and adequate maintenance thereafter, are an important factor in facilitating the wholesaling function and ensuring a high degree of competition in the lorry trade.

Implications for women traders. These adjustments in the patterns of trade, favoring larger-scale transactions and shipment of consolidated (lorryload) quantities, will clearly change the opportunities and constraints facing current actors in the system. As noted above, retail trading and farm-to-market wholesaling of quantities below say five bags, especially in remote and/or disaggregated production areas, will remain viable as economic niches for women traders. The degree to which women traders can achieve upward mobility into larger and more profitable wholesaling will need to be carefully monitored during program implementation. Access to working capital from commercial banking sources is likely to be a serious constraint for many women traders; but the fact that women in Nakuru, Nyeri and other districts have successfully entered the long-distance lorry trade (when it remains illegal) suggests that the barriers are not insurmountable. Some of them now own vehicles of their own, purchased with earnings from their trading activities. Encouraging evidence can also be seen in the very active, and completely unregulated, trade in potatoes, where women are dominant.

As noted earlier, over-regulation of the formal sector has spawned an informal sector industry that reaps only subsistence-level wages. Under a reformed market some of these traders should be able to find new commercial niches, or move into more lucrative commercial sectors, such as fruits and vegetables. As Safilios-Rothschild and Mburugu (1987:8) noted, vegetables and fruit are women's cash crops par excellence, rather than maize and beans.

4.6.6 Impact on Millers

Posho millers. This group is likely to benefit slightly under the proposed market reforms. Except in deficit areas, most rural posho millers process grain that has been produced in the immediate locality, and is then carried back home for direct consumption; since it does not enter the market, it will not be affected by price changes resulting from liberalization, nor will this small-scale end of the processing industry. Clearly, though, if availability of imported grain improves in deficit areas, then one would expect some further expansion of milling activity, as was observed in 1988-89 in the area adjacent to Lake Baringo.

There are better prospects for growth of posho milling in low-income urban areas, since the consumers who live there prefer the cheaper product to sifted flour. Current regulatory practices and movement controls restrict the supply of grain in the urban areas, which in turn holds back expansion in processing facilities. This can be expected to change as grain begins to move more easily, and at lower cost, into urban demand areas.

Flour millers. The larger mills, which are generally situated close to the NCPB's storage facilities, have been favored by the gazetted price structure of the formal system. They have done even better, in financial terms, when able to purchase maize through the "back door", directly from large farmers or lorry traders. Even under conditions of market restructuring and probable growth in the market share of private traders, however, it should be emphasized that most of Kenya's large millers have the resources and experience needed for successful adjustment.

4.6.7 Impact on Urban Consumers

Middle- and High-Income Consumers. As noted, the current system works to the benefit of high- and middle-income urban consumers in deficit and normal years, by providing both a guaranteed price and reliable supply. Those advantages would not be directly affected by the proposed KMDP policy agenda, insofar as the larger mills continue to produce adequate quantities of maize flour, based on the attractive milling margin described in Chapter 3. That margin, in turn, is a function of NCPB's sale price to the mills and the GOK's gazetted consumer price for maize flour. It is possible to imagine conditions under which either of these prices would change, but decisions on these matters fall outside the scope of the KMDP.

Low-Income Groups. The current system of movement controls penalizes low-income consumers who prefer less expensive, unsifted posho flour, but have trouble obtaining grain in urban areas. Under a reformed market this category should benefit since access to grain will be opened up. Given the important part that maize flour plays in household budgets, substitution of posho for sifted maize flour will save these consumers considerable amounts of cash. If we use the average consumption figure of 120 kg per adult unit per year for Kenyans and an average price differential between posho and sifted flour of 30 percent, then a family of five adult units currently consuming 75 percent sifted/25 percent posho spends Kshs 3,150 annually (US $154) on maize flour. If the relative proportions consumed were changed to 75 percent posho/25 percent sifted, then at current prices the amount spent annually would be Kshs 2,730, a 13 percent reduction. For a low-income consumer, this amounts to a considerable savings on food expenditures.

4.6.8 Impact on Consumers in Rural Deficit Areas

Seasonal deficit areas. These consumers suffer disproportionately under the current system, because market distortions have led to drastically increased retail prices in the months immediately preceding the long rains harvest. Parts of the Lake Basin exemplify this problem, as do parts of Central and Eastern Provinces where maize production is not emphasized, or is insufficient to supply adequate food over the full year. Such areas tend to be poorly served by the Board, and traders incur considerable transaction costs to move grain into them, even when they are geographically very close to surplus areas. They are likely to benefit more than any other category of consumers under a liberalized market, and the results should be quite easy to see, in the form of a much narrower price spread between the areas in question. Many of the "hungry" areas have experienced high rates of labor migration, and have large proportions of farms managed by women. The scarcity of cash and the exhaustion of stocks from the previous harvest place a heavy burden on those families. Increased availability of maize, at lower prices, would ease this burden substantially and increase purchasing power for other goods.

Chronic deficit areas. In contrast to the above category, these consumers are usually distant from major surplus areas. They are less likely to be well served by private traders under a reformed system, due to their remoteness and relatively small populations. Expansion of the NCPB's network of distribution depots has helped to fill an important gap: traders can now buy grain much closer to points of distribution, reducing their transport costs considerably. Given the limited potential for private trade, it is assumed that most of these depots will be maintained, at least for the foreseeable future, as a means of providing enhanced food security. In chronic deficit areas not yet served by the Board, the KMDP should monitor the extent to which private traders are taking up distribution functions under a liberalized market.

4.7 EFFECTS OF PROPOSED INFRASTRUCTURE IMPROVEMENTS

4.7.1 Road Improvement Program

Chapter 5 presents analysis and recommendations for USAID support (with local currency, PL 480 generations) to a program for upgrading of market-to-market roads, specifically C and longer D roads in the classification system used by the Ministry of Public Works. Because of the relatively high level of traffic on the C roads and many of the longer D roads, the rehabilitation work would depend on heavy machinery, although maintenance could be labor-intensive following the system developed and used under the existing donor-supported Minor Roads Program (MRP). It is proposed that KMDP financing for improvement of the long D roads and the C roads be based on private contracting, because of the inadequate fleet of MPW machinery and budgetary problems affecting the ministry.

While the need for improving market-to-market roads is undeniable, the proposed intervention will only have the intended consequences if certain factors are taken into account and adequately addressed. Most importantly, the selection process for road projects must be based on criteria related to marketing functions and linkages between production areas and market centers. Recent experience under the MRP indicates that the use of Divisional and District Development Committees to select roads for improvement or upgrading does not necessarily conform to MPW's pre-established social and economic criteria or the specific guidance provided by District Engineers. However, the process does tend to weed out many of the more questionable roads which may have political sponsorship, but little socioeconomic value. Further training and technical assistance provided under the KMDP could be used in developing this capacity at the district level, and in enhancing MPW's capabilities in transport economics.

4.7.2 Employment Impact

The employment effects of the roads program under KMDP will depend on the type of methods used for maintenance. If maintenance of class C roads is changed to be labor-based, then this will set a precedent and also result in more long-term employment opportunities for people in the affected areas, especially low-income people who are currently unemployed or underemployed. Experience gained under the MRP is expected to guide the maintenance activities on the KMDP's market-to-market roads.

In terms of labor-based maintenance, the system developed and used in the MRP is commendable (see the discussion in Chapter F). Careful attention has been given to organization and management, and it seems to be working well. In principle, laborers are to be recruited from inhabitants along the road, although in practice a small crew often develops in a district which moves from road to road. Daily attendance records are kept on each road which provide information disaggregated by sex, and several specific studies under the MRP have focused on the involvement of women in the program. A study carried out in November/December 1988 found that out of a total of 20,694 people working on various MRP roads, 17 percent were women. Women's participation was lowest on the staff and routine maintenance (7 percent in each) but higher among casual laborers on improvement works (23 percent) and periodic maintenance (18 percent). A follow-up study which involved a one day survey on 100 sites during February and March 1989 found that women are engaged in a whole range of activities, those classified as both heavy and light duties. At the same time, however, the survey found that on a large number of sites the use of women workers was restricted to a few specific activities. Only a few women were found in supervisory positions.

A Plan of Action has been proposed and discussed to increase the participation of women in the MRP. It includes making information about job opportunities more widely available. Currently chiefs are responsible for disseminating information at meetings or informally. The attention being given to increasing women's participation, spurred by donor concerns about equity, makes this program highly responsive to needs in the rural areas. It also serves to indicate the extent to which the MRP is a well established and dynamic program. KMDP-financed road activities will be based to the extent possible on the successful features of this action plan.

At times there are difficulties with labor availability and rates. For example, during the peak agricultural season in both Nakuru and Nyeri Districts, labor rates and opportunity costs are higher than Kshs 23 per day. Therefore, attendance tends to drop. However, the difficulties seem to be seasonal and do not present a major impediment to the program.

In sum, it can be projected that USAID support to a labor- based maintenance program would directly result in increasing long-term employment opportunities for the rural poor, since it is the poor who are willing to undertake such manual work. Moreover, at least 25 percent of the jobs will probably be held by women if the Plan of Action is implemented.

4.7.3 Impact on Market Conduct and Performance

Transporters and traders should derive tangible benefits from improved roads in the form of faster, more efficient operations and lower costs. Traders are likely to shift to more efficient modes of transport (i.e., to vehicles with higher capacities) as the transport linkages from production areas to market centers and between market centers are improved. In addition, the relaxation of movement controls and improvement of roads should increase the competitiveness of the transport industry and drive down transport rates for traders. In comparison to the current system, a larger number of transporters should emerge to move maize between districts, rather than only those who can operate under the current system, charging high costs including provision for chai. In short, the proposals for liberalizing the marketing of maize and beans should yield an environment for more efficient operations by transport providers.

The Transport Sector Analysis (see section F.4.2) demonstrates that the running costs for a lorry could be reduced by Kshs 6.81 per km if existing C and D earth roads were upgraded to gravel surfaces. While it is anticipated that the lower costs will be passed on in part to both producers and consumers, this is an issue that will require monitoring. As with the proposed market reforms, the improvement of "linkage" roads may result in the replacement of some itinerant traders by large-scale lorry traders, as the latter group moves into areas where road constraints had previously inhibited entry. For itinerant traders, poor road conditions often work in their favor since they are willing to walk or take donkeys into areas which are less accessible to vehicles. However, the proposed KMDP investment will have little or no impact on short "access" roads with low traffic counts, which are already covered under the MRP. Those itinerant traders who operate exclusively at the lower end of the market chain (i.e., where D and E roads, or road-to-farm trails, are the main infrastructure) are not likely to be greatly affected by the KMDP roads program. Those itinerant traders who have good market linkages should still play an important role in collecting produce at the farm-gate and selling to large-scale traders; or moving produce from rural areas served by "access roads" to the C (market-to-market) and national trunk roads.

4.7.4 Status of Market Infrastructure

The study team found only minimal need for investment in physical market infrastructure, particularly when compared to alternative uses of programs funds. For market women who are regular traders in either wholesale or retail markets, there is a need for physical storage space at the open-air markets. A dependable watchman is important, as is a place to keep their produce dry and, preferably, locked away at night. Beyond the storage needs, however, there is little need to build improved market stalls, except in the largest market towns. Most of the newly-constructed physical marketplaces in small and medium-sized centers are not used to buy and sell produce; rather they are used to store goods. In fact, women traders in the new Karatina market stalls report that they take their produce outdoors and sell it on the ground, especially on market days, since customers seem to consider that they get a better bargain from open air marketers. This pattern was also observed in Kakamega District. Furthermore, many of the newly built municipal market stalls are priced above the margins of small-scale food traders. Thus, if any KMDP funds are earmarked for market infrastructure, priority should be given to storage facilities for small-scale traders.

4.8 REQUIREMENTS FOR MONITORING AND EVALUATION

4.8.1 Monitoring the Socioeconomic Impact of Market Reforms Under the ARMES Component

A program of this kind requires careful monitoring for at least three reasons:

- It is targeted on Kenya's principal staple commodity;
- It is likely to affect the incomes and purchasing power of a very diverse set of socioeconomic groups; and
- It is predicated on continuous dialogue regarding policy adjustment, with both the donor and host government requiring hard evidence of program results as they approach each successive implementation step for policy and investment decision making.

Details of the proposed Applied Research, Monitoring and Evaluation System (ARMES) are provided elsewhere. In this concluding section, brief suggestions are put forward on ARMES priorities and methods for addressing the key issues raised in the preceding Social Soundness Analysis.

In terms of overall KMDP objectives, there are four critical functions to be served by the ARMES unit:

- First, a capability to report market price trends and patterns so that spatial and temporal price differences (which are expected to narrow as a result of program interventions) can be measured;
- Second, short-term and recurrent diagnostic studies will be needed to dig deeper on issues arising from the analysis of price data;
- Third, longer-term applied research should be conducted, drawing on the Policy Analysis Matrix (PAM) methodology and possibly other techniques, to improve understanding of maize and beans commodity systems; and

- Finally, assistance should be directed to helping the GOK develop and refine a comprehensive strategy for food security.

In the three-year time frame of the program, the first two functions are likely to be the most useful in addressing questions of social impact. The market information system, relatively simple in design, provides a direct, verifiable means of measuring the degree to which marketing costs are reduced. To take perhaps the most clear-cut example encountered in the field study, monitoring the expected reduction in the observed June 1989 price ratio of 2:1 between Uasin Gishu and Siaya should be a very straightforward matter. The logic of the KMDP (what is "supposed to happen") is relatively simple, and bottom-line results, insofar as marketing margins are concerned, should be transparent.

To augment the ongoing collection of price data, other studies and problem-oriented surveys will be needed, specifically to analyze the flow of expected benefits to different socioeconomic groups based on their role in the commodity system (producers, traders, consumers) and their geographic location. Preliminary suggestions on two key areas are offered below.

Consumption/Demand Studies. Using simple household survey techniques, a baseline survey should be initiated in two low-income and two middle-income areas of Nairobi (e.g., Dandora, Kibera, and Mathare Valley), and one of each in both Mombasa and Kisumu. [14] The surveys should focus on food purchasing behavior and preferences in relation to household budgets and income levels, and should monitor changes in relation to price trends for grain, posho, and sifted flour. Samples of 40-50 households in each location should be adequate, in order to limit the cost of data collection, processing, and analysis.[15] Following a baseline survey in Year 1 of the program, followup surveys with the identical sample should be undertaken in Years 2 and 3. Among the key points to be analyzed is whether or not, as predicted in the previous section, posho flour will be substituted for sifted flour among low-income households.

The second type of consumption/demand study would be undertaken in the seasonal and chronic deficit areas. A baseline consumption/expenditure survey of 40-50 households in each of two seasonal deficit areas (e.g. Vihiga Division of Kakamega, and a comparable area in Nyeri) and two chronic deficit areas (e.g. Baringo and Kitui) should be implemented during Year 1, and should be updated at least every six months, to capture differences between post-harvest and pre-harvest conditions. To the extent possible, the consumption survey instruments in the deficit areas should resemble the urban ones, in order to make the results comparable. The social analysis in the report suggests that consumers in seasonal deficit areas will be big "winners" under a scenario of enhanced private trade, whereas those in the chronic deficit areas are likely to remain primarily dependent on the NCPB supply and distribution network. Assuming that the network operates on its present basis, it will be important to see if many private traders/wholesalers enter these areas to compete with the Board.

Impact on Traders. The previous analysis suggests that as wholesaling opportunities open up, those traders who have access to motorized transport will be advantaged, and many of the practices employed in the informal trade under present conditions will become obsolete. The chances that this will occur appear especially great

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[14] The other large towns (Eldoret, Nakuru, etc.) are in major surplus areas and should not be surveyed unless there are patterns in the price data that suggest the need to do so.

[15] If the Central Bureau of Statistics has recent consumption data available on Nairobi or other urban areas, this information should be utilized in designing the survey instrument.

in the densely-settled areas, where open-air markets and women traders dominate. A sample of small-scale traders (40-50) should be surveyed at the start of the program in each of the six districts where the KMDP is implemented. Information on volume, income, products sold, marketing costs, and market practices/locations should be gathered. Certain of these data were collected by this team during May-June 1989 and proved not to be difficult to gather. The baseline survey should be complemented by some qualitative case studies of small-scale traders, which can be updated during program implementation. The initial baseline data on small-scale traders should be updated at least every 12 months during the program.

The analysis of trader activities should be driven by three critical questions:

- Have small-scale traders been forced out of certain markets by larger traders? If so, have they found other informal trading activities (e.g., vegetables) to pursue?
- Have small-scale traders been able to find new and more lucrative niches within the reformed maize/bean market?
- Have any small-scale traders (particularly women) been able to take advantage of new wholesaling/large-scale trading opportunities?

4.8.2 Monitoring the Impact of the Infrastructure Program

As an input to the ARMES component of the KMDP, monitoring and evaluation of the market roads program carried out by the Ministry of Public Works should collect and analyze two types of information. The first involves a system of periodic traffic surveys along market linkage roads, while the second involves case studies of a diagnostic kind similar to the consumption/demand and trader surveys described above.

Periodic Traffic and User Surveys. These surveys should be conducted at least four times each year (early and late in the rainy season, and early and late in the principal marketing season) along both (a) market linkage roads that have been improved under the KMDP and (b) unimproved C and longer D roads that form part of the marketing transport system. These surveys should measure traffic flows and record the origins and destinations of transport providers. Survey instruments should include questions on socioeconomic characteristics of different users of the transport system, disaggregated by sex.

Case studies in selected sample areas. The case studies will be carried out in at least three districts[16], with specific localities selected on the basis of population densities, road condition prior to improvement and the extent to which to maize and beans are sold and purchased. A sample will be drawn of road catchment areas within each selected district. Prior to road improvement or its completion, a rapid survey will be taken of households in the impact area and an inventory conducted in markets along the road focused on traders and vehicle operators servicing the markets. From the rapid survey, a sub-sample of farming households, traders and vehicle operators should be drawn; these are not expected to be large and hence they will not be statistically representative. The objective will be to focus on a) the extent transport costs are lowered and identifying the groups that benefit from lower costs; b) changes in marketing behavior and the distribution of positive and negative effects with attention to gender issues; and c) interrelationships and causal factors.

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[16] Ideally, all six districts covered by the KMDP road program should be included in this activity if resources permit.

4.8.3 Mitigating Potential Negative Consequences

The combination of price and traffic monitoring and selected diagnostic surveys should generate a considerable body of information on whether the expected impacts of the program are materializing, and the distribution of benefits to various socioeconomic groups. The design of the program,data collection and analysis activities discussed above there are certain implementation features of the proposed program that can assist in mitigating any potential negative social consequences. These include:

- It is assumed that the existing network of NCPB storage facilities in the more remote chronic deficit areas will be maintained, to minimize the risk of deficient supply. These are the areas in which the incentives for private traders to expand activities as a result of deregulation is likely to be weakest.

- To increase opportunities for smaller-scale traders to expand activities in a deregulated environment that favors economies of scale, certain measures may be appropriate to alleviate working capital constraints. One possible means of doing this is through credit activities supported under the rural enterprise projects in the USAID portfolio. This can be done through existing Kenyan institutions (banks and NGOs); possibly an allocation of local currency funds under the KMDP could be channelled through those projects. A key target group here is women traders who tend to be the most capital-constrained and to be perceived as high-risk borrowers given their lack of fixed collateral.

- In deficit years, as prices move upward, it is likely that some targeting of food supplies (with or without subsidies) may be required for certain urban and rural consumers. Efforts to develop a comprehensive food strategy might include a plan of action for the NCPB to place priority on maize deliveries to the urban areas most distant from surplus zones (e.g. Mombasa) in drought years, to cushion the effects of liberalization on urban consumers.

- The program should continue to examine the feasibility of utilizing cooperatives for maize marketing, as occurred in parts of Kakamega and Uasin Gishu in 1988/1989. Infrastructure constraints in the settlement areas of Kakamega (e.g., Lugari Division) may still discourage private traders from operating there until roads are improved. The use of primary societies for collecting maize from members and selling it to private traders would help counteract monopsonistic conditions if they emerge.

- Coordination of infrastructure activities with the ongoing Minor Roads Program will ensure that lessons learned from the MRP (including its Action Plan) are incorporated in the employment practices of the MoPW and private contractors, with special reference to maximizing opportunities for women's participation.

