Impact of Institutional and Regulatory Frameworks on the Food Crops Subsector in Kenya: 1990-1999

Hezron Nyangito
Lydia Ndirangu

Productive Sector Division
Kenya Institute for Public Policy
Research and Analysis

KIPPRA Discussion Paper No. 18
November 2002

KIPPRA in Brief

The Kenya Institute for Public Policy Research and Analysis (KIPPRA) is an autonomous institute whose primary mission is to conduct public policy research, leading to policy advice. KIPPRA's mission is to produce consistently high-quality analysis of key issues of public policy and to contribute to the achievement of national long-term development objectives by positively influencing the decision-making process. These goals are met through effective dissemination of recommendations resulting from analysis and by training policy analysts in the public sector. KIPPRA therefore produces a body of well-researched and documented information on public policy, and in the process assists in formulating long-term strategic perspectives. KIPPRA serves as a centralized source from which the government and the private sector may obtain information and advice on public policy issues.

Published 2002

Bishops Garden Towers, Bishops Road
PO Box 56445, Nairobi, Kenya
tel: +254 2 2719933/4; fax: +254 2 2719951
email: **admin@kippra.or.ke**
website: http://www.kippra.org
ISBN 9966 949 36 4

The Discussion Paper Series disseminates results and reflections from ongoing research activities of the institute's programmes. The papers are internally refereed and are disseminated to inform and invoke debate on policy issues. Opinions expressed in the papers are entirely those of the author or authors and do not necessarily reflect the views of the Institute.

KIPPRA acknowledges generous support by the European Union (EU), the African Capacity Building Foundation (ACBF), the United States Agency for International Development (USAID), the Department for International Development of the United Kingdom (DfID) and the Government of Kenya (GoK).

Abstract

This paper focuses on policy, institutional and regulatory reforms in the food crops sub-sector: maize, wheat and rice. Reforms in this subsector were expected to enhance market coordination and control, in addition to reducing exchange and transaction costs at each stage of the commodity system. It was expected that the reforms would stimulate growth in the sub-sector, which had deteriorated due to government involvement. Although drastic increases in nominal producer prices of maize, wheat and rice were recorded during the initial years of liberalization, the expected supply response has not been realized. Indices of input prices have had greater long-term rate of increase than those of output prices resulting in decline in domestic food production. This has lead to increased imports because consumption of the foodstuffs has been on the increase. The poor performance of the cereals sector can also be explained by existence of a poorly developed private sector whose growth has been stifled by high transactional costs and lack of capacity to undertake agricultural activities; a situation that has arisen out of slow institutional reforms and an unstable policy environment governing imports and exports. While the general policy has been to liberalize, the regulatory framework still supports controls, therefore conflicting with the commercial mandate of the institutions supporting the food crops. In some cases, as in the rice industry, the problem has been compounded by lack of reforms in the tenure system under which rice is grown. For the full benefits of reforms to be realized, there is need for rationalization of the policies, with the government investing in areas that reduce transactional costs, and creating a predictable policy environment for the private sector. Further, institutional reforms should ensure that adequate capacity exists to implement the policies. The regulatory framework needs to be harmonized with the policies and this should, to a great extent, be a participatory process between the policy makers and the farmers.

Table of Contents

List of Figures

List of Tables

1. INTRODUCTION

Kenya started to implement policy reforms in the economy in general in the early 1980s. The key concern in the policy reforms was to liberalize the operations of markets, which hitherto were dominated by government controls. In the agricultural sector, the focus was on removing government monopoly in the marketing of agricultural commodities and associated price controls, which were vested in parastatals, and removal of government controls on importing, pricing and distribution of purchasable farm inputs. The implementation of the reforms in the early period was not smooth and was characterized by considerable official ambiguity and covert and overt resistance (Ikiara et al., 1993). However, a wave of substantial implementation of the reforms towards liberalized markets in the agricultural sector started in 1993 (Nyangito, 1999). The government, for example, instituted restructuring programmes for key parastatals that handled food crops, such as the Kenya Sugar Authority (KSA) and the National Cereals and Produce Board (NCPB).