CHAPTER 5

ANALYSIS OF TRANSPORT SECTOR IMPROVEMENTS RELATED TO MARKET DEVELOPMENT

5.1 INTRODUCTION

Transportation plays a pivotal role in agricultural marketing, and the components of a rural transport system must be integrated in a manner that delivers efficient movement of commodities and allows other marketing functions to operate effectively. For purposes of analysis in this chapter, the transport system includes three components: (a) the road network; (b) the transport suppliers operating on the roads; and (c) services closely tied to transport, such as assembly of loads, temporary storage to accumulate larger shipments, and loading and unloading activities. If transport is inefficient and impedes a rational marketing program, it is necessary to identify that part of the transport system containing the most serious bottlenecks. As with any system, it takes only a malfunction in one of its parts to limit the system's effectiveness.

This chapter evaluates the current performance of the transport sector, with respect to agricultural marketing, in the sample districts of Kakamega, Kisii, Kitui, Nakuru, Nyeri, and Uasin Gishu. The main purpose is to assess the opportunities for improving maize and bean marketing by releasing constraints in the road system and the haulage industry, through a combination of policy actions and program interventions. The primary issue investigated was the degree to which friction in shipments of spatially-separated maize and beans markets can be eased through improved transport infrastructure and the relaxation of movement controls. The flows of these commodities between production areas and local market centers, and between local market centers and district markets, were assessed to determine if the supporting infrastructure channels could improve the marketing of these commodities.

The study team also examined the road haulage industry with a view toward determining what factors influence the cost of operating transport vehicles. Sections of this chapter describe the roles played by various transport providers, such as lorry-traders and local haulers, in the transportation of maize, beans and other commodities. An assessment of the impact of regulatory policies, permit controls, transport rate charges and capacity utilization on the transport haulage industry is also presented.

Against this background, later sections of the chapter present the team's recommendations for investment in rural road improvements, concentrating on roads that link market centers (sometimes across district boundaries), along with a series of recommended policy actions aimed at improving the overall efficiency of the transport sector. The economic justification for the investment in road improvements is analyzed using the results of three case studies treating roads from the sample districts.

5.2 OVERVIEW OF KENYA'S TRANSPORT SECTOR

5.2.1 Road Classification System

Kenya's road network encompasses some 160,000 kilometers, of which about 62,000 kms are classified. The classification of roads is by function, as follows:

Class A International Trunk Roads (3,600 kms). These roads link centers of international importance and cross international boundaries or terminate at international ports.

Class B National Trunk Roads (2,800 kms). These roads link nationally important centers, mainly principal towns and urban centers.

Class C Primary Roads (7,800 kms). These roads link provincially important centers (urban and rural) to each other or to higher class roads.

Class D Secondary Roads (11,000 kms). These roads link locally (district) important markets and other local centers to each other, or to more important centers.

Class E Minor Roads (26,500 kms). These roads link minor local centers or to roads of higher classification.

In addition, there are the unclassified Rural Access Roads (RARs) with about 8,000 kms, and other special roads of about 2,500 kms serving specific facilities in the tea, sugar, wheat, and settlement areas. It is clear from these data that the road infrastructure in Kenya is extensive, although the network is more concentrated in areas of medium to high agricultural potential.

5.2.2 Current Planning Procedures

Institutional and Budgeting Arrangements

The development, improvement and maintenance of roads in Kenya are the responsibility of the Roads Department, currently situated in the Ministry of Public Works (MoPW). The department is headed by the Chief Engineer (Roads) who reports directly to the MoPW Permanent Secretary. The CE (Roads) is represented at respective lower levels by the Provincial Roads Engineer (PRE) and the District Roads Officer (DRO).

Budgetary allocations from the GOK Treasury are the primary source of funds for the activities of the Roads Department; however, a significant portion of the road improvement and maintenance activities of the Department is funded through grants and loans from bilateral and multilateral international funding agencies. Maintenance activities for Class A and B roads are funded from tolls collected on these roads. Development and recurrent budget allocations are provided in the form of ceilings for each GOK ministry, reflecting the GOK's development policies and priorities. These ceilings are communicated to each ministry well in advance of the budgeting process for each subsequent financial year. The Roads Department is obliged to finalize its budget within the MoPW ceilings determined by the Treasury.

The budgeting process of the Roads Department falls into three major categories:

- Major roads, which include the improvement and maintenance of Class A and B roads, particularly on those sections that are bitumenized;
- Other roads, including Class C and some Class D roads with high traffic volumes; and
- Minor roads, which currently encompass three major programs, the Minor Roads Program (MRP), the Rural Access Roads Program (RARP), and the Graveling, Bridging and Culverting (GBC) Program.

In practice the Planning Unit of the Roads Department is responsible for determining priorities for improvement and maintenance of Class A and B roads. However, the prioritization of the improvement and maintenance of Class C, D, E and

unclassified roads is the responsibility of the various District Development Committees (DDCs). Each District Development Committee periodically submits a list of roads to the Roads Department for consideration; the accepted roads form parts of the District Development Plans.

General Planning Framework

The MoPW Roads Department is responsible for planning of all classes of roads including Classes A, B and C. Roads included in the various development programs for improvement are identified at the district level. These roads are suggested by politicians representing local areas, the DDCs, the MoPW Headquarters, mainly the Materials Branch which carries out investigations on failing paved roads requiring rehabilitation. In most cases, the roads proposed involve upgrading from earth or gravel surfaces to bitumen standards.

Proposed roads are evaluated in light of their socio-economic attributes, traffic volumes, possibility of opening up areas for future development and settlement, and role in the prevention of movement bottlenecks as a result of pavement deterioration. Some road projects are subjected to economic evaluation to form a priority list of roads that fall within the development budget ceilings of the MoPW. Only those roads whose economic evaluation indicates viability (positive net present value) are included in the development budget for improvement.

Considerable debate arose in the late 1970s and early 1980s over the procedures and criteria for selection of rural roads for improvement, the main issue being whether non-economic factors should be included. The debate came at the inception of the RARP, which was a multi-donor effort to construct about 14,000 kms of low-cost rural access roads in 26 districts covering the medium to high agricultural potential areas. The overall objective of the RARP was to improve farm-to-market access, thereby improving the income and quality of life of the residents of the road impact area.

In the case of the Class A and B trunk roads and the longer Class C and D roads, savings to road users represent the major benefits, and project analysis of these roads does not generally include other impacts. However, in the case of access roads, such as shorter Class C and D roads and Class E and RAR and special roads, the development impact and accessibility features are crucial to the project analysis. Often these roads have low or no traffic and the reason for improving them lies in their contribution to the development of the area. Thus, social impact of the proposed roads, as well as economic factors, are considered important benefits.

Accordingly, a new evaluation procedure was formulated in 1981 for the access-type rural roads with modifications in 1986 with the introduction of the Minor Roads Program (MRP). The existing planning procedure for the MRP involves three stages. First, districts are allocated equal shares of available resources regardless of population, road density or other demographic factors. Each district must identify, through the DDC, at least 100 km of roads for improvement. This list is submitted to the District Roads Engineer (DRE) for review and ranking. Roads can be immediately rejected if large bridge construction (over 12 meters) is required, traffic is high (over 70 vehicles per day), or labor-based construction methods are not feasible.

Second, the remaining roads are ranked according to points and weights given to cost and benefit factors, including social as well as economic benefits. Third, 60 km of roads with the highest evaluation scores are selected. In some cases, the lowest ranked roads in the 60-km list are subjected to simplified economic analysis.

The MRP planning procedures exclude Class C and D roads where traffic volumes exceed average daily traffic (ADT) of 70, whereas MoPW's planning process is directed to bitumenized Class A and B roads. Therefore, many Class C and longer Class D

roads, specifically those with more than 70 ADT, are left out of any formalized planning process.

Ongoing Minor Road Program

The current MRP is the successor to the Rural Access Roads Program which started in 1974. During its eight-year life, RARP improved 8,500 kms of rural roads in 26 districts. Labor-based construction and maintenance techniques were applied to roads five to 10 kms in length. Generally, each road's ADT was projected at less than 30. RARP involved alignment of existing tracks, with roadway width of 4.5 meters, of which 4.0 meters were surfaced with 10-15 centimeters murram-gravel.

MRP commenced in 1987. Its program is funded by six donors and covers a five-year time frame. Roads included in MRP are Class D and E roads. Phase I, the first two years, is currently being implemented; Phase II consists of proposed improvements in the last three years. Donor funds pay 75 percent of the program's cost, and the GOK funds the remaining 25 percent. Two-thirds of the funds are used for improvement of roads, consisting of forming and shaping the road with proper camber and drainage. If ADT is forecast at less than 20, the road is maintained as an earth road. If ADT is over 20, a murram-gravel surface is applied. The running surface of MRP roads is 5.4 meters.

The District Development Plans include funding for improving 30 km of roads in each of the 28 districts in the MRP. These funds are allocated for road improvement (e.g., shaping and graveling) plus an additional 15 km per year for periodic maintenance (regraveling) for each MRP unit. Three districts have two MRP units. Nine hundred km are scheduled for improvement in each year of the five-year program. The current five-year program consisting of two-thirds improvement and one-third maintenance is expected to be followed by a second five-year program evenly split between road improvement and maintenance.

Responsibility for road selection and priority of work is undertaken by the District Development Committee. MRP Headquarters at the MoPW coordinates the overall planning, controls the budget, and monitors the progress of the activities in the districts. MoPW also provides liaison with donors and prepares estimates of the annual MRP budgets. Funds are released by the Ministry of Finance to each district, and all expenditures by districts are reported to that ministry. Regional coordinators supervise the work in the districts and also provides liaison between districts and MRP Headquarters.

The responsibility for implementing the MRP in the districts is undertaken by the District Improvement and Maintenance Engineer of MoPW. Each district conducts direct planning and management of improvement and maintenance work. A district prepares a list of roads for improvement from each division in the district. Division officials are informed of the district's criteria for selection so that division personnel will understand the screening process at the district level. From the division submissions, a list of roads is prepared, with priority, and forwarded to MRP Headquarters. In turn, Headquarters reviews selection criteria and technical aspects of the plan but does not change the priorities established by the district. Expenditures are authorized up to the budget limit. Roads recommended by districts not funded in Phase I are included in Phase II, although it is expected that a further review will be made before submission of those roads to MRP Headquarters.[1]

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[1] The World Bank review of the Rural Access Road Program, which introduced the concept of local planning for rural roads, indicates that local involvement facilitates execution of the program and strengthens local planning. In addition, the World Bank stated that a monitoring and evaluation program offers opportunities to support the development of local institutions for effective planning. The MRP is continuing the

5.2.3 Review of Current Maintenance Practices

General Maintenance Practices

The road maintenance organization of the Roads Department is district-based. The Chief Engineer (Roads) allocates funds to District Works Officers to carry out routine and periodic maintenance including regrading, regraveling and resealing. Each province is subdivided into districts under the traditional MoPW maintenance practices. Under the RARP/MRP provinces are divided into regions, which in turn are broken down into districts, divisions, and localities. Within each locality there is a road camp where routine maintenance gangs, employed on a semi-permanent basis, are based. However, regraveling and resealing are usually done by special mobile units or contractors.

The maintenance practice adopted for all types of roads, including minor roads, is based on the use of some equipment. The area covered by individual road camps is such that even for those activities performed manually, for example cleaning culverts, a truck or tractor and trailer is essential for transporting the labor force.

The MoPW is aware of the problems of maintaining a large and dispersed road network with limited funds. The large staff and labor establishment represent a fixed expense; consequently, in time of financial cutbacks, the work output suffers significantly due to the disproportionate reduction in funds available for transport, maintenance equipment and materials. The dispersed nature of the operations also leads to low equipment availability and utilization. In addition, labor is difficult to motivate and productivity is low.

The effective maintenance of the unsealed pavement or running surface presents a serious problem. The camber reshaping of an earth or gravel road is carried out by graders. However, this activity is currently performed only once per year, even though there is a need for reshaping at least twice per year for most earth and gravel roads. Roads with high traffic levels and high rainfall require reshaping at even higher frequencies than once per year. If grading is done only once a year, the operation is expensive and time-consuming. Although the road will be in good condition immediately after completion of grading, it will deteriorate at an increasing rate until it is graded a year later.

Maintenance Under the Minor Roads Program

In the early 1980s, the GOK and participating donors considered various ways of maintaining the roads in RARP and MRP, leading to adoption of the "lengthman-contractor" system of maintenance. The alternatives considered included the traditional MoPW equipment-based practices. Another alternative, was the possibility of recruiting a gang of casual laborers two or three times a year to carry out maintenance of long sections of roads under the direction of an overseer equipped with a vehicle, caravan and a mobile store. However, costs, logistics and management problems associated with these alternatives weighed against their adoption.

RARP and MRP maintenance activities are grouped into routine, periodic and urgent operations. Routine maintenance is carried out once or more per year on a

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emphasis upon local participation and has made modifications to improve the "grass roots" planning process.

section of road. Periodic maintenance, depending upon the traffic load has a regraveling cycle of 5 to 12 years and normally requires significant skilled resources. Urgent maintenance arises from unforeseen circumstances such as flooding, bridge accidents, etc. Such situations necessitate immediate remedial actions.

Under the MRP, routine maintenance is performed using a labor-based system called the lengthman system, which assigns a former road construction worker to each section of a road. Road sections are typically 1.5 to 2.0 km in length depending upon terrain and whether the road is a RAR or minor road. The lengthman is engaged on a casual basis and is provided with hand tools. Many lengthmen live adjacent to their road sections, thereby minimizing walking to and from the work site. The lengthman is responsible for 11 specific maintenance tasks. The lengthman works three days each week and is supervised by a headman who assigns the lengthman the maintenance tasks to be performed.

The headman system consists of two types, the contractor-headman and the supervisor-headman. The contractor headman is particularly suited to short sections of RAR or minor roads where five or less contracts (lengthmen) are assigned; this applies to roads of up to 10 km in length. The contractor headman is assigned his own section for which he also works three days per week, but at a slightly higher rate than the lengthman or contractor. The contractor headman also supervises other contractors. He provides instructions to contractors, prepare work tasks, inspect and record work performed.

The supervisor headman method is more suited to longer lengths of RARs and minor roads e.g., over 10 kms in length, whereby more than five lengthmen are assigned. The headman may also supervise several nearby roads. The supervisor headman spends three days a week carrying out his supervisory duties.

Both types of headman report to a overseer who is responsible for the organization and control of all routine maintenance activities within a designated area. The overseer is also responsible for identifying urgent road works and is responsible for up to 100 lengthmen-contractors and headmen.

The advantages of the lengthman system for maintaining access roads and minor roads are as follows:

- The contractor is a local person and the community can exert influence on him to maintain the road properly;
- The work is not directly dependent on the availability of equipment and vehicles. Whatever is required is reduced to the absolute minimum. In addition, the foreign exchange component is estimated at only 10 percent or less;
- It relies on the availability of labor resources existing in the rural areas;
- Significant employment is created in the areas of implementation;
- Laborers have the advantage of living with their families; and
- Accommodation and transportation expenses are minimized.

5.2.4 Overview of the Transport Industry

The Regulatory Framework

This section provides an overview of the principal legislation governing the operations of transport vehicles in Kenya. Legislative control over vehicle operations in Kenya derives primarily from the Traffic Act , revised 1988 (Chapter 403 of the Laws of Kenya). This act is the principal instrument for the control and licensing of all registered vehicles. The act provides that a commercial vehicle shall not be licensed to operate unless an "an inspection report" showing that the vehicle or trailer has been inspected within 10 months of a request for a license and that the vehicle is insured against third risks.

In addition to the Traffic Act, the transportation of goods along Kenyan roads is governed by the Transport Licensing Act of 1962, Revised 1979 (Chapter 404 of the Laws of Kenya). This act provides, inter alia, that no motor vehicles licensed in accordance with the Traffic Act of 1988, can be used on a road for carriage of goods for hire or for reward, or in connection with any trade or business unless such a vehicle has been granted a public, limited or private carrier's license.

The Transport Licensing Act also provides that goods vehicles operate in a fit and serviceable condition. The Act further provides that any laws in force that relate to the speed and weight, laden and unladen, and the loading of goods, for each type of authorized vehicle, shall be complied with.

In accordance with Chapter 404 of the Transport Licensing Act, the GOK is becoming increasingly concerned about the economic costs of maintaining its road system. The stated policy of GOK is to make road user charges cover the full costs of using the roads. In line with this policy was the introduction of toll bridges along Class A and Class B roads. Funds collected at toll bridges are remitted directly to the MoPW for the purpose of road maintenance.

Additionally, the GOK introduced weigh-bridges to check axle loads of heavy vehicles operating also along Class A and B roads. The intent of such an effort was to effectively restrict heavy loads from damaging the road surface. The implementation of this policy was temporarily halted due to public opposition, but was re-introduced in August, 1989.

Composition of the Industry

The transportation of maize, beans and other agricultural commodities is facilitated by a wide range of transport modes, as shown in Table 5.1. These modes of transport can be grouped by function and type into three categories. The relevant categories include intermediate modes, short-haul modes, and long-haul modes. The first includes such modes as human transport (headloading); animal powered transport (e.g., donkeys or oxen driven carts), and bicycles. These modes provide local transport service for maize, beans and other commodities, primarily between the farm-gate and the local market or from the farm-gate to the nearest road. Such modes, as a rule, carry commodities locally or on short-hauls, although longer hauling distances are not uncommon. Hauling distances for this category are usually under 10 km per trip. A typical load ranges from less than a half a 90 kg bag of maize or beans up to five 90 kg bags. Vehicles in this category typically operate along trails, but can also be found along Class D and E roads.

TABLE 5.1

TRANSPORT HAULAGE IN KENYA'S RURAL AREAS

Transport Mode	Transport Facility	Primary Market Linkage	Transport Rate/Bag[1] (Kshs)	Typical Loads[2] Per Trip
Intermediate:				
Headloading	Trails, Class E & D roads	Farmgate to road, farmgate to local market.	2-5	<1-1 bag
Bicycle	Trails, Class E & D roads	Farmgate to road, farmgate to local market	2-5	1-2 bags
Donkeys	Trails, Class E & D roads	Farmgate to road, farmgate to local market	5	1-5 bags
Short-Haul:				
Pick-ups Matatus	Class E,D,C, B & A roads	Roadside to local market, local market to district market.	10-15	1-15 bags
Buses	Class D,C, B & A roads.	Roadside to local market, local market to district market.	15	<10 bags
Long-Haul:				
Lorries[3]	Class D,C, B & A roads	Local agent to local market, local market to intra-district markets, and interdistrict markets.	10-20	30-150 bags

[1] Transport rates in this column are rates charged during the dry season only. Many transport providers reported during field interviews that they typically double the rates during the rainy season because of the difficulty of getting to certain areas and because of the poor condition of the roads.

[2] A typical load carried by transport providers refers to a 90 kilogram bag unit of maize, beans or other commodities.

[3] The commodities transported by this mode, particularly maize and beans, are to NCPB depots, transfers between depots and to grain mills.

The second category consists of motorized short-haul vehicles such as pick-ups and matatus, small lorries and buses. This mode of transport is more dynamic than the first category because it covers a wider range, make trips more frequently and has a much higher load capacity than the intermediate mode. It provides transport services between the farmgate and the local or district market centers, road access permitting. Hauling distances for this transport category usually exceed a 10 km radius, but oftentimes are not in excess of 50 km. Typical loads range from an accompanied 90 kg bag of maize or beans on a pick-up/matatu or on a bus up to a full load on a 3-ton pick-up (15 bags). Vehicles in this category operate, with the exception of perhaps buses, on all classes of roads.

The third category includes lorry transport. This mode of transport has a significantly higher load capacity than the first two categories. Although some overlapping in hauling distance between the second and third category occurs, particularly for intra-district short-hauls, lorries generally operates on long-hauls. The lorry transport mode usually operate between interdistrict and intra-district market centers or outside of a 30 km radius. They mainly operate on the primary and trunk road system such as Class A, B and C roads, but they also use Class D roads. This mode facilitates the movement of large quantities of maize and beans in both the formal and informal markets. A typical truckload might range from 65 bags of maize or beans for a 7-ton lorry up to 150 bags for a 15-ton lorry.

As Table 5.1 reveals, the transportation of commodities shifts to more efficient modes of transport as the friction of distance increases and as better communications links become available. Shifting to more efficient modes of transport (i.e., to vehicles with higher capacities) is likely to continue as the transport linkages from production areas to market centers and from market centers to market centers are improved. Additionally, as the policy of liberalized prices and relaxation of movement restrictions take effect, downward pressures on transport rates should causes transport providers to become more competitive in rate setting and in their service delivery. This is expected to lead to the utilization of more higher capacity transport vehicles than at present.

The structure of the transport industry indicates that producers use a range of transport modes to get their products to the market. They rely on several modes to reach a local market thereby raising their costs for transport. The providers of local transport services are generally of two types. They consist mainly of owner-operators who may own a pick-up/matatu, bus or a lorry. The second type is the lorry-trader, who may have his own transport. Lorry-traders also purchase maize, beans and other commodities. The lorry-trader is unique in the sense that providing transport services complements other business activities. Lorry-traders primarily buy and sell large quantities of maize and beans. As discussed in Chapters 3 and 4, they also make deliveries to the NCPB's depots and unofficially to grain millers.

5.3 BOTTLENECKS TO EFFICIENCY IN THE CURRENT SYSTEM

This section discusses the transport system as it relates to those aspects of Kenya's maize marketing practices. As previously indicated, an inefficient transport system impedes the rational marketing of commodities. When this occurs, remedial actions, oftentimes involving a combination of policy instruments and program measures, are necessary to remove the bottlenecks and to bring the system in line with the demand for transport. An integrated system of transport tends to improve the overall efficiency of markets. This section outlines how the transport system can improve the overall efficiency of maize and beans marketing.

5.3.1 Road Network

The road network serving agricultural marketing consists primarily of relatively short access roads connecting farms with local markets or roads leading to markets, and longer roads linking market centers. In Kenya, Class E, Rural Access, special roads (those serving tea, sugar, wheat, settlement areas) and some Class D roads provide the access function, while Class C and longer Class D roads serve as links between markets. (Class A and B roads, where available, would be used for longer distance inter-market hauls.)

Design standards for access and linkage roads are a function of the expected traffic. Width of roadway and types of surface and strength (thickness) are related to levels of traffic and the type of vehicles operating on the roads. Underdesigned roads (roads on which traffic exceeds the level for which they were designed, or which cannot accommodate economical loads) yield high costs of transportation, either through traffic congestion -- although this is unlikely in the cases considered in this report -- or high unit costs per km associated with use of several smaller vehicles rather than larger shipments in larger vehicles. In these cases, there should be a balance between the higher investment costs associated with higher design standards and the lower transport costs arising from using larger vehicles, if demand warrants their use. Linkage roads generally have higher traffic levels and require somewhat higher design standards than pure access roads. Consequently, larger vehicles are able to operate, and, if demand allows full loads on larger vehicles, the resulting transport costs per ton/km are minimized.

Overdesigned roads lower operating costs to transporters. However they are too expensive as an investment, because the road geometrics and surface strength exceed what is required for the traffic demand.

Roads, if not maintained properly, will lose some of the capacity of their original design. Improper maintenance, or the lack of it, reduces the ability of roads to take heavier loads. Also, poor road maintenance results in longer times to cover distances and reduces the utilization of vehicles, yields high vehicle maintenance costs, and high transport costs result.

Finally, the full benefits of improved linkage and access roads are not forthcoming unless connections are made. This interdependence means that the program of road improvements in an area should proceed in a manner that provides the linkage connections to access roads as soon as possible after completion of access road improvements.

5.3.2 Local Transporters

In agricultural marketing, the types of transport used vary depending upon the extent of the market, the state of the roads, and size of the farms. Small farm output moving to nearby markets may be moved by animals, headloading, or bicycle on access roads. Motor vehicle use involves pickup trucks and lorries of 7- to 10-ton capacity. Also, movement may be by bus or matatu, with an individual accompanying the shipment. Longer movements on connecting roads generally will be by motor vehicle, with the size of the vehicle dependent on the loads made available. Thus, transport capacity is mixed. The capacity is generally available for movement, but the capacity for efficient motor vehicle movement with potential lower transport costs may be insufficient.

Institutional barriers can impede efficient transportation. Control of entry into commercial transportation may unnecessarily restrict supply and provide opportunities for monopolistic pricing, even by an industry that does not exhibit any natural monopoly characteristics. However, in the agricultural transport markets considered in this report,

entry control is not a significant factor. Besides the barriers to entry into the transportation business, other artificial impediments may appear. Restrictions on the amount to be moved in a vehicle lead either to unused capacity of larger equipment or the use of smaller, higher unit cost means of transport, including owner-accompanied shipments by matatu. The movement controls regulating maize marketing are of this type.

While motor carriers in the agricultural transport trade are not in a position to charge monopolistic prices, they are subject to the power of those providing a substantial part of the traffic. This arises when transport is undertaken either for agents of the NCPB or for depot-to-depot movements. The issue of transport rate charges are discussed later in this chapter.

5.3.3 Services Allied to Transportation

For small shipments, an important efficiency device in terms of transport costs is to consolidate shipments into larger loads and take advantage of the lower unit costs of full utilization of vehicles. The consolidation, or assembling, of small shipments into larger loads can be performed by groups of shippers, by one shipper acting on behalf of others, by the transporter itself, or by an independent agency acting as go-between in shipper-transport supplier transactions.

In small-farm agricultural trade, small shipments may be aggregated at local markets; i.e., individual small lots are transported to the market by producers, and consolidation for further shipment is done at the market by a trader or by a buying agent for a large purchaser of farm products. In addition, a trader, whether with his own truck or with a hired truck, acts as a consolidator when purchasing the small offerings of farmers along the road.

Consolidation, where feasible, yields lower cost transport when the economies of full vehicle loads more than compensate for the costs of consolidation; this will occur for longer hauls. Current marketing practices in rural Kenya do not encourage consolidation, and poor road conditions also may dampen enthusiasm for efficient consolidation.

In Chapter Two of this report, the potential for added storage facilities under liberalization of grain marketing is discussed. The storage function in that framework contributes to price stabilization in open markets as well as long-range security supply of foods. However, the consolidation of shipments into economical loads for transportation involves some storage, but for relatively short periods of time while full loads are being accumulated. Added space at these long-term storage facilities could be provided for the consolidation function at little added cost. Moreover, storage entrepreneurs may find that providing a consolidation function for shippers and transporters is a viable business activity. Also, the proposal for improving market facilities should include assigned space for loading and unloading shipments and for consolidation by transporters.

5.3.4 Summary

Obviously, a transportation system can fulfill its marketing tasks even though some parts are not operating efficiently. However, there is ample evidence that Kenya's existing rural road transport system is functioning at high cost and that all three components of transportation contribute to the inefficiencies. Access road and linkage road improvement is slow, and maintenance still remains a problem in many areas. Not only do road conditions create problems for transport suppliers, but arbitrary market constraints such as movement controls hinder efficient transport operations. Consolidation that would lower transportation costs is hit-or-miss and ineffective.

The proposals for liberalizing the marketing of agricultural commodities should yield an environment for more efficient operations by transport providers. Also, the addition of facilities to promote consolidation of shipments will contribute towards transport efficiency. However, these possibilities will be diluted substantially if the third component of the transport system is overlooked. An integrated road improvement and maintenance program must be introduced and sustained to garner the full impact of transport efficiency potential.

The next section analyzes the constraints that have hampered the development of an efficient transport system in the study area under the current marketing framework. If not alleviated, they could hinder realizing the full benefits of a liberalized market system.

5.4 ANALYSIS OF THE TRANSPORT SECTOR IN SELECTED DISTRICTS

5.4.1 The Road System

In this study, we have grouped all Class C roads and Class D roads over 20 km in length together, and termed them **Linkage Roads**. They not only represent an important component in the rural road network, but as will be seen, they are not adequately supported by existing programs and sources of funding.

Certain C roads, as well as shorter Class D roads, are provided for already. Class C roads with heavier traffic volumes (ADT over 300) are candidates for bitumen surfacing and fall under the jurisdiction of MoPW; they are treated as "Other" roads in the budgetary process. Class C roads of lower ADT are candidates for graveling by GCB; however, in recent years the backlog of work has increased because of inadequate funding of GCB. Class D roads are included in the Minor Roads Program. However, in the six sample districts covered by this study, there are many Class D roads over 20 km in length. While these roads do provide access functions, they also provide some mobility between smaller market centers and from those centers to higher class roads. Because of their length, improving these Class D roads would consume most of a district's annual budget for road improvement, leaving little or no funding for shorter Class E roads.

Consequently, there appears to be a vacuum in terms of road responsibility and financing involving the Linkage Roads. The application of funds for road improvement under the Kenya Market Development Program (KMDP) could make a substantial contribution toward filling this vacuum. Details on the proposed KMDP Road Projects which are designed to start filling the vacuum, are set forth in Section 5.5.

The road network serving the six districts in the study reflect their different demographic characteristics, as shown in Table 5.2. In Table 5.3, the road inventory in the study area is described in summary form, broken down by Trunk Roads, Linkage Roads, and Access Roads for each of the six districts. It should be noted that most Trunk Roads and some Linkage Roads extend across district boundaries. In Table F.3, only the km in the specified district are included. For example, some Linkage Roads are longer than shown; also, some of the Class D roads are under 20 km in length may be longer if they connect two districts.

TABLE 5.2

ROAD DENSITY IN THE STUDY AREA

	High Potential Densely-Populated (Kisii, Nyeri Kakamega)	High Potential Maize Surplus Area (Uasin Gishu, Nakuru)	Low Potential Maize Deficit Area (Kitui)	National Total Area
Population per Square Kilometer	265	76	16	29
Road Kilometers				
% Bitumen	12	24	2	11
% Gravel	52	50	32	43
% Earth	36	26	66	46
Population per Kilometer of Access Road[1]	678	601	257	418
Square Kilometers per Kilometer of Access Road[1]	2.56	7.44	16.30	15.40

[1] Includes Class E, RARs, and Special access roads.

The High Potential Densely Populated area (Kisii, Kakamega and Nyeri Districts) shows all of its Trunk Roads as having bitumen surface. However, in the Linkage Road category, only 119 km are bitumen, while 879 km are non-bitumen (gravel or earth surface). The High Potential Maize Surplus Area (Nakuru and Uasin Gishu Districts) has trunk roads that are bitumen surfaced, but for its Linkage Roads, a greater proportion are bitumen-surfaced -- 277 km -- compared to 728 km of non-bitumen surfaced. Kitui District, with its large area but sparse population, shows practically all of its roads as non-bitumen. Its Linkage Road Category totals 835 km of earth or gravel surface roads.

There is no indication of the relative quality of the gravel-surfaced Linkage Roads. However, field inspection by the study team revealed that many Class C and D roads, once graveled, have significantly deteriorated. Not only has the surface disappeared, but drainage and camber standards have deteriorated to earth road surfacing standards, and in many cases, the camber of the roadbed and drainage ditches have been lost.

The deteriorating conditions of the roads and the fact that little or no attention is focused on Class C and longer Class D roads presents an opportunity to improve the efficiency of maize marketing. This can be accomplished by a program which seeks to upgrade and integrate the trunk roads and minor roads with the primary roads.

TABLE 5.3

KENYA'S ROAD INVENTORY BY DISTRICTS
(IN KILOMETERS)

ROAD TYPE	CLASS	KISII	KAKAMEGA	NYERI	UASIN GISHU	NAKURU	KITUI	TOTAL
TRUNK ROADS:	A	31	81.4	72	118.4	156.7	141.2	600.7
	B	48.2	12.3	66.3	35.2	102.8	163.6	428.4
TOTAL KMS		79.2	93.7	138.3	153.6	259.5	304.8	1029.1
LINKAGE ROADS:	C	174.4	214.3	34.3	189.2	199.8	210.5	1022.5
	D	166.1	227	181.8	173.5	460.9	624.9	1834.2
TOTAL KMS		340.5	441.3	216.1	362.7	660.7	835.4	2856.7
ACCESS ROADS:	D	105.3	128.3	98.9	78.1	58.2	24.6	493.4
	E	526.9	608.4	876.7	279.8	542.1	1276	4109.9
	RAR	436.1	304.9	258.6	292.2	255.9	527.6	2075.3
	G	3.4	11	114.4	6.5	36.1	3.4	174.8
	L	50.2	162.3	78.8	41	0	0	332.3
	T	61.9	22.7	25.7	0	0	0	110.3
	S	0	80	0	0	0	0	80
TOTAL KMS		1183.8	1317.6	1453.1	697.6	892.3	1831.6	7376
ALL ROADS		1603.5	1852.6	1807.5	1213.9	1812.5	2971.8	11261.8

5.4.2 The Transport Industry

Transport Providers

Although many transport services are available in the study area, there are mainly two types of transport providers: lorry-traders and local transporters or owner-operators. Lorry-traders are characterized by their ability to buy, sell, and transport large quantities of maize or beans for their own account for sale to the NCPB. Their primary business is not providing transport services, but serving as official buying and selling agents for NCPB, and trading on their own account, outside the formal system.

As described in Chapter Three, lorry-traders through their network of sub-agents consolidate smaller shipments of maize or beans for sale to the NCPB and in the informal market. Lorry-traders, typically own their transport vehicles. Some lorry-traders, depending on their scale of operations, may hire out their transport on back-hauls to the NCPB or to other customers requiring transport services. On occasion, a smaller lorry-trader may simply consolidate smaller quantities of commodities and hire transport as need arises. While many lorry-traders own their lorries as the name suggest, some operate with pickups to enter areas normally inaccessible to larger vehicles.

Lorry-traders, in their role as transport providers, generally fall within the group of transporters servicing the NCPB's depots. NCPB as one of the main clients of large lorry-traders, also uses their vehicles to transport maize and beans between depots in maize/beans surplus areas and depots in deficits areas. Lorry-traders appear to have better information regarding the transport needs of NCPB than other transporters. They are also quite knowledgeable of the general demand for transport services in their district as well as the market system.

Local transporters or owner-operators, on the other hand, are quite a distinct group from lorry-traders. They normally offer their lorries for hire to anyone needing transport services. They provide service from production areas to NCPB depots, between NCPB depots and from NCPB depots to grain mills. Although providing transport service is their main line of business, local transporters have been known, on occasion, to buy, sell, and transport small quantities of maize or beans for their own account. Local transporters serve the same markets and travel the same roads as lorry-traders, but differ in that they usually do not own the commodities they transport.

The results of field interviews with local transporters suggest that they often are not given the same opportunities for transport business with the NCPB as the larger lorry-traders -- some of whom seem to have developed mutually beneficial relationships with NCPB depot managers. For example, larger lorry-traders appear to be able to schedule their transport activities, particularly backhauls, around NCPB's grain shipments. Perhaps, this can be explained by the fact that larger lorry-traders tend to own newer vehicles and have several vehicles in their fleet. This produces a higher capacity than that which can be provided by local transporters. It also affords the NCPB an opportunity to transport larger volumes of maize and beans without having to secure the services of several transporters at a time.

Transport Capacity and Utilization

The three production and marketing environments represented by the sample districts offer varying degrees of transport capacity and various transport utilization rates. The area consisting of Kisii, Kakamega, and Nyeri is served mainly by pick-ups and lorries between the local and the district market centers and between interdistrict and intra-district market centers. The high potential areas, exemplified by Uasin Gishu and

Nakuru, have well developed road systems and commodities are transported mainly by lorries which deliver maize and beans to the NCPB depots, or direct to the large mills. Uasin Gishu and Nakuru appear to have an oversupply of lorries. This is evidenced by the number of idle lorries in the lorry parks. Interviews conducted in the field indicate that such lorries average about one trip per week between NCPB depots, although their deliveries to NCPB depots from production areas and other market centers are more frequent.

At the other extreme, the situation in the low potential area of Kitui indicates significantly fewer business opportunities for local transport providers. Although there are some commonalities with the high potential area, the supply of transport in the Kitui area is quite limited because there are fewer markets to serve and fewer NCPB depots to deliver than in the other two surplus areas. Kitui, as a deficit area, gets much of its maize deliveries from the high potential, surplus areas of Nakuru and Uasin Gishu. This limits the demand for transport services within Kitui, particularly the need for lorry transport to transport maize or beans.

Vehicle Fleet

Field observations showed that the vehicle fleets owned by transport providers in the study area range from one to 10 lorries, with the mean fleet size from 27 individual cases being just under two. These fleets have load capacities of between 7 and 10 tons per vehicle, with the 7-ton lorries being the most common vehicle type. Although higher capacity vehicles of 15 tons were reported, they cannot be considered representative of the vehicle mix for transporting maize or beans in the study area. Nakuru and Uasin Gishu, both surplus production areas, had larger numbers of registered transport firms than the other study districts.

Operating Costs

The main operating cost components for vehicles engaged in transporting agricultural commodities consist of:

- Consumption of petroleum products such as fuel, oil, and lubricants;
- Wear and tear on tires;
- Consumption of spare parts;
- Maintenance costs;
- Drivers' wages and the costs of helpers;
- Vehicle idling time; and
- Vehicle depreciation.

Transport Rate Charges

These costs are driven by different road design standards and varying road surface conditions and altitudes, as well as by different vehicle prices, ages, loads and engine power. These operating cost factors combine to influence vehicle speeds and the wear and tear of the vehicle, particularly during the rainy season. Field interviews were conducted with transport providers to ascertain data on the cost of operating their vehicle fleets. Findings from these interviews are presented in Table 5.4.

The vehicle operating costs indicated above can also be grouped into two categories consisting of fixed costs and variable costs. Fixed costs are those costs incurred as a result of owning the vehicle: they are licenses fees, taxes, insurance and depreciation. Variable costs, or more precisely running costs, on the other hand, relate to those costs incurred as a result of putting the vehicle into service. Variable costs include: fuel, oil and lubricant consumption, spare parts consumption, tire consumption, maintenance repair costs, crew costs, and idling costs.

The fixed costs, based on Table 5.4, represent 65 percent of total operating cost for 7-ton lorry or about Kshs 35.75 per km. The variable costs are 35 percent of the vehicle operating costs or Kshs 19.59 per km. Assuming that a lorry spends 50 percent of its running time on a gravel road and 50 percent on a paved road (both in good condition), the operating cost should be approximately Kshs 18.76 per km. However, because of the road conditions prevailing in the study area, the running costs per kilometer for a lorry are estimated to be 53 percent (Kshs 6.81 per km) above what they would be if the roads were in good condition. As Table F.4 indicates, the variable operating costs for a typical transport vehicle, in this case a 7-ton lorry, are quite high on a per km basis. The difference in costs for operating a 7-ton lorry on a earth road and a gravel road is shown graphically in Figure 5.1. About Kshs 2.2 per km can be saved if an earth road is upgraded to a gravel road. Therefore, the main savings to transport providers and in turn producers and consumers, derive from improved roads.

Although lorries operate mainly on the trunk and the primary road system, they often travel on Class C and D roads and sometimes on Class B gravel roads to reach market centers. High traffic volumes and inadequate or lack of maintenance have caused significant road surface deterioration. Many Class C and D roads have deteriorated to such an extent that they bear little or no resemblance to their original road geometrics. This is particularly evident during the rainy season when many of the Class C and D roads are not motorable. Deteriorating road surfaces are a major cause of the high vehicle operating costs experienced by transporters in the study area. Such conditions limit the ability of the transporters to serve certain markets. The ability to achieve efficient operation of the vehicle is also impeded by the inability to achieve the speeds for which the roads were originally designed.

It should not come as a surprise, given the poor conditions of the roads, that transport rates charged to producers in the study area are high. For example, transport rates are usually double in the rainy season compared to what they would be in the dry season. Such high rates are set because of the difficulty of using the road system during this time of year. As we have already indicated, deteriorating road conditions are driving up the cost of operating a transport vehicle. In the absence of any official controls on transport rates, vehicle operating costs are normally reflected in the rates charged to producers on the production end, and in the price of goods to consumers on the distribution end. The results of the field interviews indicated quite clearly that transporters set their rates in direct relationship to their ability to negotiate a particular road or enter a particular production area.

The demand for transport varies across the districts visited, although quite surprisingly, the rate charges do not vary significantly. For example, the rate charged for transporting a 90 kg bag of maize from one market center to the next in Nakuru District is the same as in the low production area of Kitui, about Kshs 15 per bag during the dry season and about Kshs 30 per bag during the wet season. Moreover, transporters who rely on contracts with the NCPB, or who transport to NCPB depots, are paid Kshs 10 per bag up to 25 km plus an additional 14 cents per bag over 25 km.