At first, market liberalized reforms were not easily accepted because restructuring measures spelt new challenges for the government. Major uncertainties remained as to how urban consumers, a potentially politically-volatile group, would respond to subsidy elimination for the stable foods. As a result, the government kept on progressing and retracting on rules for liberalizing markets. A good example is in the movement of maize which, in the late 1980s and early 1990s, the government kept on implementing reform and retracting on the same. However, the high cost of maintaining the status quo was economically untenable. The operations of the National Cereals Produce Board (NCPB), which had the monopoly to market maize, constituted 20 percent of the public sector budget deficit (Kodhek, 1994) and continuing business as usual was becoming financially unsustainable.

Despite the optimistic pro-market focus, the reforms have not elicited the expected supply response. Although substantial reforms started in 1993, production of the main food crops stagnated or declined in the 1990s (Nyangito, 1999). This is against the arguement by many advocates of market reform that the transition from an economy with extensive, direct government controls to a market-based economy would raise agricultural productivity. The fact that the policies have not performed as expected may be explained by at least two schools of thought. The first school of thought (e.g. Binswanger, 1990; Cleaver, 1985; Barrett and Carter, 1997) explains the poor response to higher prices resulting from policy reforms to structural constraints such as poor state of roads, irrigation and other physical infrastructure, combined with the lack of responsive varieties to intensified use of inputs. The second school of thought (e.g. Staatz and Ba, 1996; Reardon et al., 1996 and 1997; and Jayne and Jones, 1997) explains the poor response to institutional constraints such as property rights, market rules, and exchange mechanisms. This school of thought points to the failure of organizations within and outside government for the poor performance of the agricultural sector under liberalized market policies. This may well be the case for the food crops subsector in Kenya. Although policy and legal reforms have not been finalized even after a decade of implementation, there is need to identify the institutional constraints that may have hindered the anticipated results of the reform process.

Public policies fail or succeed depending on the level of institutional support. However, separating policy from institutions is not simple in practice because the two concepts often overlie each other. Institutions can be a constraint on policy and vice versa. Governments often aim to alter institutions as a first step to reach other objectives. The drawback is that institutional changes usually lag policy changes, which can foil any endeavor by officials to move to new common goals. This is because institutional reforms can be painfully slow to unfold because they are strongly influenced by the forces of the precedent, and the existing ways of doing things may impede progress.

This paper reviews the role that institutions or "rules and laws" governing operation of organizations have played in supporting or stifling policy changes on the food crops subsector in Kenya. The paper is divided into five sections. The first section outlines the focus of the study, the conceptual framework and the methodology used. The second section presents a brief on the background to the policy reforms in the agricultural sector. Section three review the performance of the agricultural sector in recent years while the regulatory framework and performance of the individual commodities (maize, wheat and rice) are discussed in section four. Section five presents the conclusions from the analysis.

Methodology

This paper focuses on policy, institutional and regulatory reforms in the food crops subsector covering maize, wheat and rice. Reforms in this subsector are expected to enhance market coordination and control, in addition to reducing exchange and transaction costs at each stage of the commodity system. In this regard, therefore, it may not be possible to utilise a single approach of analysis due to the divergence of the issues. A combination of New Institutional Economics (NIE) and Structure, Conduct and Performance (SCP) analysis has been used in this study.

The SCP analysis is a compromise between formal structures of neoclassical economic theory and empirical structures of organizational experience in imperfect markets (Harris, 1993). In this model, market performance represents the economic results of structure and conduct, in particular the relationship between distributive margins and the costs of production of marketing services. The analysis is built on the concepts of market integration, competition and efficiency but this has a number of limitations that include:

- The false assumption that commodity markets are polar; that is they are either perfectly competitive or monopolistic.
- Concentrating attention on concepts of competition and therefore diverting attention from structural interrelationships between production, exchange and consumption, which are essential in an understanding of the role agricultural markets play in economic development.
- Strong anti-interventionist and pro-infrastructure-focused conclusions. These follow on the verdict that markets are competitive, but ignore questions on the means and nature of policy implementation.

A recent approach to the study of institutions is the New Institutional Economics (NIE). Application of NIE concepts to smallholder agriculture in Africa has provided seminal breakthroughs in understanding how structural constraints operate in constraining market participation by smallholder farmers (Delgado, 1998). In NIE, the focus is on market coordination and control, and exchange and transaction costs of institutions in a system such as that covering an agricultural commodity.