TABLE 5.4

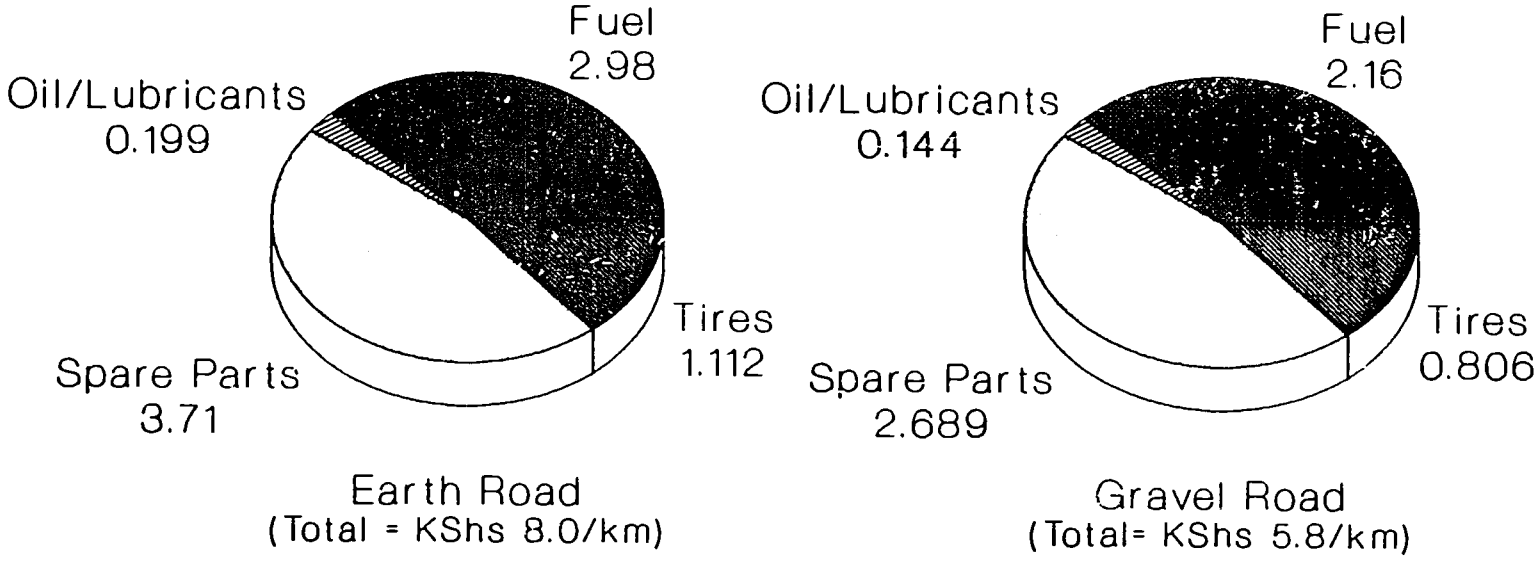
OPERATING COSTS PER KILOMETER FOR 7-TON LORRY IN THE STUDY AREA

Cost Center	Average Cost/Km[1] (Kshs)	% Share[2]
Variable Costs:		
Fuel Consumption	3.75	6.8%
Oil/Lubricant Consumption	0.25	0.1%
Tire Consumption	1.40	2.5%
Spare Parts Consumption	4.67	8.4%
Maintenance Costs	1.33	2.4%
Crew Wages	1.17	2.1%
Idling Costs	7.00	12.7%
Fixed Costs:		
Vehicle Depreciation	33.00	59.6%
Insurance,Taxes, Fees	2.78	5.0%
Total/km	55.35	100.0%

[1] The costs indicated in this column assume a full load of maize (100 bags, more than rated capacity, but typical of what is actually loaded on most lorries of this size). These are indicative costs only, and are not specific to a particular class of road, road geometrics or road surface condition.

[2] This column may not actually add to 100 percent due to rounding.

FIGURE 5.1 VEHICLE RUNNING COSTS PER KILOMETER FOR A 7-TON LORRY (KShs.)



Source: MPW Estimates and Field Studies

While the transport rates paid by NCPB are sensitive to quantity and distance, many transport providers complain that the rates are too low and have not kept pace with increases on operating costs. However, NCPB's rate structure affects transporters and lorry-traders differently. For example, many lorry-traders have other business operations and often transport maize or beans for the NCPB on their backhauls. Such backhauls are intended to cover their operating costs on their return trip.

On the other hand, local transporters, particularly owner-operators, whose main line of business is providing transport services generally, and who are reliant on NCPB haulage business, are affected more severely by the Board's rate structure. This is because of the limited demand for transport services in the study area. The NCPB happens to be the main customer for many local transporters, and they are likely to be negatively affected by a liberalized maize and beans pricing regime. During field interviews in Mwingi, for example, an owner-operator complained that he had been waiting five days to get an NCPB shipment.

Transport providers are likely to be affected more by improved road conditions than by increased transport rates. This is because of the oversupply of transport vehicles in the study area which tends to put downward pressure on transport rates. Additionally, because of the limited demand for transport services, any rate increase is not likely to equal the estimated Kshs 2.2 savings per km if the roads are improved.

The Impact of Liberalized Prices on Transporters

Under a regime of liberalized maize and beans prices and relaxation of movement controls, transport providers are expected to become more competitive in rate setting and more efficient in their operations. Those transport providers who are dependent upon NCPB inter-depot shipments as their primary business are expected to experience a significant decline in the demand for their services. This group consists mainly of local transporters or owner-operators. A lesser role for the NCPB in the purchase and distribution of maize and beans implies a reduction in demand for inter-depot transport, as well as for direct deliveries to the Board.

Lorry-traders, on the other hand, are expected to be the main beneficiaries of the removal of movement controls and liberalized maize and beans prices. Under the present system, lorry-traders consolidate or have maize and beans consolidated on their behalf, make deliveries to the NCPB or informally to mills, using their own transport. Because they purchase as well as sell maize and beans, they have knowledge about the market that other transports do not have. Lorry-traders are well positioned to take full advantage of the removal of permit controls. They simply know the players on both ends of the market and are not likely to relinquish their market share of transport services, particularly in the light of the fact that they own their own transport vehicles. The larger ones do not consider providing transport services as a profit center but, rather, as a way to cover their cost on backhauls when they distribute other goods in the districts. Therefore, they are expected to continue and extend their present operations if permit controls are removed.

5.5 KMDP ROAD INFRASTRUCTURE PROJECTS

5.5.1 Introduction and Program Background

The Government of Kenya, operating through the MoPW, has undertaken an extensive program of improving and maintenance of the minor roads system. Such efforts, although they cover only the minor roads and the rural access roads (about 10 percent of the road system) have been quite successful. However, because of a lack

of equipment, the maintenance and upgrading efforts of MoPW have not kept pace with the high traffic levels and overloading on Class C and longer Class D roads. The consequences have been increasing road surface deterioration which causes reduced motorization, especially during the rainy season.

The long-run consequences of the present situation should be cause for even more concern. Kenya is a country with a well-developed road system relative to other countries of similar size and population. This road infrastructure has been built up over many years. However, should the present situation persist, Kenya risks losing much of its Class C and Class D road infrastructure due to inadequate funding for road maintenance and road improvement. This problem is further exacerbated by overloading of heavy trucks and by increasing traffic volumes, both of which result in significant deterioration of the road system.

Other consequences are general transport inefficiencies such as system bottlenecks that result in limited access between market centers, and between market centers and production areas. Such inefficiencies produce high transport costs for commodities between markets centers resulting in higher consumer prices. Transport inefficiencies between market centers and production areas also translate directly into high transport rates for producer goods and lower income at the farm-gate.

The deteriorating conditions of Kenya's road system as cited above represent an opportunity for USAID/Kenya to support the national road improvement efforts of the Government of Kenya. This can be accomplished with the development and funding of a coordinated program of road system integration and improvement.

5.5.2 Program Objectives

KMDP investment in market to market roads is intended to accomplish the following objectives:

- To ease the friction of movement of commodities and people between spatially separated market centers through improved road surface conditions and better road access;

- To better rationalize and improve the efficiency of the transport sector through long-range planning and by creating conditions that reduce the high cost of transporting commodities on the primary road and minor roads that link market centers to production areas; and

- To better integrate the primary roads that connect market centers to the trunk roads and to the rural roads that provide access from market centers to agricultural production areas.

5.5.3 Project Description

The KMDP road improvement component is designed to enable it to build on the local planning framework of MoPW and the District Development Committees. The program does not envision the creation of a new framework for road development in MoPW. However, it is expected that some modifications to the administrative, operational and planning functions of MoPW at headquarters and at the district level will be necessary for cost-effective program implementation. Inter-district planning and collaboration between different District Development Committees will also be needed for successful program implementation.

Road projects to be developed under the KMDP are based on four key factors. First, the projects should seek to build upon the existing planning and road improvement efforts of the District Development Committees and the District-level MoPW. Although the proposed effort seeks to build on the district-based framework and is consistent with the national policy of decentralization by GOK, it nevertheless raises several institutional issues regarding project selection, planning and coordination. A companion study[2] is intended to examine these issues in greater detail than can be done here.

Second, the KMDP road projects should focus on integrating and improving Class C and longer Class D roads to gravel standards. These two classes of roads play an important part in connecting the entire road system. They are also important for the integration of spatially separated markets to market centers and market centers to production areas. The current and anticipated program efforts of MoPW to maintain and upgrade these classes of roads continue to lag behind what is necessary to maintain the original road design standards and sustain the capacity of the roads. This situation exists because MoPW does not have the required resources to intervene in a timely and effective manner. In light of this, the prospects for MoPW to fulfill its mission regarding the improvement of Class C and D is uncertain at best. The present situation is likely to persist well into the future unless outside program support is made available to GOK. Present resources are simply inadequate for MoPW to take remedial action.

Third, road projects under the KMDP should be directed towards the use of private road contractors to undertake the road improvement work. Private contractors have the requisite road equipment, the contract performance record, and the necessary mobility to participate in the proposed projects. Moreover, because of previous road contracting experience, they are uniquely positioned to assist MoPW in filling the current and persistent gaps in their efforts to improve the road system.

Fourth, the scope of the road projects to be improved under the KMDP covers an area that extends from the eastern districts of Kitui, Nyeri, and Nakuru to the western districts of Kakamega, Kisii and Uasin Gishu. Although the KMDP roads are intended initially to be implemented across the six districts in the study, they have national implications for improving the efficiency of the transport sector and for maize marketing. The projects are designed to cover three types of market conditions across the sample districts. The geographical delimits of the KMDP projects are indicated below.

5.5.4 Area Delimits of the Projects Under the KMDP

Infrastructure projects proposed for improvement under the KMDP are designed to be targeted to three coverage areas that cut across the geographical delimitations of the district boundaries. Although the projects are to administered at the district level, it should not be perceived of as a district-by-district road program, but rather as an area-based agriculture marketing program whereby road system integration and improvements are designed to improve market access. In some cases the road improvement efforts aimed at integrating spatially separated markets may involve connecting two market centers in two different districts. This will require inter-district collaboration involving the planning and coordination of the projects by the District Development Committees of different districts. Other cases may require efforts to focus on specific market areas within a district where road impedance add significant cost to commodities and passenger transport.

Infrastructure projects under the KMDP are intended to cover the high potential maize surplus and high potential cash crop areas as well as the low potential maize

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[2] The Institutional and Financial Analysis for the KMDP is being undertaken by a team of Kenyan consultants during July and August 1989.

deficit areas discussed earlier in this chapter. These areas represent three distinct market conditions and opportunities to improve efficiency of the transport sector. Improving road surface conditions in these areas under competitive market conditions should lead to lower transport costs and to more efficient forms of road haulage i.e, larger loads being carried. The project will focus on integrating and improving the road system in high agricultural production areas, particularly maize and beans areas, with local and regional market centers. This is because of the objective of improving the efficiencies of market to market and market to production area commodity flows. In light of this objective, the level of funding and project support for KMDP projects will necessarily limit its geographic coverage.

5.5.5 District Planning and Project Selection

Although improving roads under the KMDP is intended to function within the framework of district-based planning, current planning efforts of the districts may have to be strengthened and improved upon in order to achieve the marketing objectives of KMDP. This can be accomplished through additional project planning support for the MoPW.

Additionally, the current project selection criteria of the MoPW are not adequate to identify those road projects that can achieve the objectives of connecting spatially separated markets through road system integration under the KMDP. Much of what is done at present does not appear to be related to systematically reducing transport friction between markets. Rather, the project selection procedures of the District Development Committees seem to be aimed at spreading limited road improvement resources among the various divisions within the districts. Existing criteria for project selection do not pay sufficient attention to the economic impacts of a project during the initial screening process, and this does not augur well for a program that emphasizes improving efficiencies in the transport sector. In fact, social or political criteria appear to drive the entire project selection process, and only marginal economic analyses are undertaken to screen projects for funding.

It is expected that the companion institutional analysis study will address the question of project selection criteria more fully than was possible under this study. In this regard, more attention will have to be paid to the economic feasibility of a project because several road projects within a given market area(s) will require evaluation if the desired marketing outcome is to be achieved. Absent a clear procedure for project selection based on strong economic grounds, current methods simply spread the investments in road improvement too thin without foreknowledge of the project's economic impacts. This would be incompatible with the desirability to improve the overall efficiency of agricultural marketing under the KMDP and in particular the transport system.

5.6 EVALUATION OF THE KMDP ROAD PROJECTS

This section presents the evaluation methodology and the resulting economic feasibility analyses of implementing and improving roads under the KMDP. KMDP road projects are intended to integrate the system of Class C and D roads with district market centers and production areas, and involves upgrading existing market roads to gravel standards. The economic analyses of the projects are based on the evaluation of three cases: Class C and D road projects from a high-potential maize-surplus area, a high potential cash-crop area, and a grain deficit area.

5.6.1 Evaluation Methodology

Because reductions in transport costs are the most direct benefits that accrue to users of an improved road under a regime of competitive markets, the study team decided to use these benefits as the basis for the economic feasibility analyses. Vehicle operating cost savings come about, for example, when an earth road is upgraded to gravel standards or when a gravel road in poor condition is restored to its original design standards. Because such an improvement results in changes in the surface conditions of the road, the costs of operating vehicles over the road are lowered. The resulting transport benefits were first annualized and then projected over the life of the improved road. The discounted benefits were then compared to the discounted cost of construction and the cost of both routine and periodic maintenance of the road improvement over the same time horizon. The benefits were then taken as a ratio of the costs. The net benefits (i.e, the discounted benefits minus the discounted costs) were used to conduct the internal rate of return and net present value analyses. A sensitivity analysis was also conducted to determine if the road investment was economically feasible under alternative scenarios such as, for example, reducing the projected benefits or increasing maintenance costs. The results of these analyses indicate whether making the investment to improve the road is justified on economic grounds.

The basic data requirements for conducting the economic appraisal of a road improvement project include following:

- Traffic profile of existing traffic volumes and classifications by vehicle;
- Diverted and generated traffic by volume and classification;
- Vehicle operating costs by vehicle class for different road conditions;
- Geometrics of the road (e.g, length, width, surface conditions, etc.); and
- Construction and maintenance costs per kilometer.

5.6.2 Analytical Procedures

The procedure used in performing the analysis was to evaluate a base case scenario first for a Class D and C road in the two high potential areas and in the low-potential area. Under the base case scenario, the economic analysis was conducted on the user savings only. The cost inputs for the base case analysis included the construction costs estimated at Kshs 260,000 (U.S. $12,700 at the exchange rate of Kshs 20.5 to $1) per km, annual maintenance costs estimated at Kshs 10,900 per km for routine maintenance, and Kshs 150,000 per km for periodic maintenance. All cost inputs were shadow priced for the foreign exchange component and for the use of unskilled labor to reflect economic costs rather than financial costs.[3] Vehicle operating cost savings or user benefits were estimated on the basis of the savings achieved from

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[3] The construction costs are assumed to include a foreign exchange component that equals 27 percent of total financial costs and an unskilled labor component that is 40 percent of total financial costs. Total construction costs were shadow priced at 83 percent of the financial costs. The shadow prices include a rate of 130 percent of financial costs for the foreign exchange component including taxes and subsidies, and 50 percent of financial costs for the unskilled labor component. The maintenance costs were shadow priced at 60 percent of financial costs for routine maintenance and 80 percent of financial costs for periodic maintenance. Unskilled labor was assumed to be 75 percent of the maintenance cost and the foreign exchange component was estimated at 10 percent of the financial cost for maintenance. The shadow prices are based on I.B.R.D. 1986.

using an earth road in poor condition as compared to the using an improved gravel road. Because the Class C and longer Class D roads in the study are in such poor condition, user benefits were estimated for the difference between using an earth road and an improved gravel road. The results of the economic analyses are discussed below and are detailed in Appendix 5.1.

5.6.3 Evaluation of Case Studies

Three cases were used to evaluate the economic feasibility of the proposed KMDP road project. Case I examined the economic feasibility of improving a Class C and a Class D road in Nakuru District. Case II evaluated a Class C and a Class D road in Kisii and Kakamega Districts, Case III evaluated a Class C and a Class D road in Kitui. In each case, the project improvement involved improving a gravel road in poor condition to a higher standard. Both the routine and periodic maintenance were assumed to be carried out using labor-based methods, as in the Minor Roads Program.

Case Study I

The roads evaluated in Case I are D-320, which is in Nakuru District, and C-50, located in Uasin Gishu District. D-320 is 45.9 km in length and connects the towns of Mau Narok, Elementaita and Lanet. Road C-50 is 59 km in length and extends from the junction of road B-2 near Moi's Bridge to the junction of road E-323. The road surface conditions for both of these roads are very poor and in the rainy season the roads are virtually impassable.

The results of the economic analysis are presented in Appendix F.1.1. Improving road D-320 is economically justified on the basis of the IRR which is 24.82 percent. The NPV on the project benefits discounted at 12 percent and 14 percent indicate a positive return on the investment, as well as the benefit-cost analysis which yielded a ratio of 1.43.

The estimated project benefits were reduced by 25 percent to determine if the proposed project was feasible. Even under the reduction in benefits scenario, the project still had a positive return. The IRR was 14.3 percent and the NPV was positive at Kshs 1,031,242 as presented in Appendix F.1.2.

The economic evaluation of road C-50 reveals that if the road is improved to gravel standards, the investment would be economically feasible. The project's IRR is 32.4 percent and the NPV discounted at 12 percent and 14 percent is respectively Kshs 13,936,414 and Kshs 11,087,116. Details of the economic evaluation are presented in Appendix F.1.3.

The sensitivity analysis conducted on the project's benefits indicated that the project is still feasible even if benefits are reduced by 25 percent. Under this benefit reduction scenario, the IRR as shown in Appendix F.1.4 is 20.93 percent. The NPV remains positive when the benefits are discounted at 12 percent and 14 percent.

Case Study II

The road projects evaluated for Case II include D-206, which is located in Kisii District, and C-41 in Kakamega District. Road D-206 is 22.6 km in length and extends from Igare south to Igembe. Road C-41 is 27.9 km long and extends from the outskirts of Kakamega town north to the district boundary near Chebuyusi.

The results of the economic analysis of road D-206 indicate that the project is feasible to undertake. As revealed in Appendix 5.1.5, the IRR for the project is 33.86 percent while the NPV is Kshs 5,541,211 when considering user benefits only.

The sensitivity analysis performed on the project's benefits indicates that by reducing the benefits to 75 percent of the estimated value, the project is still economically attractive. This is shown in Appendix F.1.6 where the IRR is 21.71 percent and the NPV is Kshs 2,274,859.

Case Study III

The road evaluated in Case III was D-507 in Kitui District, which is 168 km in length and extends from Kitui to Nuu. However, this evaluation considered only a 45 km length of the road. The road section evaluated extends from Mwingi north to the district boundary at Kiuga, and is in very poor condition.

The results of the economic analyses on the project benefits for a improving a gravel road to higher standards are presented in Appendix 5.1.7. As Appendix 5.1.7 indicates, the road improvement investment when considering the base case of road user savings only, the project is only marginally feasible. The internal rate of return (IRR) for the project is 13.569 percent. The net present value of the benefits discounted at 12 percent yields a present value of Kshs 719,196. The results of the benefit-cost analysis reveal a ratio of 1.04. Each of the economic tests indicates that improving the road to gravel standards in the low potential maize-deficit area is justified on economic grounds. However, the economic tests also clearly indicate that this is a marginal investment because a higher return could be achieved from an alternative road project.

Because this project is only marginally feasible, it was not necessary to conduct a sensitivity analysis on the benefits derived from making the investment. A sensitivity analysis would only reveal that this road project should not be accorded a high investment priority.

The three case studies discussed above represent different opportunities to integrate Class C and longer Class D roads to market centers and production areas. The benefits derived from the making the investments to improve these classes of roads increase with the length of the road. This is expected, because the only variable factors are the road length and the traffic volumes. Traffic volumes tend to be higher for Class C and longer Class D roads, because they are the link to the trunk road network. Other factors such as vehicle operating costs and the road conditions are the same for each kilometer of road. Such results imply the need for focusing on longer roads.

5.7 IMPLEMENTATION OF KMDP ROAD PROJECTS

Because of potential pitfalls and institutional constraints that can limit the effectiveness of the KMDP, the infrastructure component of the KMDP should be organized and implemented along the lines indicated in the following sections.

5.7.1 Organization and Administration

At the ministerial level, the Ministry of Public Works should be the executing agency for the KMDP road projects. Within the districts, road project under KMDP are to be supervised by the District Improvement and Maintenance Engineer (DIME) under the Minor Roads Program of the ministry. It is anticipated that once road

projects in high-potential market areas are identified within the framework of the District Development Committees, the actual technical and economic analyses of the road projects will be conducted by the Planning Unit of MoPW.

5.7.2 Project Output of the KMDP

Under KMDP, it is proposed that between 1860 and 1890 km of Class C and longer D roads will be upgraded to gravel standards over three years. The average cost of improving roads in the three coverage areas is estimated to be Kshs 260,000 per km. About 620 to 630 km of roads are to be improved per year across the six districts. This estimate assumes that the work will be performed by private contractors. It is based on the capacity of local private contractors to upgrade between 100 to 150 km of roads per year, per district. The actual output will also be based on the institutional capacity of MoPW to absorb the proposed projects and the level of technical assistance provided.

The companion institutional study will explore the contractors' capacity to undertake this volume of work, and the institutional capacity of MoPW to administer the projects under its present administrative and operational functions.

5.7.3 Private Road Contracting

Road projects under the KMDP will increase the level of participation of private road contractors in road improvement work. Although MoPW contracts out some of its road work to private firms, particularly for Rural Access Roads, the volume of road contract work to private contractors can be significantly increased under this KMDP. However, the contract award process of MoPW will have to be modified in order to permit open competitive bidding. At present, MoPW awards road contracts on a sole-source basis. The KMDP envisions an award process whereby pre-qualification of road contractors precedes the actual submission of bids to MOPW. On the basis of this pre-qualification process, contractors will be permitted to submit bids using a standardized bidding format.

5.7.4 Coordination and Supervision

Improving roads under the KMDP will require a level of planning, coordination, and management supervision beyond the present capabilities of MoPW. The operational planning, administrative, and supervisory capacity of MoPW appear to be overextended with the current MRP. In order to effectively implement the infrastructure component of the KMDP, outside technical and management assistance will be necessary. The proposed KMDP road component will require two full-time staff persons to assist MoPW in implementing the projects. Such a staff should consist of a Project Coordinator (Senior Transport Economist) and a Civil Engineer. The proposed Project Coordinator should have primary responsibility for overall project administration, coordination and supervision with the District Development Committees and MoPW. The Project Coordinator should have the responsibility for coordinating the activities of the KMDP road activities with those of other donor agencies providing support for the Minor Roads Program. The Project Coordinator should participate in the contract award process and should review the invoices of private road contractors for approval before payment is granted. The Project Coordinator should review the economic and technical studies conducted by MoPW prior to final project selection in order to ensure that the KMDP guidelines are adequately taken into account.

The proposed Civil Engineer should have a background in road infrastructure and should be responsible for day to day project coordination at the district level with the DIME, the District Agricultural Officer and the District Development Officer. The Civil

Engineer should also participate in the process to pre-qualify road contractors and in the contract award process. This staff person should supervise and conduct inspections of the road contractors' work and prepare field reports as required.

5.7.5 Applied Research, Monitoring and Evaluation System

The KMDP infrastructure component will have to rely on the collection and analysis of data within the framework of the Applied Research, Monitoring, and Evaluation System (ARMES) to facilitate its long-range transport planning efforts. Under the KMDP it is envisioned that the Planning Unit of MoPW will be the implementing agency for the collection and analysis of transport sector data under ARMES. Once these data are collected they should be made available to the Ministry of Planning and National Development, as the coordinating ministry for ARMES. Additionally, regular sector reports should be prepared and submitted to the Ministry of Planning addressing issues and opportunities for improving the efficiency of the transport sector.

The collection and analysis of transport data should include the following:

- Traffic volumes and vehicle classification data;
- Origin and destination of vehicles and commodities;
- Vehicle operating cost data;
- Road maintenance and improvement cost data; and
- Vehicle registration and fleet data.

5.7.6 KMDP Project Funding

The funding requirement necessary to support KMDP road projects are estimated to be US$ 20 to 25 million (Kshs 410 to 512.5 million). This estimate is based on an equivalent U.S.$ 12,700 (Kshs 260,000) per km times 1,860 km. Such funding is to be disbursed over three years and is programmed to fund: the road improvement contracts between private road contractors and MoPW; technical support and short-term consultancies in the Planning Unit of MoPW; and the salaries and related support of the Project Coordinator and the Civil Engineer, in addition to their administrative and operational support staff. The required funding also includes support for the collection and analysis of transport sector data under the Applied Research, Monitoring and Evaluation System (ARMES).

5.8 POLICY AND INSTITUTIONAL ISSUES

Successful implementation of the infrastructure component of the KMDP requires coming to grips with several significant policy and institutional issues. In this section four major issues are explored in depth, while the institutional issues are highlighted for subsequent analysis. The four issues are: (1) private road contracting; (2) road user charges; (3) road financing; and (4) regulatory policies.

5.8.1 Private Road Contracting

The MoPW under its Rural Access Road Program has contracted certain road upgrading work to private contractors, and this is likely to continue in the near term. In fact, MoPW has programmed roads for private contractor to undertake in several of

the districts in the study area. MoPW anticipates that about 20 km of road per district over the next fiscal year will be let to private contractors.

At present, the MoPW awards road contracts to private contractors on a sole-source basis and without the benefit of open competitive bidding. Such contract awards are typically based on a fixed-priced contract whereby the contractor is paid according to the work completed. There are, however, a number of implications for policy and program development that arises from this type of award process. First, because there is no pre-qualification process for short-listing contractors, it is not always clear that the best road contractors are being considered for the work.

Second, the fixed-price contracts tend not to reflect the financial costs of road contract work. The fixed-price contract is based on the estimated unit cost of certain road improvement activities such as hauling gravel, spreading materials, preparing the sub-base, etc. There is no reason to expect that MoPW is more capable of estimating the financial cost of upgrading work than private contractors. Moreover, it is not clear in the absence of contractors' pre-qualifying that MoPW is aware of a contractor's overhead structure or for that matter, the contractor's fee structure. Additionally, no performance or surety bonds are required by MoPW. The contracting process requires modification if the private contractors are to fully participate in the KMDP road improvement projects. What is required is a process which awards contracts on the basis of the contractor's ability to perform in terms of completing the work, as scheduled and within budgetary limits.

Setting aside the institutional issues indicated above, private contractors are expected to participate if the volume of work is sustainable. Additionally, the profitability of such an effort and the possibility for a volume of work that is long term should also interest private contractors.

5.8.2 Road User Charges

A sustainable road system that will provide transport service efficiently requires a steady flow of funds for continual construction, rehabilitation and periodic maintenance, as well as recurring routine maintenance. Donor aid provides some funds, but except for grants, Kenyan funds must be found to meet annual financial commitments. A sustainable road system is one that has caught up on the backlog of road rehabilitation and is conducting the proper maintenance to keep the roads providing service levels in line with their original design standards. Kenya's road system is generally well laid out, and current construction and rehabilitation work is primarily upgrading roads as traffic dictates, as well as improving roads that have fallen into disrepair because of lack of funds. Central Treasury funds have been used to meet Kenya's road commitments not covered by grants with the exception of toll road revenues imposed in 1984 which flow into the Public Roads Toll Fund administered by the MoPW. But past experience indicates that not only are funds insufficient to reach the sustainable level, they fluctuate over time as revenue rates and sources change and levels of collection vary. Also, road funds are subject to limitation because of demands for Central Treasury funds by other government ministries and parastatals.

A dependable and predictable source of funds is a prime requirement for a sustainable road program. A 1987 World Bank study indicated that some 31 countries, including Kenya, had legislation which earmarked taxes for road improvement. Several Central American countries have turned to road user charges as a means of collecting funds for road purposes. Usually, a series of different fees, taxes, tolls and charges make up the road user charge system and proceeds from those charges are dedicated (earmarked) for use on highway construction and maintenance. There are various types of user charges, but the common element is that they are paid by those using the roads and causing the construction and maintenance activities that require the revenues. The charges may be imposed on vehicles and parts, or on fuel, oil and tires required

to operate vehicles, or on specific use of specific highways in the form of tolls. In some instances, drivers license fees, if earmarked for road purposes, are considered a user charge. Licensing fees charged businesses operating transport firms are usually not considered road user charges, but rather the costs of being allowed to enter into the business. However, Kenya's regulatory fees are imposed on the vehicles operating for transport or other business, rather than on the business firm; thus they can be considered as road user taxes.

The financing of a sustainable road system must not only be dependable and predictable, but it should reflect economically efficient pricing and be equitable among all parties. Finally, a road user charge system must be able to target those users required to contribute to the system and allow for exclusion of those who may purchase commodities on which a road user tax is assessed but are not used on roads. Possibly no one user fee can meet all the conditions of dependability, predictability, efficiency and equitability. However, when established as a package of user charges (a price structure), the amount paid by specific users through several types of user charges may meet the efficiency and equitability standards and the totals paid by all users meet the dependability and predictability standards.

Types of Road User Charges

Fees on Vehicles and Parts. Charges may be imposed on the one-time purchase of vehicles and parts which have a long-life, i.e., over a year. Import duties and excise taxes applied at time of sale are of this type. Since they apply to vehicles operating on the roads they fall into the road user category. However, they fail to meet some of the conditions of an appropriate user charge. They will tend to provide fluctuating revenues as import quotas change or as the rate of duty or tax changes. In addition, it is difficult to tie the charge made to specific highway use, since the charges apply for the life of the vehicle or part. As a price, they cannot relate to road cost responsibility of operators of the vehicle as well as other types of charges. Of course, they can be large sources of funds, depending upon the rate of the duties and taxes.

The annual fees imposed on motor vehicles overcome some of the limitations of one-time impositions represented by excise tax or import duties. Registration fees charged vehicles on an annual basis are a steady dependable source of revenues and generally can be predicted within acceptable ranges of error. Vehicle fleets are a function of population and economic growth, primarily, as well as road conditions and other factors directly influencing transportation. Annual fees lose some degree of efficiency, because they cannot take account of where vehicles are operated, the amount of road use in the year period, or the time of use. However, they can be differentiated by type of vehicle and thus overcome some of the inefficiencies of other types of user charges. From a fairness point of view, these types of fees can target the highway user and generally can exclude imposing road user charges to those not causing road costs. In other words, the registration fees and one-time charges can apply to specific vehicles and parts that use the highways.

Taxes on Recurring Expenditures for Motor Vehicle Operation. Operating motor vehicles requires recurring expenditures for fuel, oil and tires. In the case of fuel, especially, the tax falls in line with efficiency and equitability conditions of a sound financing scheme. Fuel consumption rates increase with larger vehicles, resulting in higher payments per kilometer of operation, which coincides with the higher cost responsibility of larger vehicles. Also, fuel consumption increases directly with increased travel on roads, which also coincides with the idea that the amount of traffic raises cost responsibility. Oil and tire taxes are not as precise but generally take on the same characteristics.

Because there is a large traffic base and traffic increases generally follow population and economic trends, the amount of annual revenues accruing from fuels taxes is dependable and predictable. As stated earlier, as a form of prices, they are equitable among highway users and lead to efficient use of the road resources.

There is one condition in which the fuels tax, as well as oil and tire taxes, is lacking. If these charges in treated as highway user fees, then only the fuel, oil and tires used in road operations should be assessed those fees. However, there is considerable use of fuel and oil by equipment and machinery not using the roads. For example, agricultural machinery using fuel but not operating on highways should not be charged highway user charges. An import duty or a consumption type excise tax on fuel cannot distinguish the ultimate use of the fuel purchased. Consequently, a system of excluding the purchase of fuels not used in equipment causing highway costs must be worked out. One possibility is to exempt the equipment using the fuel off the road from other types of taxes or duties in which a distinction can be made.

Highway Tolls. Tolls charged for road service can be specific to the vehicle, site and timing of traffic. Consequently, they exhibit efficiency and equitability traits that other user charges cannot. Differentiated toll rates can account for the different cost responsibility of various sizes of vehicles. Since tolls apply to travel on specific roads they can be related to the revenue requirements for the specific road or class of road. Finally, tolls can be differentiated by time of travel (peak vs. non-peak, or congested vs. uncongested). Thus, if cost responsibility is carefully analyzed before establishing the toll schedule, tolls can meet the efficiency and equitability requisites quite closely. Because tolls usually are placed on heavily traveled roads and applicable to a large traffic base, they are a dependable source of revenues; i.e., there will not be drastic swings in the annual amounts collected. In addition, tolls meet the target requirement, since vehicles can be identified and charged the appropriate price from the toll schedule, and only highway users will pass through the toll stations.

The drawback to a toll system is the collection and administration costs, which make tolls feasible only when such costs can be spread over greater amounts of traffic. Consequently, they are economical only on heavily-traveled trunk highways.

5.8.3 Road Financing

The capital requirements of the KMDP road component are estimated at Kshs 500 million over a three-year period. These amounts would be provided by USAID/Kenya grants channeled through MoPW's Development Budget and earmarked for KMDP road rehabilitation.

A critical aspect for the KMDP road component will be developing a dependable source of funds to finance routine and periodic road maintenance. When the program is completed, annual maintenance requirements will total approximately Kshs 76 million based on an annual maintenance cost of Kshs 38,720 per km (Kshs 10,900 for four years for routine maintenance plus Kshs 150,000 for periodic maintenance in the fifth year divided by five years), and a completed system of between 1,860 and 1,890 km.

The nature of the maintenance funding problem is shown in the following calculations. If we assume that maintenance of the Class A and B roads and any other bitumen surface roads will eventually be financed from the Public Roads Toll Fund, there remains about 26,200 km of gravel roads and 28,600 km of earth roads to be maintained. Most of the roads that will be rehabilitated under the KMDP are now classified as gravel roads. Therefore, a difference of 24,350 km of other gravel roads will require annual maintenance funds.

It is also assumed that the annual maintenance costs of earth roads are substantially lower, first because not all earth roads are in condition to warrant maintenance. Such roads would require substantial rehabilitation before maintenance expenditures are incurred. Some earth roads will be upgraded to gravel standards through the Minor Roads Program. Assuming the maintenance cost per kilometer of gravel roads is Kshs 38,720 and the annual maintenance cost of earth roads averages Kshs 5,000 per km, the annual funding requirements to sustain the non-bitumenous roads system is as follows:

Annual maintenance cost of the KMDP roads:	
1,860-1,980 km x Kshs 38,720/km	Kshs 76 million
Annual maintenance cost of other gravel roads:	
24,350 km x Kshs 38,720/km	Kshs 942 million
Annual maintenance cost of earth roads:	
28,600 km x Kshs 5,000/km	Kshs 144 million
Total annual maintenance requirement	Kshs 1162 million

The funds in MoPW's 1989/90 Recurrent Expenditure Budget come from GOK sources and total Kshs 1300 million. However, of this only Kshs 470 million is allocated for road maintenance. If the amount assigned to trunk roads is deducted, approximately Kshs 434 million will be available for non-bitumen roads. This falls far short of the Kshs 1162 million estimated maintenance funds needed for that part of Kenya's road system. Consequently, to sustain the KMDP roads as they are integrated with the Kenyan road system will require assurance that the Kshs 76 million are available annually and does not fall into the Kshs 720 million annual shortfall of maintenance funds.

One method of adding dependability to maintenance funding is to dedicate or earmark specific revenues for that purpose. Our discussion gives the conditions for an effective user charge system and describes Kenya's current user charges. The specifics for financing the maintenance requirements of the KMDP and whether some earmarking of road user charges is feasible should be addressed by the subsequent institutional study. However, the need for a reliable source of funds if the KMDP roads are to sustain their serviceability over their 15-year life cannot be overemphasized.

One further potential problem area must be addressed relative to maintenance financing. The maintenance costs assigned roads under the KMDP assume no continual overloading of vehicles operating over the road. Normal recurring maintenance activity and periodic maintenance every fifth year should retain the roads' original design standards and quality. Repeated vehicle overloading, however, will be damaging to gravel roads and could either permanently lower the capacities of such roads or shorten the interval between periodic maintenance. For example, using a three-year interval for periodic maintenance work increases the annual maintenance costs per km from Kshs 38,720 to nearly Kshs 57,300. It is also likely, that repeated overloading, despite more frequent periodic maintenance, will shorten the useful life of the road from the assumed 15-year period. The sustainability of the investments under the program will be enhanced if institutional devices are introduced to control the problem of vehicle overloading. The alternatives are far more costly for a country such as Kenya. Kenya is rapidly falling into a situation whereby it is chronically plagued by the lack of sustainable roads once constructed or rehabilitated to appropriate design standards.

5.8.4 Regulatory Policy

Kenya has a regulatory act which could, if strictly enforced, limit the supply of vehicles operating in the commercial transport business.[4] Each vehicle coming under the law's definition of commercial business must have a license to operate on the road. The Transport Licensing Board may attach conditions to the issuance of a license. Among those conditions are a limitation to types of goods that may be carried or not carried, the charges or maximum or minimum charges for freight transport and "such other conditions as may be prescribed in the public interest or with a view to preventing uneconomic competition." These provisions could be applied to impose rigid controls over the motor carriage of goods. However, to date, denial of a vehicle license or imposition of substantial conditions upon vehicle use has not been implemented. The act does provide for licensing fees, as described under road user charges.

Evidence in many countries indicates that the need for strict economic controls of the transport of goods by motor vehicle is generally not necessary and if practiced could lead to inefficiencies in the goods transport industry. Kenya's regulatory provisions primarily serve as a device to collect revenues through the license fees. However, the fees are not large and may act more as a nuisance tax than for any needed purpose.

Laws of Kenya, **The Transport Licensing Act.**

APPENDIX 5.1.1
KMDP INFRASTRUCTURE DEVELOPMENT COMPONENT: NAKURU DISTRICT
ECONOMIC COST ANALYSIS

Class D Road:
Road Length: 45.9 km

Units: KShs.

	COSTS			: BENEFITS		:DISCOUNT FACTOR AT .12		
Year	Construction Costs	Maintenance Costs	Total Costs	User Savings	Total Benefits	Discounted Costs	Discounted Benefits	Discounted Net Benefits
0	4,316,000	0	4,316,000	0	0	3,854,188	0	(3,854,188)
1	5,589,220	130,800	5,720,020	883,747	883,747	4,558,856	704,347	(3,854,509)
2		300,186	300,186	3,534,989	3,534,989	213,732	2,516,912	2,303,180
3		300,186	300,186	3,588,014	3,588,014	190,918	2,281,977	2,091,059
4		300,186	300,186	3,641,834	3,641,834	170,205	2,064,920	1,894,714
5		5,508,000	5,508,000	3,696,462	3,696,462	2,792,556	1,874,106	(918,450)
6		300,186	300,186	3,751,908	3,751,908	135,684	1,695,863	1,560,179
7		300,186	300,186	3,808,187	3,808,187	121,275	1,538,508	1,417,232
8		300,186	300,186	3,865,310	3,865,310	108,367	1,395,377	1,287,010
9		300,186	300,186	3,923,290	3,923,290	96,660	1,263,299	1,166,639
10		5,508,000	5,508,000	3,982,139	3,982,139	1,580,796	1,142,874	(437,922)
11		300,186	300,186	4,041,871	4,041,871	77,148	1,038,761	961,613
12		300,186	300,186	4,102,499	4,102,499	68,743	939,472	870,730
13		300,186	300,186	4,164,037	4,164,037	61,538	853,627	792,089
14		300,186	300,186	4,226,497	4,226,497	54,934	773,449	718,515
15		5,508,000	5,508,000	4,289,895	4,289,895	897,804	699,253	(198,551)
16		300,186	300,186	4,354,243	4,354,243	43,827	635,719	591,892
	9,905,220	20,257,032	30,162,252	0 59,854,921	59,854,921	15,027,232	21,418,464	6,391,231

APPENDIX 5.1.2
KMDP INFRASTRUCTURE DEVELOPMENT COMPONENT: NAKURU DISTRICT
ECONOMIC COST ANALYSIS
(USER SAVINGS AT 75% OF TOTAL SAVINGS)

Class D Road:
Road Length: 45.9 km

Units: KShs.