Most commodity system studies by agricultural economists and agribusiness specialists describe both horizontal and vertical structural elements (Jaffee and Morton, 1995). The former relate to entry and competitive conditions prevailing at each industry stage (for instance processing and retailing), and the latter to the location/timing/clustering of marketing functions, interstage differences in size, seasonality, the number of parallel marketing channels, and incidence and form of contractual or ownership integration. Other institutional elements of the commodity-system environment are government programmes, which affect the commodity's production and marketing, and institutions such as banks, auctions, trade associations and insurance companies which perform specific facilitative functions.

A key issue of analysis in NIE is transaction costs. In broad terms, transaction costs are defined as the full cost of carrying out exchange, presumably including marketing costs (Coase, 1963, cited in Delgado, 1998). They include intangibles such as search, monitoring and enforcement costs. The competitive structure of the market determines the level of transaction costs in that fewer alternative buyers or sellers may lower screening costs while increasing bargaining and enforcement costs. Further, if there are relatively fewer alternative-trading partners, one might expect:

- less complete disclosure of interests to trade and disclosure of product information,
- better opportunities for strategic bargaining, and
- more transaction enforcement problems since threats to terminate trade and deal with competitors will be less credible.

In this paper, the analysis attempts to assess entry and competitive conditions, but more so the vertical structural elements of marketing functions, contractual arrangements and the impact of the regulatory and functional roles of government on production, price discovery and smallholder participation in the decision-making process. In undertaking the analysis, the study traces the evolvement of policy in the 1990s when the reforms were intensified, resulting in institutional restructuring and changing roles on input supply and output marketing. Necessary conditions for successful impact of these reforms include enforcement of regulations and proper administration to enable the food crops subsector face the challenges and take advantage of the opportunities offered by the liberalization policies. A description and analysis of each subsector is given to determine changes in such elements as roles, and identify gaps in the reform process. The objective is to make recommendations on reforms necessary to enhance marketing, pricing, utilisation of inputs, and stakeholder participation in the decision-making process in order to improve efficiency throughout the commodity systems.

The analysis also focuses on governance, performance, and the conduct and role of the major organizations that were involved in control of production and marketing of the food commodities. The performance of these institutions had an impact on the growth of the subsector. Initially, in the 1960s and 1970s, there was positive growth but production started declining later, a factor that was attributed to inefficiency of the organizations (Swamy, 1994). This study therefore analyses production aspects, decision-making process, functions of the parastatals, and the relevant legal framework. The impact of reforms on marketing, entry conditions, decision-making and returns to farmers are also discussed.

2. BACKGROUND TO AGRICULTURAL POLICY REFORMS

For almost two decades after independence, Kenya pursued a policy of a mixed economy with direct involvement of the government in productive economic activities through parastatal organizations[1] and private sector enterprises operating side by side. In 1982, the government set up a Working Party on Government Expenditure[2] which recommended a major reform programme to address operational inefficiencies in parastatals. The main recommendation was to remove government involvement in production activities and promote the private sector, which, it was felt, was capable of undertaking some of the developmental roles more efficiently. The government functions were therefore to focus more on regulation and creation of an enabling

[1]Established following the Sessional Paper No. 10 of 1965 on *African Socialism and its Application to Planning in Kenya*

[2]The Ndegwa Commission of 1982 on *Government Expenditure*

environment for private sector investment. This principle was expounded in the Sessional Paper No. 1 of 1986 on *Economic Management for Renewed Growth*. However, it was not until 1992 that this principle was put into practice with the launching of the Public Enterprise Reform and Privatization Programme (Kenya, 1992). The Programme identified 32 strategic and commercially-oriented parastatals to be retained in the public domain but requiring restructuring, among them the National Cereals and Produce Board (NCPB). Others like the Kenya Sugar Authority (KSA) and the National Irrigation Board (NIB) were identified as requiring efficiency improvements and financial self-sustenance.

During the era of government controls, the NCPB was the main channel of implementing government policy on cereals (maize, wheat and rice). These crops were regarded as "scheduled crops". Scheduling allowed *inter alia* for the control of production, distribution and marketing of maize, rice, wheat and sugar. The main objectives were to ensure a ready market (and therefore better returns) to farmers at reasonable prices and to avail the same to consumers at affordable prices. The following strategies were used to achieve these objectives:

(a) Coordinated construction and management of public storage facilities and maintenance of strategic grain reserves for the maize subsector.