	COSTS			:	BENEFITS		:DISCOUNT FACTOR AT .12		
Year	Construction Costs	Maintenance Costs	Total Costs	:	User Savings	Total Benefits	Discounted Costs	Discounted Benefits	Discounted Net Benefits
0	4,316,000	0	4,316,000		0	0	3,854,188	0	(3,854,188)
1	5,589,220	130,800	5,720,020		662,810	662,810	4,558,856	528,260	(4,030,596)
2		300,186	300,186		2,651,242	2,651,242	213,732	1,887,684	1,673,952
3		300,186	300,186		2,691,010	2,691,010	190,918	1,711,483	1,520,564
4		300,186	300,186		2,731,376	2,731,376	170,205	1,548,690	1,378,484
5		5,508,000	5,508,000		2,772,346	2,772,346	2,792,556	1,405,580	(1,386,976)
6		300,186	300,186		2,813,931	2,813,931	135,684	1,271,897	1,136,213
7		300,186	300,186		2,856,140	2,856,140	121,275	1,153,881	1,032,606
8		300,186	300,186		2,898,982	2,898,982	108,367	1,046,533	938,166
9		300,186	300,186		2,942,467	2,942,467	96,660	947,474	850,815
10		5,508,000	5,508,000		2,986,604	2,986,604	1,580,796	857,155	(723,641)
11		300,186	300,186		3,031,403	3,031,403	77,148	779,071	701,923
12		300,186	300,186		3,076,874	3,076,874	68,743	704,604	635,862
13		300,186	300,186		3,123,027	3,123,027	61,538	640,221	578,682
14		300,186	300,186		3,169,873	3,169,873	54,934	580,087	525,153
15		5,508,000	5,508,000		3,217,421	3.217,421	897,804	524,440	(373,364)
16		300,186	300,186		3,265,682	3,265,682	43,827	476,790	432,962
	9,905,220	20,257,032	30,162,252	0	44,891,191	44,891,191	15,027,232	16,063,848	1,036,616

IRR:	14.30%
NPV: @12%	1,031,242
@14%	120,866
B/C Ratio:	1.07

APPENDIX 5.1.3
KMDP INFRASTRUCTURE DEVELOPMENT COMPONENT: UASIN GISHU DISTRICT
ECONOMIC COST ANALYSIS
(WITH USER SAVINGS ONLY)

Class C Road:
Road Length: 59 km

Units: KShs.

	COSTS			:	BENEFITS		:DISCOUNT FACTOR AT .12		
Year	Construction Costs	Maintenance Costs	Total Costs	:	User Savings	Total Benefits	Discounted Costs	Discounted Benefits	Discounted Net Benefits
0	5,395,000	0	5,395,000		0	0	4,817,735	0	(4,817,735)
1	7,337,200	163,500	7,500,700		1,728,151	1,728,151	5,978,058	1,377,336	(4,600,721)
2		385,860	385,860		5,189,643	5,189,643	274,732	3,695,026	3,420,293
3		385,860	385,860		5,314,194	5,314,194	245,407	3,379,828	3,134,421
4		385,860	385,860		5,441,735	5,441,735	218,783	3,085,464	2,866,681
5		7,080,000	7,080,000		5,572,337	5,572,337	3,589,560	2,825,175	(764,385)
6		385,860	385,860		5,706,073	5,706,073	174,409	2,579,145	2,404,736
7		385,860	385,860		5,843,019	5,843,019	155,887	2,360,580	2,204,692
8		385,860	385,860		5,983,251	5,983,251	139,295	2,159,954	2,020,658
9		385,860	385,860		6,126,849	6,126,849	124,247	1,972,845	1,848,598
10		7,080,000	7,080,000		6,273,893	6,273,893	2,031,960	1,800,607	(231,353)
11		385,860	385,860		6,424,467	6,424,467	99,166	1,651,088	1,551,922
12		385,860	385,860		6,578,654	6,578,654	88,362	1,506,512	1,418,150
13		385,860	385,860		6,736,542	6,736,542	79,101	1,380,991	1,301,890
14		385,860	385,860		6,898,219	6,898,219	70,612	1,262,374	1,191,762
15		7,080,000	7,080,000		7,063,776	7,063,776	1,154,040	1,151,395	(2,645)
16		385,860	385,860		7,233,307	7,233,307	56,336	1,056,063	999,727
	12,732,200	26,033,820	38,766,020	0	94,114,109	94,114,109	19,297,691	33,244,382	13,946,692

IRR: 32.40%
NPV: @12% 13,936,414
@14% 11,087,116
B/C Ratio: 1.72

APPENDIX 5.1.4
KMDP INFRASTRUCTURE DEVELOPMENT COMPONENT: UASIN GISHU DISTRICT
ECONOMIC COST ANALYSIS
(WITH USER SAVINGS at 75% ONLY)

Class C Road:
Road Length: 59 km

Units: KShs.

	COSTS			: BENEFITS		:DISCOUNT FACTOR AT .12		
Year	Construction Costs	Maintenance Costs	Total Costs	: User Savings	Total Benefits	Discounted Costs	Discounted Benefits	Discounted Net Benefits
0	5,395,000	0	5,395,000	0	0	4,817,735	0	(4,817,735)
1	7,337,200	163,500	7,500,700	1,296,113	1,296,113	5,978,058	1,033,002	(4,945,056)
2		385,860	385,860	3,892,232	3,892,232	274,732	2,771,269	2,496,537
3		385,860	385,860	3,985,646	3,985,646	245,407	2,534,871	2,289,464
4		385,860	385,860	4,081,301	4,081,301	218,783	2,314,098	2,095,315
5		7,080,000	7,080,000	4,179,253	4,179,253	3,589,560	2,118,881	(1,470,679)
6		385,860	385,860	4,279,555	4,279,555	174,409	1,934,359	1,759,950
7		385,860	385,860	4,382,264	4,382,264	155,887	1,770,435	1,614,547
8		385,860	385,860	4,487,438	4,487,438	139,295	1,619,965	1,480,670
9		385,860	385,860	4,595,137	4,595,137	124,247	1,479,634	1,355,387
10		7,080,000	7,080,000	4,705,420	4,705,420	2,031,960	1,350,456	(681,504)
11		385,860	385,860	4,818,350	4,818,350	99,166	1,238,316	1,139,150
12		385,860	385,860	4,933,991	4,933,991	88,362	1,129,884	1,041,522
13		385,860	385,860	5,052,406	5,052,406	79,101	1,035,743	956,642
14		385,860	385,860	5,173,664	5,173,664	70,612	946,781	876,168
15		7,080,000	7,080,000	5,297,832	5,297,832	1,154,040	863,547	(290,493)
16		385,860	385,860	5,424,980	5,424,980	56,336	792,047	735,712
	12,732,200	26,033,820	38,766,020	70,585,582	70,585,582	19,297,691	24,933,287	5,635,596

APPENDIX 5.1.5
KMDP INFRASTRUCTURE DEVELOPMENT COMPONENT PROGRAM: KISII DISTRICT
ECONOMIC COST ANALYSIS
(WITH USER SAVINGS ONLY)

Class D Road:
Road Length: 22 km

Units: KShs.

	COSTS			: BENEFITS		:DISCOUNT FACTOR AT .12		
Year	Construction Costs	Maintenance Costs	Total Costs	: User Savings	Total Benefits	Discounted Costs	Discounted Benefits	Discounted Net Benefits
0	4,747,600	0	4,747,600	0	0	4,239,607	0	(4,239,607)
1		143,880	143,880	1,937,566	1,937,566	114,672	1,544,240	1,429,568
2		143,880	143,880	1,966,629	1,966,629	102,443	1,400,240	1,297,798
3		143,880	143,880	1,996,129	1,996,129	91,508	1,269,538	1,178,030
4		143,880	143,880	2,026,071	2,026,071	81,580	1,148,782	1,067,202
5		2,640,000	2,640,000	2,056,462	2,056,462	1,338,480	1,042,626	(295,854)
6		143,880	143,880	2,087,309	2,087,309	65,034	943,464	878,430
7		143,880	143,880	2,118,618	2,118,618	58,128	855,922	797,794
8		143,880	143,880	2,150,398	2,150,398	51,941	776,294	724,353
9		143,880	143,880	2,182,654	2,182,654	46,329	702,815	656,485
10		2,640,000	2,640,000	2,215,394	2,215,394	757,680	635,818	(121,862)
11		143,880	143,880	2,248,624	2,248,624	36,977	577,896	540,919
12		143,880	143,880	2,282,354	2,282,354	32,949	522,659	489,711
13		143,880	143,880	2,316,589	2,316,589	29,495	474,901	445,405
14		143,880	143,880	2,351,338	2,351,338	26,330	430,295	403,965
15		2,640,000	2,640,000	2,386,608	2,386,608	430,320	389,017	(41,303)
16		143,880	143,880	2,422,407	2,422,407	21,006	353,671	332,665
	4,747,600	9,790,440	14,538,040	0 34,745,150	34,745,150	7,524,478	13,068,178	5,543,700

IRR:	33.86%
NPV: @12%	5,541,211
@14%	4,486,686
B/C Ratio:	1.74

APPENDIX 5.1.6
KMDP INFRASTRUCTURE DEVELOPMENT COMPONENT: KISII DISTRICT
ECONOMIC COST ANALYSIS
(WITH USER SAVINGS ONLY AT 75 %)

Class D Road:
Road Length: 22 km

Units: KShs.

	COSTS			: BENEFITS		:DISCOUNT FACTOR AT .12		
Year	Construction Costs	Maintenance Costs	Total Costs	: User Savings	Total Benefits	Discounted Costs	Discounted Benefits	Discounted Net Benefits
0	4,747,600	0	4,747,600	0	0	4,239,607	0	(4,239,607)
1		143,880	143,880	1,453,175	1,453,175	114,672	1,158,180	1,043,508
2		143,880	143,880	1,474,972	1,474,972	102,443	1,050,180	947,738
3		143,880	143,880	1,497,097	1,497,097	91,508	952,154	860,646
4		143,880	143,880	1,519,553	1,519,553	81,580	861,587	780,007
5		2,640,000	2,640,000	1,542,346	1,542,346	1,338,430	781,970	(556,510)
6		143,880	143,880	1,565,482	1,565,482	65,034	707,598	642,564
7		143,880	143,880	1,588,964	1,588,964	58,128	641,941	583,814
8		143,880	143,880	1,612,798	1,612,798	51,941	582,220	530,280
9		143,880	143,880	1,636,990	1,636,990	46,329	527,111	480,782
10		2,640,000	2,640,000	1,661,545	1,661,545	757,680	476,863	(280,817)
11		143,880	143,880	1,686,468	1,686,468	36,977	433,422	396,445
12		143,880	143,880	1,711,765	1,711,765	32,949	391,994	359,046
13		143,880	143,880	1,737,442	1,737,442	29,495	356,176	326,680
14		143,880	143,880	1,763,503	1,763,503	26,330	322,721	296,391
15		2,640,000	2,640,000	1,789,956	1,789,956	430,320	291,763	(138,557)
16		143,880	143,880	1,816,805	1,816,805	21,006	265,254	244,247
	4,747,600	9,790,440	14,538,040	0 26,058,863	26,058,863	7,524,478	9,801,133	2,276,655

IRR:	21.71%
NPV: @12%	2,274,859
@14%	1,617,551
B/C Ratio:	1.30

APPENDIX 5.1.7
KMDP INFRASTRUCTURE DEVELOPMENT COMPONENT: KITUI DISTRICT
ECONOMIC COST ANALYSIS
(WITH USER SAVINGS ONLY)

Class D road:
Road Length: 45 km

Units: KShs.

	COSTS			: BENEFITS		:DISCOUNT FACTOR AT .12		
Year	Construction Costs	Maintenance Costs	Total Costs	: User Savings	Total Benefits	Discounted Costs	Discounted Benefits	Discounted Net Benefits
0	4,316,000	0	4,316,000	0	0	3,854,188	0	(3,854,188)
1	5,395,000	130,800	5,525,800	779,954	779,954	4,404,063	621,624	(3,782,439)
2		294,300	294,300	2,342,205	2,342,205	209,542	1,667,650	1,458,108
3		294,300	294,300	2,412,471	2,412,471	187,175	1,534,332	1,347,157
4		294,300	294,300	2,484,845	2,484,845	166,868	1,408,907	1,242,039
5		5,400,000	5,400,000	2,559,391	2,559,391	2,737,800	1,297,611	(1,440,189)
6		294,300	294,300	2,636,172	2,636,172	133,024	1,191,550	1,058,526
7		294,300	294,300	2,715,258	2,715,258	118,897	1,096,964	978,067
8		294,300	294,300	2,796,715	2,796,715	106,242	1,009,614	903,372
9		294,300	294,300	2,880,617	2,880,617	94,765	927,559	832,794
10		5,400,000	5,400,000	2,967,035	2,967,035	1,549,800	851,539	(698,261)
11		294,300	294,300	3,056,046	3,056,046	75,635	785,404	709,769
12		294,300	294,300	3,147,728	3,147,728	67,395	720,830	653,435
13		294,300	294,300	3,242,159	3,242,159	60,332	664,643	604,311
14		294,300	294,300	3,339,424	3,339,424	53,857	611,115	557,258
15		5,400,000	5,400,000	3,439,607	3,439,607	880,200	560,656	(319,544)
16		294,300	294,300	3,542,795	3,542,795	42,968	517,248	474,280
	9,711,000	19,862,400	29,573,400	0 44,342,423	44,342,423	14,742,749	15,467,244	724,495

IRR:	13.56%
NPV: @12%	719,196
@14%	(182,283)
B/C Ratio:	1.05

ANNEX 5.2

KENYA'S SCHEDULE OF ROAD USER CHARGES

Kenya charges a variety of fees and taxes on road users[6]. However, except for the proceeds from toll charges, none of the revenues accruing from user charges are earmarked for road expenditures. Instead, the funds are channelled to the Central Treasury and mixed with other governmental revenue before allocations are made to the various ministries and public agencies.

Fees, Taxes and Licenses on Vehicles and Parts. Motor vehicles are subject to an import duty and a sales tax at time of sale. For passenger motor cars, the tariff rate is 50 percent of landed cost (CIF) of assembled cars and 25 percent of landed cost if unassembled. The duty rate applies to all sizes of passenger vehicles. The sales tax is imposed on the landed cost plus duty of the vehicles; the rate is graduated from 25 percent for the smallest cars to 270 percent for larger vehicles, such as 4-wheel drive wagons. Duties on lorries of all sizes are 35 percent of landed cost; however if imported from a Preferential Trade Area (PTA) the duty is only 10 percent. The sales tax on lorries is 17 percent. The duty on buses ranges from 45 percent to 120 percent, but PTA duties reduce the amount assessed to about one-third to one-half of the normal duty rate. Buses are also charged a sales tax ranging from 17 percent for small buses and increasing to 85 percent for larger buses. Road tractors for semi-trailers pay duty of 35 percent unless PTA rate of 10 percent applies; sales tax on tractors is 10 percent. Trailers and semi-trailers assembled are assessed an 80 percent duty (PTA duty of 24 percent) and a sales tax of 17 percent. Vehicle parts are assessed duties mostly at the 35 percent rate but in some cases lower PTA rates apply, and are subject to 17 percent sales tax.

In addition to the above one-time assessments, vehicles are charged a one-time fee when registering vehicles for the first time. The rate for motor vehicles ranges from Kshs 650 for vehicles less than 1,000 cc engine capacity, to Kshs 1,300 for vehicles of 2000-2500 cc, to Kshs 3,300 for vehicles exceeding 3000 cc. Trailers less than four wheels are charged Kshs 250, trailers with four wheels or more, Kshs 800. All types of tractors are charged Kshs 250.

Registration fees charged motor vehicles are assessed annually. For passenger vehicles, the annual fee ranges from Kshs 500 per year for the smallest (less than 1000 cc engine capacity) to Kshs 2500 annually for vehicles with 2000-2250 cc, to Kshs 9000 for the largest vehicles (over 5000 cc). Buses and lorries are assessed on their tareweight and range from Kshs 550 for the smallest (less than 1000 kg tareweight) to Kshs 4,400 for the largest vehicles (over 5000 kg tareweight). Full

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[6] Sources: Republic of Kenya, **Import Licensing Schedules**, June 1988. Kenya Gazette Supplement No. 28, **The Provisional Collection of Taxers and Duties Act**, 16th June, 1988. Laws of Kenya, **The Transport Licensing Act, Chapter 404.** Laws of Kenya, **The Public Roads Toll Act, chapter 407.**

trailer fees range from Kshs 350 for the smallest to Kshs 4,850 for the largest. Semi-trailers are assessed annual fees ranging from Kshs 250 to 3,850 annually. Tractors are charged Kshs 500 annually.

Finally, lorries and buses engaged in for-hire operations or transporting goods in connection with trade or business carried on by the vehicle owner are charged an annual license fee per vehicle of Kshs 100.

In summary, these charges are set to provide substantial revenues. For one-time assessments such as import duties, sales tax, and first-time registration fees,the user charge schedules tend to reflect equity and efficiency objectives. However, if these charges are considered as contributions to vehicle road cost responsibilities, there is a case of inequitable treatment. Vehicles imported from PTA countries pay a significantly lower import duty than the same type vehicles imported from non-PTA countries. Heavier vehicles which cause greater highway expenditures are charged higher amounts because the cost of heavier vehicles on which percentage rates apply increase, and because the percentage rates increase for the larger vehicles. These types of charges are subject to change and import quotas may impact on the numbers of vehicles subject to these charges in any year; consequently, while they account for a substantial amount of revenue, they may vary from year to year. Vehicle registration fees, both annual fees as well as the one-time fee when first registered also are graduated by size of vehicle. If the fee schedule remains the same, this source of revenue is quite dependable and predictable, since vehicle fleets are not subject to major year-to-year changes. The annual license fees assessed commercial transport vehicles are basically the same regardless of size of vehicle. Also, they are not large compared with other one-time and annual fees and thus not a major provider of funds.

Fuels, Oil and Tire Taxes. Motor vehicle fuels are subject to regular tariff duties or PTA duties, and sales tax. Regular gasoline is charged Kshs 0.726 per liter duty (Kshs 0.198 per liter PTA) and sales tax of Kshs 3.714 per liter. Premium gasoline duties are the same but the sales tax is Kshs 4.097 per liter. Gas oil (diesel fuel) is charged Kshs 0.484 per liter normal duty, Kshs 0.132 per liter PTA, and a sales tax of Kshs 2.087 per liter. It is difficult to judge whether these charges reflect efficiency and equity conditions without an analysis of the cost responsibility of various types of vehicles and their fuel consumption rates. However, it appears that they are major contributors to the treasury. Also, since vehicular travel is not subject to wide variations from one year to the next, they are a dependable and predictable source of funds. However, the problems relating to target conditions exist since any equipment using these fuels is charged the taxes whether the equipment is used on the road or not. Lubricating oil is also charged duty and sales tax. Tires and tubes are assessed a duty of 70 percent (PTA rate of 45 percent) and a sales tax of 17 percent.

Tolls. Since 1984 tolls have been collected from traffic on various trunk roads (Class A and B). Seven toll stations were included in the Public Roads Toll Act. Since then, three additional toll stations have been installed and the MoPW intends to increase to 14 stations. The toll schedule is graduated. Motor cars are charged Kshs 5; light goods vehicles Kshs 10; motor buses Kshs 20; medium goods vehicles Kshs 50; and heavy goods vehicles, Kshs 100. These fees do not reflect distance

traveled, since the same rate applies to any vehicle if it passes through the toll station regardless of distance traveled on the road. However, since the toll stations are on major trunk roads that connect major cities, there probably is little local traffic. Again, since the stations are on heavily-traveled roads, the toll revenues are a dependable and predictable source of revenues and at least do not violate any efficiency or equity objectives. At present, these are the only road user charges for which the revenues are dedicated to highway needs. All toll collections are paid into the Public Roads Toll Fund which is administered by the MoPW. All moneys paid out of the Fund are used for the repair or maintenance of roads as the Minister may direct.

Drivers Licenses. The annual fee for a drivers license is Kshs 150, but if a triennial license is obtained the fee is Kshs 520. The license for driving larger vehicles costs an additional Kshs 150 per year.

Summary. Kenya has in place a variety of licenses, fees, duties, taxes and tolls that can be considered road user charges. Individually, they differ in reflecting desirable user-charge characteristics--dependability, predictability, efficiency, equitability and target effectiveness. But, collectively, they appear to at least move in the direction of meeting these goals. To what degree Kenya wishes to fine tune the charges is a matter of policy and expediency. As long as those charges are not dedicated to meeting road costs but are treated as general revenue sources, there may not be any compelling reason for adjusting them, other than changing rates as circumstances dictate. However, if all or part of the revenues obtained from these various charges can be dedicated to road financial needs, then some adjustments may be desirable.

APPENDIX 1

BIBLIOGRAPHY

APPENDIX 1

BIBLIOGRAPHY

Ackello-Ogutu and M.O. Odhiambo, 1986 "Maize Production in Kenya: A Study of Costs and Technological Constraints Associated with Output Expansion", Report to USAID/Kenya.

Acland, J.D., 1971: East African Crops. London and Nairobi: Longman.

Akong'a, Joshua, 1988 "Drought and Famine Management in Kitui District, Kenya", in D. Brokensha and P. Little, eds. *The Anthropology of Development and Change in Eastern Africa*. Boulder, CO: Westview Press.

Bahemuka, Judith M., 1985. "Social-Anthropological Survey of Small-Scale Farming in Western Kenya." Report for USAID/GOK On-Farm Grain Storage Project, Nairobi.

Bates, Robert 1984. *Markets and the State in Africa*. Berkeley, University of California Press.

Booker Agriculture International, and Githongo & Associates, 1988 *Grain Marketing Study* (Seven volumes). Original draft submitted to Ministry of Finance, Government of Kenya, in 1983.

Casley, D.J. and T.J. Marchant 1979: "Smallholder Marketing in Kenya: Report of FAO Marketing Project". Nairobi: FAO/Ministry of Economic Planning and Community Affairs.

Central Bank of Kenya. 1988. Quarterly Economic Reviews for March, June, and September, 1988.

COWICONSULT Engineers and Planners. 1989. "Impact Study of the Minor Roads Programme in Nyanza Province, Kenya. Phase I Baseline Study". Final Report prepared for DANIDA".

Devres, Inc. 1984 "Assessment of the Socio-Economic Impacts of the Kenya Rural Access Roads Programme, Part II". Report to USAID/Kenya.

Fleuret, Anne. 1988. "Food Aid and Development in Rural Kenya", in D. Brokensha and P. Little, eds. *The Anthropology of Development and Change in Eastern Africa*. Boulder, CO: Westview Press.

Freeman, D.B. 1984. "District Development and the Rural Non-Farm Enterprise Sector".

Garnett, Harry 1988. "Kenya Market Development Program, Market Towns Component: Economic Justification." Abt Associates, Cambridge, Massachusetts. Report to RHUDO, Nairobi.

Gsaenger, H.G. and G. Schmidt 1977 "Decontrolling the Maize Marketing System in Kenya," Discussion Paper No. 254, Institute for Development Studies, University of Nairobi.

Hesselmark, O. and G. Lorenzl. 1976. "Structure and Performance of the Maize Marketing System in Kenya," *Zeitschroft fuer Auslaedische Landwirtschaft* 15(2) pp. 171-179.

Iavrijsen, J.S. 1984. "Rural Poverty and Impoverishment in Western Kenya". Utrecht, Netherlands.

Ireri, E.K. 1977 "Structure, Conduct and Performance of Kutus Maize Market", M.Sc Thesis, University of Nairobi.

Ithaca International Limited 1989 "Agricultural Markets and Economic Development in Africa." Report prepared for the Africa Bureau, Agencu for International Development, Washington, DC.

James Austin Associates and Alexander, Maclennan, Trundel and Co. 1989. Kenya: Private Sector Description (MAPS). Report prepared for USAID/Kenya.

Kariungi, F.T. 1976. "Structure, Conduct and Performance of the Kitui Local Maize Market". M.Sc Thesis, University of Nairobi.

Kliest, Ted 1985. "Regional and Seasonal Food Problems in Kenya." Nairobi: Ministry of Finance and Planning.

Kongstad, P. and M. Monsted. 1980. *Family, Labour and Trade in Western Kenya.* Uppsala: Scandinavian Institute of African Studies.

Little, Peter D. 1983. "The Livestock/Grain Connection in Northern Kenya: An Analysis of Pastoral Economies." *Rural Africana*, No. 11/12.

_____ 1987. "Domestic Production and Regional Markets in Northern Kenya." *American Ethnologist*. Vol. 17 (2).

MacDonald, Wagner, and Priddle Ltd. 1982. "Grain Handling, Storage, and Marketing Project", Final Report for the National Cereals and Produce Board, Nairobi.

Maritim, H. K. 1982. "Maize Marketing in Kenya: An Optimal Commodity Flow Pattern and Policy Strategy", PhD Thesis, Technische University of Berlin.

Meilink, H.A., 1987 "Food Consumption and Food prices in Kenya: A Review", Report No. 21/1987, Food and Nutrition Planning Unit, Ministry of Planning and National Development, Nairobi.

Mwendwa, H. 1986. "Land Use in Uasin Gishu District", KREMU Technical Report No. 124, Nairobi.

Njiru, George K.1982. "The Rendille Economy-Some Preliminary Findings on Trading Activities". Working Paper No. 389, Institute for Development Studies, University of Nairobi.

Odhiambo, M.O. 1988. "Policies Related to Domestic Grain Market Development", *Policy Assessment Study*, Volume III.A, Report prepared for USAID/Kenya by Agriconsult, Nairobi.

Ong'ayo, Milcah 1986. "Report on the Cultural Survey Carried Out in Kisii District, Kenya for the Woodfuel Development Programme. Nairobi." The Beijer Institute.

Orvis, Stephen. 1985. "Men and Women in a Household Economy: Evidence from Kisii." Working Paper No. 434, Institute for Development Studies, University of Nairobi.

_____. 1986. "Men, Women and Agriculture in Kisii, Kenya". Paper presented at the Annual Meeting of the African Studies Association, Oct. 29-Nov. 2, Madison, Wisconsin.

Ottichilo, W.K. and R.K. Sinange. 1987. "Long Rains Maize Production in Kenya", Kenya Range and Ecological Monitoring Unit (KREMU), Ministry of Planniong and National Development, Nairobi.

Pragma Corporation. 1988. "Rural Industrialization in Kenya". Report submitted to USAID/Nairobi and the Kenya Association of Manufacturers.

Raikes, Alanagi. 1987. "A Socio-Economic Study of Women's Utilization Rates of Family Planning Services in Kisii District, Kenya".

Republic of Kenya 1962, revised 1972: "The Maize Marketing Act", *Laws of Kenya*, Chapter 338, Government Printer, Nairobi.

_____. 1972: "The Price Control Act", *Laws of Kenya*, Chapter 504, Government Printer, Nairobi.

_____. 1979. "The Transport Licensing Act", *Laws of Kenya*, Chapter 404, Government Printer, Nairobi.

_____. 1981. "Integrated Rural Surveys, 1976-1979, Basic Report", Central Bureau of Statistics, Ministry of Planning and National Development.

211

_____. 1983. "Land Use in Kisii District". Kenya Range and Ecological Monitoring Unit (KREMU), Ministry of Planning and National Development.

_____. 1984. Ministry of Finance and Planning
Kakamega District Development Plan. 1984/1988.
Nakuru District Development Plan, 1984/1988.
Kisii District Development Plan, 1984/1988.
Uasin Gishu District Development Plan, 1984/1988.
Nyeri District Development Plan, 1984/1988.
Kitui District Development Plan, 1984/1988.

_____. 1985. "The Public Roads Toll Act", *Laws of Kenya*. Chapter 407, Government Printer, Nairobi.

_____. 1985 "Survey of Rural Non-Agricultural Enterprises," Central Bureau of Statistics, Report to the Ministry of Planning and National Development.

_____. 1985. "Road Maintenance and Improvement Schedule, 1985/86", Volumes I and II. Roads and Aerodromes Department, Ministry of Transport and Communications.

_____. 1986. "Kitui District Environmental Assessment Report". Nairobi: The National Environment Secretariat.

_____. 1986. "Renewed Growth for Economic Development." Sessional Paper No. 1.

_____. 1987. *Statistical Abstract*. Nairobi: Government Printer.

_____. 1988. *Economic Survey of Kenya*. Nairobi: Government Printer.

_____. 1988. Import Licensing Schedules, June 1988.

_____. 1988. "Memorandum of Understanding Between the GOK and the Commission of the European Communities Concerning a Cereals Sector Reform Programme".

_____. 1988. "Cereals Sector Reform Programme: Agreement on the Implementation Timetable".

_____. 1988. "The Traffic Act", *Laws of Kenya*, Chapter 403, Government Printer, Nairobi.

_____. 1988. *Kenya Subsidiary Legislation*, Government Printer, Nairobi.

_____. 1988. "Kisii District, Rural Access Roads/Minor Roads Programme", Report to District Development Committee.

-212-

_____. 1988. "Kisii District, Rural Access Roads/Minor Roads Programme, DANIDA-Supported Districts: Work Plan For 1988/89 Financial Year".

_____. 1989. "The Restriction of Trade Practices Monopolies and Price Control Act" *Kenya Gazette* Legal Notice No. 120, Government Printer, Nairobi.

_____, International Labor Organization, and United Nations Development Program, 1989 "Strategy for Small Enterprise Development in Kenya: Towards the Year 2000".

_____. 1989. Ministry of Planning and National Development: Kakamega District Development Plan, 1989-93.
Nakuru District Development Plan, 1989-93.
Kisii District Development Plan, 1989-93.
Uasin Gishu District Development Plan, 1989-93.
Nyeri District Development Plan, 1989-93.
Kitui District Development Plan, 1989-93.

_____. 1989. "Minor Roads Programme Management Reporting System Manual." Roads Department, Ministry of Public Works.

_____. 1989 "Development Estimates for the Year 1989/90".

_____. 1989. "Estimates of Recurrent Expenditure for the Year Ending 30th June, 1990".

_____. 1989: *National Development Plan, 1989-1993.*

_____. 1989. *Statistical Abstract*, Central Bureau of Statistics, Ministry of Planning and National Development.

Safilios-Rothschild, C. and E. Mburugu 1987. "Men's and Women's Agricultural Production and Incomes in Rural Kenya." New York: The Population Council.

Schmidt, Guenter. 1979. "Maize and Beans in Kenya: The Interaction and Effectiveness of the Informal and Formal Marketing Systems." Occasional Paper No. 31, Institute for Development Studies, University of Nairobi.

Schmidt, G. and E.S. Mbugua. 1976. "Aspects of Marketing Effectiveness for Selected Food Crops". Working Paper No. 287, Institute for Development Studies, University of

Sperling, Louise, 1987. "Food Acquisition During the African Drought of 1983-1984: A Study of Kenya Herders". Unpublished manuscript, McGill University, Montreal.

Task Force on On-Farm Grain Storage, 1989. "Crop Post-Harvest Management Program in Kenya : Final Report", Nairobi.

Technosynesis, S.P.A. and Coopers and Lybrand Associates. 1988. *National Cereals and Produce Broard Reorganization Study*, Final Report in 4 Volumes.

United Nations Industrial Development Organization. 1988. Industrial Development Review Series: "Kenya: Sustaining Industrial Growth Through Restructuring and Integration."

United States Department of Agriculture. 1989. "Assessment of the Current Market Information and Crop Forecasting System, and Suggestions for Modifications and Improvements". Report prepared by Raymond Hancock and Howard L. Steele for USAID/Kenya.

Utrecht University. 1988a. "Location Development Profile: Soy, Kakamega District." Utrecht, Netherlands.

1988b. "Location Development Profile: Central Kisa, Kakamega District". Utrecht, Netherlands.

World Bank. 1981. "The Road Maintenance Problem and International Assistance".

_____. 1982. "Kenya: Maize Marketing and Pricing Subsector Review", World Bank Report No. 4005-KE.

_____. 1984. "The Economic Analysis of Rural Roads Projects". World Bank Staff Working Paper, Number 241.

_____. 1985 "Kenya Agricultural Inputs Review", Vol. 2, World Bank Staff Working Paper.

_____. 1986 "Project Completion Report on Kenya Rural Access Roads Project" (Loan 1305/Credit 651-KE). Eastern and Southern Africa Regional Office.

APPENDIX 2

SCOPE OF WORK
AND
GOK LETTER OF INTRODUCTION

ECONOMIC AND SOCIAL SOUNDNESS ANALYSES FOR THE KENYA MARKET DEVELOPMENT PROGRAM PAAD

STATEMENT OF WORK

I. Background

During the next several months, USAID/Kenya will be preparing the Program Assistance Approval Document (PAAD) for the proposed Kenya Market Development Program (KMDP). The principal objectives of this program are as follows:

Goal: To assist the Government of Kenya in achieving its goal of increased agricultural productivity through the development of a more efficient and lower cost market system for agricultural commodities.

Purpose: To develop a more efficient national market system through improvements in the policy framework and to reduce real costs of agricultural marketing through investment in physical infrastructure.

These objectives are to be served by a program which supports the evolutionary reform program developed by the GOK with regard to market policies; the development of rural market infrastructure; and the strengthening of institutional capacity to guide public policy and investment decisions.

Development of this program is proceeding on the basis of several, informed assumptions regarding market and economic conditions and behavior in Kenya. Specifically, it is believed that:

1. Some government policies, such as price and marketing controls, are believed to distort market signals and reduce the efficiency of markets for agricultural commodities;

2. As an enabling environment is created and institutional and infrastructure improvements are introduced, rural markets will become increasingly competitive and efficient;

3. Private entrepreneurs will respond to improving marketing opportunities by increasing investment in rural areas; and

4. Opportunities for public investment in infrastructure in rural areas and market towns exist which will yield positive social rates of return and will be financially sustainable.

The results of the specific analyses carried-out within this Statement of Work will be used as illustrative examples in PAAD preparation. The results for maize and bean markets will also be extrapolated utilizing the USAID/Kenya Agricultural Information System and GOK data banks to permit a break-even benefit/cost analysis for the program, i.e., benefits resulting from improvements

in the maize and bean market systems against the incremental cost of the program. Six market areas will be short-listed and used for analysis under this study. It should be noted that while the six areas selected for study are consistently near the top of all selection criteria utilized, the selection process has not yet been finalized. Should selection be completed prior to the commencement of the economic and social analyses, the list of market areas to be examined may be modified. If, however, the selection is not completed prior to the analyses and should the final selection include market areas not in the scope, they will be incrementally examined for inclusion after project implementation has begun. The areas suggested for analysis in this scope are sufficiently representative of varying ecological and production zones that, should any of them not be finally selected for inclusion in the program, the results of the analyses can and will be applied to market areas with similar characteristics.

II. Objectives

The objectives of the work to be completed under this PIO/T are to scrutinize the foregoing assumptions and to collect information and conduct analyses required for the supporting economic and social soundness analyses of the Kenya Market Development Program PAAD, and to prepare draft economic and social soundness analyses for the PAAD. This activity will be comprised of three separate, but inter-related components:

A. Analyses of the structure, conduct, and performance of the maize and bean markets in six (6) specified geographical market areas (tentatively identified as Kitale, Kakamega, Kisii, Nakuru, Nyeri and Machakos). Analyses of one or more selected other commodity markets in each area (to be agreed upon by the contractor and USAID) will also be undertaken so that comparisons can be made with the markets for maize and beans. The contractor will also analyze the structure, conduct, and performance of the national maize and bean markets (as well as markets of selected other commodities) and examine the linkages between the national market and the specified market areas;

B. Economic and social soundness analyses of public infrastructure investment in the market areas specified above. This will include analyses of infrastructure resource allocation decisions and the economic and financial viability of representative, recent or pending, infrastructure in rural areas and market towns, and their social impact; and

C. Economic and social soundness analyses of constraints to an efficient market system which hinder private sector investment and of the probable effect of their removal.

III. Methodology

A. Methodology

Because there is considerable secondary source data in Kenya on the rural market system, the first task will

be to gather and review this information. The method of inquiry to be followed for the collection of complementary primary data will be one of rapid appraisal which allows the efficient diagnosis of the market systems under review. The study will be structured to permit the analyses of the six specified geographical areas as well as the linkages with the national market.

The contractor will use both the traditional "with" and "without" benefit/cost technique to arrive at the values of the changes in the benefits and costs of the KMDP. As noted, in the case of analysis of potential infrastructure investment, a representative sample of recent public infrastructure investments will be chosen for analysis.

The contractor will first obtain the necessary production and value data to conduct the "without intervention analyses." In general, these analyses will involve extrapolating the data over 10 to 20 years on the assumption that no interventions take place. The contractor will utilize secondary source data as well as primary data for these analyses. Data will be gathered from GOK and USAID sources for each of the six (6) specified market areas. In addition to the six areas studied, the analyses will also include a complementary national study which focuses upon the market linkages among regions: The data collected are expected to be verified and complemented by the use of rapid appraisal techniques within the subject market

areas. The contractor is expected to study maize and the principal (1-2) other agricultural outputs within the defined market area from the farmgate to the point of either consumption within the market area or the entrance into the national market system. Similarly, the principal agricultural inputs will be followed from the point of production (or import) to the farm level end-user.

The contractor will then conduct the necessary "with intervention analyses." These analyses will involve reviewing market price and cost data in order to assess the magnitude of market distortations, identifying the key constraints to increased market efficiencies, assessing the extent to which these constraints might be addressed by the KMDP, and assessing the expected effect of the program on prices, production and consumption for the specified commodities. As with the case of the "without intervention analyses," much of the data has been gathered and will be made available. The contractor is expected to verify and complement this data through rapid appraisal techniques.

For the social soundness analysis, the data collected will be analyzed by the contractor to (1) describe the distribution of population groups within the market structure under study; (2) discuss the feasibility of proposed program interventions taking into account constraints and incentives to each group; (3) identify distributional and

socio-political issues; and (4) examine the likely social impact of the program among different segments of the population, e.g., distribution by gender, age, income level. The analyses will include an indication of how probable program interventions will provide beneficiaries with greater economic opportunities and/or increased entrepreneurial skills.

IV. Scopes of Work

A. Analyses of the Structure, Conduct, and Performance of Agricultural Markets and their Social Dimensions.

Tasks to be Accomplished

1. Analyze the economic (spatial and temporal) organization of markets for maize and beans, as well as for one or more selected other commodities, and the roles of producers, traders, consumers and government entities (market structure analysis) for each of the six specified market areas and the linking national market;

2. Analyze the economic behavior of market participants (market conduct);

3. Examine the efficiency of the selected markets (both by geographical area and by commodity) as indicated by prices and market margins (performance);

4. Having examined the market structure, conduct, and performance for each of the specified markets, identify the constraints to the growth and efficient performance of these markets (both by geographical area and by commodity);

5. Conduct analyses of the existing market and production systems for the commodities under study, i.e., the "without" analysis suggested above. This will involve analysis of a) costs attributed to the constraints identified in (4) above of the current market systems (from producer to consumer); and b) current production trends. The analyses will be conducted in the six selected representative market areas. The findings of these analyses will be aggregated using existing data to obtain a national estimate.

6. Conduct the "with" benefit/cost analysis of the program when interventions are assumed. This will include an analysis of a) the reduction of current market costs which can be expected from the program interventions; b) the estimated increases in production in response to changes in producer prices which incerase as a result of reduced marketing costs; and c) the direct and indirect costs (including private sector and on-farm costs) associated with the program.

7. In addition to the above, develop a break-even benefit/cost analysis for the program. This

analysis will determine the necessary increase in maize and bean production attributed to program interventions which will assure that program benefits are equal to or greater than program costs.

8. Describe the distribution of population groups within the market structure and the feasibility of the proposed program in terms of constraints and incentives to each group. Indicate how the proposed program will impact on each group. Suggest changes in the proposed program to increase its feasibility and its impact on special groups.

B. Economic and Social Soundness Analyses of Public Infrastructure Investments

Tasks to be Accomplished

1. Assess the priority infrastructure needs of potential users that would contribute to increased agriculture marketing efficiency. Determine what measures are needed to help ensure that the marketing infrastructure financed under this program meets these needs. Inventory current infrastructure availability and condition;

2. Analyze the economic viability related to market efficiency of a representative sample of recent public infrastructure investments (located in the market areas identified in the short-list for inclusion in the program) and estimate from this

analysis the potential economic impact of future investments. Analyze the viability of future investment assuming at least the following different policy environments: the removal of fixed prices, the removal of movement controls, and a reduced public market share. Investments to be assessed (which potentially affect the efficiency of the rural market system) will include;

- farm-to-market rural roads

- private/public transportation

- in market towns: roads and streets; power supplies, water and drainage, physical markets, telephones, bulking sites, storage, and bus/truck parks.

3. Assess past and present procedures for the selection of infrastructure investment, including decisions made at both the national and local level on the selection process. Define the process and criteria for determining the economic and social feasibility of potential infrastructure investments under the KMDP.