(b) Application of policy instruments such as licenses, permits, price controls, compulsory acquisition of produce, credits and Guaranteed Minimum Returns (GMR) loans to farmers.

(c) Declaration of maize, wheat, rice and sugar as special crops for purposes of establishing the NCPB, NIB and KSA to control the pricing and marketing of these commodities.

(d) Establishment of Cereals and Sugar Finance Corporation (CSFC) to provide finance for maize, wheat and sugar production by giving loans to government agencies for purchase and advances against these products mainly for the GMR.

(e) Establishment and empowerment of the Central Agricultural Board (CAB) to declare the latest and earliest dates for planting to facilitate GMR payments to farmers.

The effect of these policies was that the NCPB held a monopolistic position in handling of the key food commodities. Despite the government investment in extensive infrastructure network for the NCPB, free flow of maize between surplus and deficit areas was impeded by poor market integration. Parallel markets that encouraged rent-seeking activities also existed. The realization that these policies had failed to achieve the intended objectives formed the basis of the Parastatal Divesture[3] and overall economic reforms including a new management approach, restructuring the economy and expenditure patterns.

The structure of food crops marketing before market reforms (1990) is shown in Table 1 and is compared with the structure after liberalization (2001). Currently, the NCPB still plays a major role in maize and wheat marketing partly due to its high storage capacity and the slow development of the private sector.

Table 1: Structure of food marketing before and after liberalization in Kenya

Crop	Processor	Marketing before 1990	Marketing in 2001
Maize	Millers	NCPB	NCPB/Private traders
Rice	NIB	NCPB	NCPB/Private traders
Wheat	KGGCU*/KFA**	NCPB	NCPB/Private traders

*Kenya Grain Growers Cooperative Union; ** Kenya Farmers Association

[3]Government reduction in commercial activities for many parastatals and the shift to privatization of the parastatals

3. PERFORMANCE OF THE AGRICULTURAL SECTOR IN THE 1990s

The purpose of liberalization was to address constraints that prevailed in the food crops subsector including inadequate access to inputs, poor pricing and marketing incentives, lack of suitable varieties, and poor adoption of technologies. However, recent research findings indicate that these constraints are still prevalent and ways have to be found to address them (Kilungo et al, 1999). Farmers still face high input prices, lack improved seed, receive low producer prices and have inadequate marketing information, which leads to high variations in produce prices. Most farmers purchase fertilizer and pesticide but do not purchase improved seed; they cannot therefore reap the full benefits of using quality inputs. Furthermore, while liberalization was supposed to ensure availability of food to all people at all times, cases of famine are still reported even in areas that were previously food self-sufficient. This has undermined the policy reforms.

3.1 Prices

Specifically, liberalization of pricing and marketing of the food sector in 1993 led to dramatic increases in producer price in nominal terms for most commodities, although sugar prices increased at a lower rate and stabilized at much lower levels soon after 1994 (Figure 1). The dramatic increase in prices for food crops from 1993 was due to removal of price controls and response to market forces, indicating that the prices were set below the market price as determined by supply and demand.

Despite the nominal increase in output prices, production volumes indicate a poor response to the price increase. This can be explained by the fact that real producer prices fluctuated heavily while the terms of trade between the outputs and inputs worsened (Nyangito and Okello, 1998, and Nyangito, 1999). Consequently, the profitability of growing food crops was low, as the prices did not provide adequate incentives for increased production of the crops. Furthermore, an analysis of the input and output prices in the 1990s shows that liberalization measures have yet to impact positively on profitability in agriculture. Both output and input prices have increased in response to the macroeconomic environment but the indices of input prices paid have had a greater long-term rate of increase over time (Figure 2).

Figure 1: Prices of food commodities in Kenya: 1980-1999

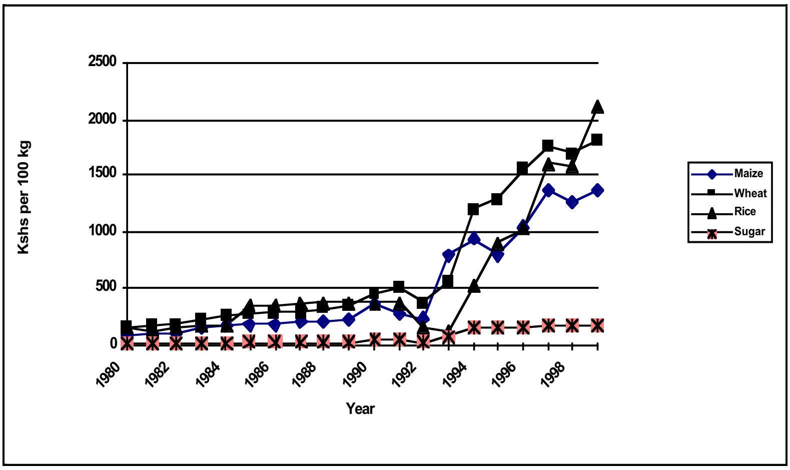
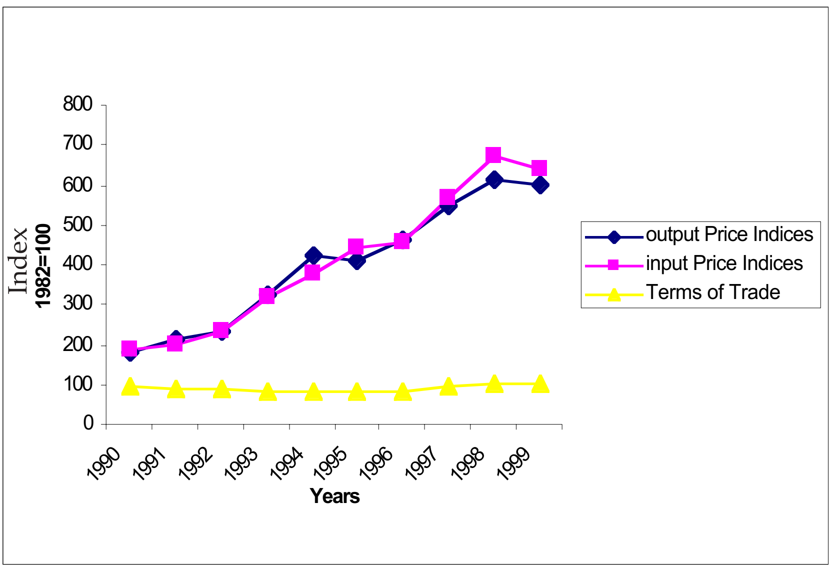


Figure 2: Output and input price indices and terms of trade: 1990-1999



The policy reforms have also led to fluctuations in volumes of marketed output through formal market channels for the main food commodities, as shown in Figure 3. This has however bolstered participation of private firms and individuals in the trade and whose numbers have increased after the removal of monopolies such as the Kenya National Trading Company (KNTC) and the National Cereals and Produce Board (NCPB). Over the ten years, the volumes of marketed maize and wheat through the formal channels have declined. The situation is better depicted by the trend of the marketed cereal output indices shown in Figure 4.

Figure 3: Marketed volumes of food commodities ('000 tons)

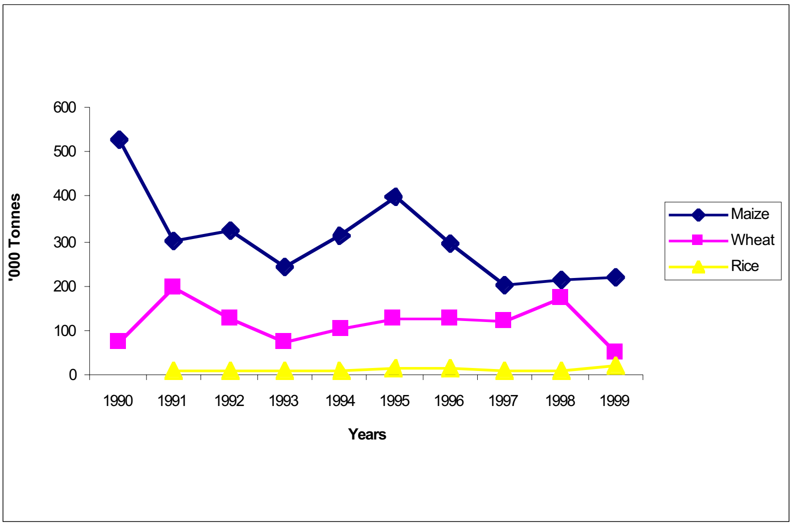
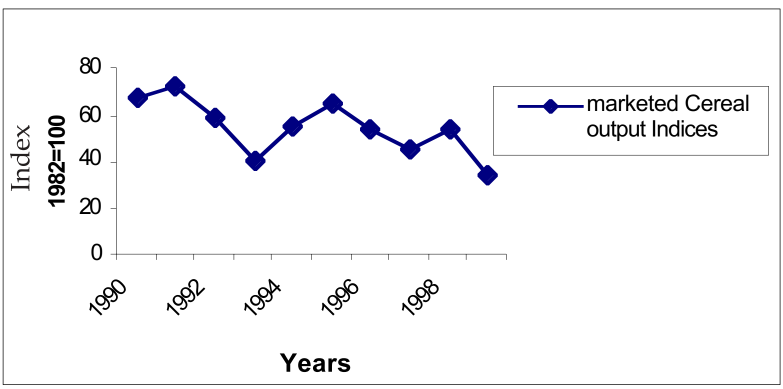