4. Assess the financial implications for each type of investment included in the representative sample, including recurrent cost (and sources of revenue to meet these costs) and sustainability issues. Analyze to what extent improved cost recovery measures and/or higher user fees might negatively affect the poor and women; and

5. Analyze the potential distributive effects of benefits among different segments of the population, e.g., distribution by gender, age, income level, and across regions. Define, to the extent possible, both direct and indirect beneficiaries.

C. Economic and Social Analyses of the Private Sector

Tasks to be Accomplished

1. Assess the principal constraints to market efficiency which hinder private sector investment in the market areas under study. Critical constraints might include policy/regulatory factors, lack of/or poor infrastructure, lack of adequate and reliable market information, etc.

2. Analyze the extent to which each of these constraints differ by:

   - type of enterprise
   - size/scale of enterprise
   - informal vs formal sector enterprise
   - gender of manager and owner of enterprise

3. Assess the economic impact of the removal of the identified constraints (broken-out according to the above categories). Estimate the potential effect on investment and related impact on income, employment and agricultural productivity.

analyze the cost for various modes of transportation in order to provide the information needed to determine whether monopoly profits are being earned by the transporters and if the condition of the roads are an inhibiting factor to more and cheaper production. He/She will also determine if the farmers have access to more than one trucker or trucking firm and, if not, the cause of the lack of competition and its cost consequences. This analysis will be conducted at the farmgate, secondary market, and primary market levels. He/She will be responsible, for carrying out benefit/cost analyses of increased investment in transportation infrastructure, including recurrent cost implications.

7. A specialist experienced in analyzing private investment and rural town development.

   The specialist will analyze both the formal and informal private sectors, with an emphasis on identifying the market system constraints which hinder private sector investment and analyzing the probable effect of their removal on private investment and employment generation.

4. Related to three above, analyze existing data on informal sector enterprises to ascertain if there are statistically significant differences between men and women in informal sector trade activities with regard to barriers to entry and growth (this analysis will draw on recent data on the subject gathered in six districts throughout Kenya).

V. Products/Level of Effort

USAID will contract with the U.S. IQC firm listed in Block 14A to carry out the scopes of work. Prior to the arrival of the full expatriate contract team, the team leader from the IQC firm will visit Kenya to select and hire local experts to fill the six agricultural marketing and institutional development positions specified in (3) below. Based upon the rates which are negotiated for these positions, the authorized AID/W agent will negotiate an amendment to the original IQC work order to include these personnel on the team. The activity will result in a set of three reports (corresponding to the three scopes of work identified in sections IVA, IVB, and IVC above) which will discuss the findings, conclusions and recommendations of the studies. From these reports the consultants will prepare draft economic and social soundness analyses for the PAAD.

The total estimated time to complete the work is 577 person-days to be distributed over a 16 week period. The precise scheduling of the work will be agreed between USAID and the contractor following execution of the work order.

Six weeks after the contract team begins work in Kenya, the contractor will submit draft reports in the three subject areas, plus drafts of the economic and social soundness analyses. After discussion with USAID and receipt of written comments, the final reports and economic and social soundness analyses will be prepared and submitted to USAID.

To carry out the required analyses, the contractor(s) will provide the following personnel:

1. A team leader who will be responsible for the completion of the overall assignment, the drafting of the economic and social soundness analyses of the PAAD, and the national level studies. He/She should have a Ph.D. in the social sciences. He/She should also have considerable experience with rapid appraisal techniques, African marketing systems, benefit/cost analysis and break-even analysis.

2. Two agricultural marketing specialists with knowledge of the marketing systems and practices in Kenya or East Africa.

   The marketing specialists will be responsible for organizing and carrying-out the analyses of the structure, conduct and performance of the rural market system. They will analyze the economic and spatial organizations of markets for important agricultural goods and services, economic behavior of market participants, and the efficiency of the market areas selected for analysis. They will carry out the

economic analyses required in the first two scopes of work above (identified in sections IVA and IVB), including benefit/cost analyses. One will be responsible for the analyses of Kakamega, Kitale and Kisii; the other for the analyses Nyeri, Machakos and Nakuru.

3. Six agricultural marketing and institutional development support staff who will work with the two agricultural specialists specified above as well as with the social scientist/institutional development specialist.

4. A social scientist/institutional development specialist familiar with farming/marketing systems in Kenya or East Africa.

   The specialist will provide input into the questions to be asked by the economists, will conduct interviews to determine what the farmers/market participants perceive to be their most important problems, and will be responsible for conducting the various social analyses necessary for the study.

5. Two agricultural marketing transport specialists with experience in analyzing transportation systems in rural and urban Kenya or East Africa.

   In support of the work to be carried out by the marketing specialists identified in 2 and 3 above, the transport specialist will assess the expected impact of road construction/improvement. He/She will

MINISTRY OF PLANNING AND NATIONAL DEVELOPMENT

Telegrams: "Planning", Nairobi
Telephone: Nairobi 338111
When replying please quote
Ref. No. EPD/SA 8/01
and date

THE TREASURY
P.O. Box 30005
NAIROBI

9th May, 1989

District Commissioners
District Agricultural Officers
Area Managers, National Cereals & Produce Board
District Roads Engineers
District Trade Officers
Clerks of County Councils
All Members of GOK Steering Committee

RE: FEASIBILITY STUDY FOR PROPOSED KENYA MARKET DEVELOPMENT PROGRAMME

Over the past several months, the Government of Kenya and the United States Agency for International Development (USAID), have been jointly planning a large-scale Market Development Programme that is inteded to develop a more efficient national market system for agricultural commodities. The importance of efficient markets has been highlighted in our Government's Sessional Paper No.1 of 1986, and in the 1989-1993 National Development Plan.

We have now reached the stage of undertaking detailed feasibility studies in a number of the country's principal rural market areas. These studies will focus on the linkages between improved efficiency and reductions in marketing costs, on the one hand, and public infrastructure investments and private enterprise expansion, on the other hand. During May and June of this year, a team of Kenyan and American consultants will carry out the studies, examining both the economic and social soundness of the proposed programme. In performing their duties, the team will need to review a substantial amount of existing data and documentation, and to interview many Kenyans from both the public and private sectors. They will begin with interviews at the national level, and will proceed to make field visits in six areas that have been targeted for priority attention under the proposed programme. These are the market zones of Kisii, Kakamega, Nasin Gishu, Nakuru, Nyeri and Kitui.

The team of consultants is being provided by Development Alternatives, Inc. (DAI) of Washington D.C., with assistance from the Institute for Development Anthropology. DAI's team leader for the studies is Dr. Tony Barclay, who has substantial previous research and consulting experience in Kenya. Four senior Kenyan consultants will play important roles on the team as well, namely:-

1. Dr. Mark Odhiambo - Agricultural Marketing Specialist
2. Mr. Felix Kariungi - Agricultural Marketing Specialist
3. Mr. Gordon Onyango - Transport Economist
4. Dr. Caleb Wangia - Private Enterprise Specialist.

By means of this letter the Ministry of Planning and National Development is pleased to introduce the study team, and requests your cooperation in facilitating the team's work. Their task is an important one, since it will help lay the foundation for approval and funding of a programme that is closely tied to the Government's development goals.

J.O. Otieno
Chief Planning Officer
for: PERMANENT SECRETARY

c.c. (Mailing List attached)

MAILING LIST

For Each of Six Districts:

(Kisii, Kakamega, Uasin Gishu, Nakuru, Nyeri, Kitui)

1. District Commissioner
2. District Agricultural Officer
3. Area Manager, National Cereals & Produce Board
4. District Roads Engineer
5. District Trade Officer
6. Clerk of County Council.

(All Members of GOK Steering Committee)

1.	Mr. David Andere	- Department of Resource Surveys and Remote Sensing
2.	Mr. Akach	- Central Bureau of Statistics (Agriculture)
3.	Mr. Daniel Karobia	- Ministry of Agriculture
4.	Mr. John Karanja	- Ministry of Agriculture, Development Planning Division
5.	Mr. Joel Muasya	- Ministry of Agriculture, Farm Management Division
6.	Mr. Opi	- Ministry of Supplies and Marketing
7.	Major Litaba	- National Cereals and Produce Board
8.	Mr. Fred Murage	- National Cereals and Produce Board
9.	Mr. George Mitine	- Ministry of Finance
10.	Mr. George Kioko	- Ministry of Finance
11.	Permanen Secretary	- Ministry of Transport & Communications
12.	Mr. Z. P. Omwando	- Ministry of Local Government
13.	Mr. P.M. Wakori	- Ministry of Public Works
14.	Mr. R. Langat	- Ministry of Livestock Development.

APPENDIX 3

PARTIAL LIST OF PERSONS INTERVIEWED

APPENDIX 3

PARTIAL LIST OF PERSONS INTERVIEWED

Financial Institutions

Agricultural Finance Corporation

Mrs. V. Kodwol	Branch Manger, Kakamega.
Mr. Ndungu	Branch Manager, Kisii.
Mr. E. Saina	Assistant General Manager for Western Kenya, Nakuru
Mr. Wekesa	Branch Manager, Kitui

Barclays Bank

Mr. Gachiri	Branch Manager (West), Nakuru
Mr. R.D. Makwana	Branch Manager, Eldoret.

Commercial Bank of Africa

Mr. B. Campbell	Managing Director, Nairobi.

Cooperative Bank of Kenya

Mr. F.L. Emukule	Branch Manager, Kisii.
Mr. Kabungo	Regional Manager, Nakuru
Mr. F. O. Machyo	Field Officer, Eldoret.
Mr. E. Mureithi	Managing Director, Nairobi.
Mr. J. Onyango	Loans Officer, Kisii.

Kenya Commercial Bank

Mr. W.C.W. Kariuki	Branch Manager, Nyeri
Mr. Kibor	Outgoing Branch Manager, Kakamega
Mr. R.K. Koech	Branch Manager, Eldoret.
Mr. P.B. Kopiyo	Loans Officer, Kisii.
Mr. J.K. Milgo	Incoming Branch Manager, Kakamega
Mr. E.M. Muhindi	Area Manager, Nyeri
Mr. Mukoko	Branch Manager, Mwingi

Standard and Chartered Bank

Mr. Mugambe	Branch Manager, Kitui

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Private Sector Firms

Milling Industry

Mr. Ababaker	General Manager, Kitui Mills, Mwingi
Mr. Das	General Manager, ABC Foods Corp., Nakuru
Mr. Jethua	Manager, Kenya Grain Mills, Nakuru
Mr. J. Kibiru	Asst. General Manager, Unga Maize Millers, Eldoret.
Mr. Karanja	Government Relations Executive, Unga Ltd, Nairobi.
Mr. Ngaita	Owner, Kamune Millers, Nakuru
Mrs. O. Ohawa	Owner, Ndege Millers, Nakuru
Mr. Rashid	Manager, Kitui Products, Ltd., Kitui
Mr. Kamal Shah	Managing Director, United Millers Ltd., Kisumu.
Mr. H.K. Shah	Managing Director, Swan Millers Ltd., Kisumu.
Mr. Shah	Owner, Simba Posho Mills, Nakuru

Also, numerous small posho mill owners in Nakuru, Nyeri, Kitui, Kisii, Kakamega, and Uasin Gishu.

Other Firms

Mr. M. Ahmed	Rapid Construction Ltd, Eldoret
Mr. I. Ghani	Rapid Construction Ltd, Eldoret
Mr. Muya	Managing Director, Safina Ltd, Nairobi.
Mr. M. Mwithaga	Mariko Construction Ltd, Nakuru
Mr. L. Ombese	Salesman, Agro-Input Store, Nyasiongo, Kisii.
Mrs. Owour	Manager/Owner, Agri-Vet Supplies Ltd. Eldoret.
Mr. N. Wesonga	Manager, Agrobusiness Co. Ltd, Mumias

Cooperative Sector

Kenya Grain Growers Cooperative Union

Mr. R.C. Butaki	General Manager, Nakuru
Mr. J. Chumba	Director of Public Relations, KGGCU, Nakuru
Mr. T. Labatt	Branch Manager, Eldoret.
Mr. Ndeithi	Branch Manager, Nyeri
Mr. Ng'etich	Cereals Marketing Manager, Nakuru
Mr. O. Rachar	Branch Manager, Kisii.
Mr. Wanga	Assistant Branch Manager, Kakamega.

Other Cooperative Organizations

Mr. Arunga	Secretary/Manager, Lugari Farmers Cooperative Society, Lugari, Kakamega
Mr. H. Kirui	Secretary, Kapasagoi Farmers Cooperative Society, Turbo, Uasin Gishu
Mr. Korongo	Manager, Kakamega District Cooperative Union
Mr. Mwamu	Overseer, Kitui Cooperative Union
Mr. R. Omae	Secretary/Manager, Matutu Farmers Cooperative Society, Suneka, Kisii
Mr. A. Ombonyo	Vice Chairman, Matutu Farmers Cooperative Society, Suneka, Kisii

Parastatal Organizations

National Cereals and Produce Board

Mr. H. Chemgorem	Area Manager, Eldoret
Mr. P.D. Gathu	Financial Manager, Embu
Mr. Kagau	Depot Manager, Mwingi
Mr. D. Kirstein	General Manager for Operations
Mr. Kiget	Assistant Depot Manager, Nakuru
Mr. F. Murage	Statistics Officer, Nairobi
Major Koitaba	Managing Director, Nairobi
Mr. H. Maritim	Depot Manager, Nyeri
Mr. J. Mumo	Depot Manager, Kitui
Mr. F. Obulinji	Field Officer, Kisii
Mr. J. Okech	Area Manager, Kisumu
Mr. Rotich	Area Manager, Nakuru
Mr. F. Waweru	Depot Manager, Kisii
Mr. Wanyonyi	Area Manager, Kakamega

Pyrethrum Board of Kenya

Mr. R. Kitazi	Assistant Marketing Manager, Nakuru
Dr. J. M. Wangai	Marketing Manager, Nakuru

Kenya Industrial Estates, Ltd

Mr. Mwawaka	Regional Economist, Nakuru
Mr. Ndolo	Regional Manager, Nyeri
Mr. Otango	Industrial Development Officer, Nyeri

Government of Kenya Officials

Civil Administration

Mr. J.A. Abdula	District Officer I, Nakuru
Mr. J.O. Anguka	District Commissioner, Nakuru
Mr. J. Kimwingi	Acting District Commissioner, Uasin Gishu
Mr. J. M. Mutemi	District Commissioner, Nyeri
Mr. P. Mwita	District Officer I, Kisii
Mr. Ngariama	District Development Officer, Nyeri
Mr. Njiru	District Officer I, Nyeri

Ministry of Agriculture

Mr. Asol	District Crops Officer, Kisii
Mr. J.K.A. Cheluget	District Agricultural Officer, Nakuru
Mr. J. Chepkwony	District Agricultural Officer, Eldoret
Mr. N. Chepkwony	District Crops Officer, Uasin Gishu
Mr. Gathuru	District Crops Officer, Kitui
Mr. J. Karanja	Chief, Development Planning Division, Nairobi
Mr. Kihumba	Divisional Extension Officer, Othaya
Mrs. Kirui	District Crops Officer, Nakuru
Mr. Lwangu	District Marketing Officer, Nyeri
Mr. Mathenge	Divisional Extension Officer, Endarasha
Mr. J. Mbori	District Farm Management Officer, Kitui
Mrs. J. Mogere	District Extension Officer, Kisii
Mrs. Muriuki	District Crops Officer, Nyeri
Mr. Mwamki	District Marketing Officer, Nakuru
Mr. P.M. Mwiti	District Agricultural Officer, Kakamega
Mr. Ndirangu	District Farm Management Officer, Nyeri
Mr. J.K. Omokamba	District Agricultural Officer, Kitui
Mr. G. Orero	Divisional Extension Officer, Turbo
Mr. D.N. Waithuki	District Extension Coordinator, Uasin Gishu
Mr. F.K. Wambugu	District Agricultural Officer, Kisii

Ministry of Commerce

Mrs. Agola	District Trade Development Officer, Nakuru
Mr. Holo	District Trade Development Officer, Kitui
Mr. J.G. Muraya	District Trade Development Officer, Nyeri
Mr. Njoroge	District Licensing Officer, Nakuru
Mr. D. O. Ogwel	District Trade Development Officer, Uasin Gishu
Mr. A. Owiro	Assistant District Trade Development Officer, Kisii.
Mr. P.B. Yogoh	District Trade Development Officer, Kakamega.

Ministry of Cooperative Development

Mr. Chepkwony	Assistant Cooperative Development Officer, Uasin Gishu.
Mr. Gachanja	District Cooperative Development Officer, Nyeri
Mr. Muhindi	Assistant Cooperative Development Officer, Uasin Gishu.
Mr. Ombuna	District Cooperative Development Officer, Kisii.

Ministry of Finance

Mr. Bulimu	Provincial Tax Assessor, Nakuru
Mr. D. B. Kimutai	Director of Budgetary Supply, Nairobi

Ministry of Planning and National Development

Dr. Onyango	Director, Small Scale Enterprise Unit
Mr. J. Otieno	Chief Planning Officer

Ministry of Public Works

Eng. M. J. Abdi	District Works Officer, Uasin Gishu
Mr. J. Ademba	MRP Clerk, Kakamega
Mr. M. E. Agalo Ochieng	Officer in Charge, Traffic Census Unit Nairobi
Mr. J. A. N. Agundo	District Roads Officer, Kakamega
Eng. S. M. Akute	Senior Superintendent Engineer Special Projects, Nairobi
Eng B. N. Ariga	MRP Program Coordinator (MOPW), Nairobi
Eng. Pieter Dijkstra	MRP Regional Coordinator, Nakuru
Eng. Rudi Jelinek	MRP District Improvement and Maintenance Engineer, Nyeri
Mr. D. Jennings	Training Engineer, MRP School, Kisii
Mr. B. K. Kariuki	District Works Officer, Kakamega
Eng. J. N. Maina	District Works Officer, Kisii
Mr. L. M. Mbogo	MRP District Inspector, Kitui
Eng. J. O. Ndeda	Provincial Mechanical Engineer, Kakamega
Eng. Minri	MRP District Improvement and Maintenance Engineer, Kisii
Mr. J. Murage	Regional Coordinator, MRP/RARP, Nyeri
Eng D. M. Mutuku	District Improvement and Maintenance Engineer (MOPW), Nakuri
Mr. G. M. Mwakulomba	Provincial Works Officer, Kakamega
Mr. J. K. Mwaniki	District Roads Officer, Nyeri
Mr. J. Onyango	Maintenance Inspector, MRP, Kisii
Eng. D. Stiedl	ILO Representative, Labor-Based Technology, Nairobi

Mr. G. Taylor	MRP Planning, Monitoring and Evaluation Engineer, Nairobi
Eng. P. M. Wakori	Senior Superintending Engineer for Planning and Maintenance, Nairobi

Local Government Authorities

Mr. Kiratu	Town Clerk, Nakuru
Mr. Owendo	Clerk to the County Council, Kakamega
Mr. Wadongo	Revenue Officer, Kakamega County Council

Staff of Donor-Assisted Projects

Mr. Gem Argwings-Kodhek	Univ of Arizona/PAM Study
Ms. Judith Beckwith	Project Manager, Rural Private Enterprise Project, Deloitte Haskens & Sells, Nairobi
Mr. P. Bowbrick	Agro-Progress Cereals Pricing Study Team
Mr. Evans	Extension Specialist, On-Farm Grain Storage Project, Kisumu
Mrs. K. Kogo	Deputy Director Projects, Kenya Rural Enterprises Program, Nairobi.
Dr. Eric Monke	Univ of Arizona/PAM Study
Mr. Alex Nelson	Stanford University/PAM Study
Dr. Scott Pearson	Stanford University/PAM Study
Ms. T. San Martin	Consultant, Austin Associates MAPS Study
Mr. G. Schmidt	Agro-Progress Cereals Pricing Study Team
Mr. Mwenda Tharibi	RPE Project, Deloitte Haskens & Sells, Nairobi

International Agency Staff

USAID/Kenya

Ms. J. Gachagua	Agricultural Economist
Mr. James Gingerich	Chief, Office of Agriculture
Mr. C. North	IDI, Office of Agriculture
Mr. Justus Omolo	Private Sector Officer
Mr. D.A. Smith	Agricultural Economist
Mr. S. W. Sinding	Director
Mr. P. Weisel	Project Manager, Office of Agriculture
Ms. Holly Wise	Private Sector Officer
Mr. E. Zallman	Deputy Director

European Economic Commission

Mr. P. Darmuzey	Economic Advisor, Nairobi

International Labor Organization

Dr. Gichira	Small Scale Enterprise Specialist, Nairobi

Canadian High Commission

Ms. Anne Lavender	Nairobi

World Bank Regional Mission to East Africa

Mr. R. Anson	Agricultural Economist