Figure 4: Marketed cereal output indices



The steepest decline occurred between 1991 and 1993 when terms of trade in the agricultural sector were at their worst. Cereal production increased from 1994 up to 1996 but fell in 1997 owing mainly to the drought that was prevailing then. Other factors that can be used to explain the decline are increased food imports and declining government expenditure.

3.2 Food Imports

Trade liberalization has led to an increase in import of foodstuffs, mainly rice, wheat and sugar as shown in Table 2. Cheap imports, however, dampen the producer prices and create competition for domestic supplies therefore resulting in disincentives for increased domestic production.

Imports have also been necessitated by an increase in consumption for most of the food commodities, which has not been met by increase in local production. For instance, per capita consumption for maize rose from 90kg in the early 1990s to 125kg by the end of the decade. The

Table 2: Imports of major food crops 1990-2000 (‘000 tons)

Year	Maize	Wheat	Rice
1990	0	322.6	28.0
1991	0	242.6	61.2
1992	414.9	100.8	58.9
1993	12.9	314.4	37.2
1994	650.4	353.1	93.5
1995	12.0	364.0	28.2
1996	6.8	486.9	39.2
1997	1.1	388.1	62.4
1998	368.9	478.9	62.9
1999	73.5	583.8	53.4

Source: Statistical Abstract and Economic Survey (various issues) decline in production for domestic maize was further aggravated by adverse weather conditions, ethnic conflicts, low levels of technology use, low use of fertilizers, poor seed quality and poor husbandry practices (Mose et al., 1997). Marketing uncertainties arising from inaccessibility to markets and price fluctuations also led to decline in production (Nyangito and Ndirangu, 1997).

Wheat imports are necessitated by low productivity locally and high capital costs of production. These make domestic wheat more expensive than imported wheat. Domestic wheat production only meets 50 percent of the local demand. Poor accessibility to markets arising from poor infrastructure has meant low competition among wheat buyers, therefore leading to low producer prices.

Domestic rice demand is also higher than domestic production by 60 percent. Domestic rice production has been declining in the late 1990s due partly to the disincentives for production in National Irrigation Board schemes, and low production technology for rain-fed rice (SAMEZ, 1994). The settlers in the schemes have no freehold control of the land and have no say in the tenancy arrangements. Producer prices have been low due to the high operational costs of the National Irrigation Board. Production of rain-fed rice, which is non-aromatic has also been affected by cheap imports.

3.3 Government Expenditure

One of the objectives of liberalization was to reduce government expenditure. It should, however, be recognized that agriculture still offers the best prospects for economic growth given that it has a multiplier effect of 1.6 compared to the rest of the economy whose multiplier effect is estimated at 1.23 (Block and Timmer, 1994). In view of this, it is necessary to allocate more funds to the agricultural sector within the national budget. However, the allocation of government expenditure to the sector between 1990 and 2000 has been fluctuating, and has been below 5 percent of total public expenditure (Table 3).

Table 3: Government expenditures for all sectors and agriculture (K£ million 1989/1990 – 1999/2000)

Year	Agric. Recurrent	Agric. Develop.	Total Agric.	Total Public	Percent Share of Agric.
1989/90	82.7	71.1	153.8	3,156.0	4.8
1990/91	38.6	40.2	78.8	2,815.7	2.8
1991/92	13.3	4.9	18.2	4,926.7	0.4
1992/93	117.0	177.2	294.2	6,064.7	4.8
1993/94	160.6	302.9	463.5	9,007.7	5.1
1994/95	184.4	192.2	376.6	9,205.6	4.1
1995/96	216.1	170.5	386.6	9,205.6	4.1
1996/97	220.15	127.99	348.14	9187.05	3.8
1997/98	213.43	174.39	387.82	15651.48	2.5
1998/99	248.09	397.51	645.60	12574.21	5.1

More important perhaps is that most of the development expenditure is funded by donors. Donor funding, however, is unstable and not a sustainable long-term strategy for agricultural development. The instability of donor funding is part of the reason that explains the observed fluctuations.

4. REGULATORY FRAMEWORK AND POLICY IMPLEMENTATION FOR FOOD CROPS SUBSECTOR

This section discusses the regulatory framework under which the policies governing production and marketing of food crops have been executed. It also discusses the performance of the institutions mandated to handle the sector under the prevailing policy framework.

4.1 Maize and Wheat Industry

Maize and wheat are the major food crops in Kenya. Their legal and policy frameworks are closely intertwined because of their importance as staple food crops.

The regulatory framework for maize and wheat is spelt out under CAP 338 of the Laws of Kenya, which established the National Cereals and Produce Board. The Act confers on the Board the functions of marketing and distributing cereals. To support these functions, it became necessary to enforce uniform pan-territorial and pan-seasonal pricing systems. However, the policy on pan-territorial-pan-seasonal-prices was not always effective because the Board could not operate competitively throughout the country. Farmers often sold their produce to middlemen therefore losing the benefits of 'higher' into-depot prices. The NCPB also sold its stocks to middlemen (traders) who sold it to consumers at 'higher' than recommended prices. In deepening its control, the Government of Kenya set both the producer and selling prices. However, the free flow of maize between surplus and deficit areas was still impeded by government restrictions on amounts of maize that could be moved from one region to another. The controls however encouraged the existence of a parallel market and brought about unnecessary costs on the government in terms of 'policing' on the number of bags moved between districts (Kodhek, 1994 and Nyangito, 1997).

The National Cereals and Produce Board (NCPB) emphasized measures affecting producer prices rather than intervening directly to influence consumer prices of maize meal. A pan-seasonal and pan-territorial price provided farmers with an easily referenced price but its application throughout the country and across time was difficult. The Board therefore faced tremendous budgetary problems leading to subventions from the government. Faced with dwindling resources and a high population growth, the government reduced maize marketing costs in the late 1980s by allowing the Board to operate within a price band of import and export parity prices. The band determined the range within which domestic prices could vary, but this band was too wide. The Boards financial position also continued to deteriorate to the extent that it could not adequately pay for the farmers' maize, and in due course severe payment delays were experienced (Nyangito, 1997).

In the case of wheat, growers were registered by the Board. Control of marketing and distribution of wheat, flour, wheat feed, and even imports and exports was vested with the Minister for agriculture. In a nutshell:

(a) The government, directly or indirectly by appointing or registering agents, controlled the production, pricing, movement, storage and marketing of wheat, as well as research and breeding of wheat.

(b) Cess was charged on wheat grown at delivery or selling points but it was mainly used to support the activities of the NCPB and not for development of, for example, infrastructure in the wheat industry.

(c) Entrepreneurs had to acquire permits for acquiring or constructing mills, and millers were licensed and allocated the quantity of wheat to be milled. High transaction costs were incurred because the licences were not directly transferable to other entrepreneurs.

4.1.1 Implementation of policy reforms for maize and wheat industry

Substantial implementation of policy reforms towards liberalized markets started in 1993 and mainly focused on the removal of movement restrictions on maize, rice and wheat marketing by reducing the monopoly of the NCPB as the official marketing agency. Reforms in the subsector between 1988 and 1998 have been effected mainly under three programmes, namely:

(i) The Cereal Sector Reform Programme (CSRP) between 1988-1990;

(ii) Total liberalization of the grain market as part of the overall macro economic policies agreed with the IMF/World Bank between 1991 and 1994; and

(iii) NCPB Commercialization Reform Programme between 1996 and 1998.

The NCPB Commercialization Project, the most recent programme, had the following key achievements[4]:

- Development of Operating Rules to define relations between the Government of Kenya and the NCPB;
- The proposal and agreement to change the name of NCPB to Grain Corporation of Kenya;
- The development of a mission statement for NCPB to reflect the changed role;
- Significant cost reductions at the Board, which included a staff reduction of 63 percent and introduction of significant cost controls;

[4] NCPB Commercialization Project; Second retreat, April 1998

- Refinement of the accounting system and decentralization of budgeting to depot level;
- Leasing of up to 3 million bags of idle capacity to private sector to generate income;
- Restructuring of the Board of Directors to include persons from the private sector; and
- Drafting of a legal framework for the parastatal in order to review the NCPB Act to reflect the changed role of the Board.

Arising from the three programmes mentioned above, major changes were effected through the issue of legal notices as shown in Table 4.

Table 4: Major reforms in the maize and wheat subsector since 1990

No.	Commodity	Legal Notice No.	Date Issued	Purpose
1.	Maize	508	13/12/90	Movement up-to 4 tons
		80	15/4/92	Movement up-to 8 tons
		410	23/12/93	Price control revoked
		412	28/12/93	Full liberalization
2.	Wheat	41	23/12/93	Price control revoked
		412	28/12/93	Removal of movement control

On the input supply side, reforms were introduced on fertilizers and hire of government tractors and machinery. Banks were also encouraged to extend credit to the agricultural sector. Previously, prices of fertilizers were controlled, tractor and machinery hire services were subsidized by the government and banks were required to give a certain percentage of their loan portfolio to the agricultural sector.

The implementation of agricultural reforms was brought about by policy shifts from government controls to liberalized markets. However, the principal laws that gave legal support to the policies existing before 1990 were not changed. The legal framework supports government controls while the policy framework supports liberalized markets. Even after the removal of movement restrictions, for example, the market still faces obstacles in the way of the legal framework as in the case of the Chief's Authority Act which gives authority to administration personnel to restrict movement of maize. The legal and the policy frameworks are therefore inconsistent and lead to misinterpretation.

Reforms in pricing and marketing have also been affected by inconsistency of policies. During the era of government controls when food self-sufficiency was the key objective, all policies on marketing and pricing controls were geared towards its achievement. As a result, reforms deemed to have a negative impact on food self-sufficiency were unacceptable. Significant changes have occurred with the shift in policy from food self-sufficiency to food security.[5] NCPB's role has changed from a monopoly to buyer and seller of last resort and to an agent of the government.

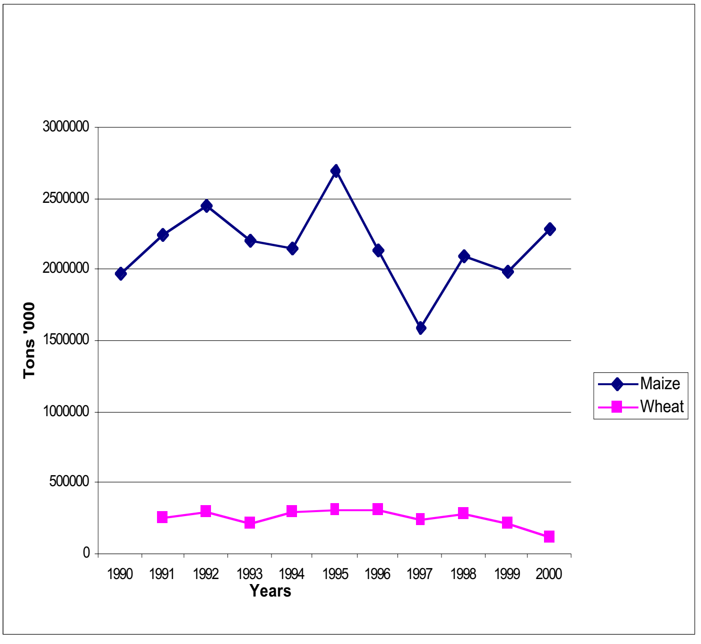
The National Food Security Office (NFSO) centrally regulates agricultural produce for purposes of national food security and maintenance of strategic grain reserves. These functions are also performed by the NCPB on an agency basis, but the government reserves the right to appoint any other grain dealer as its agent. The NCPB is no longer the official

[5]Sessional Paper No. 2 of 1994 on National Food Security

marketing agency and its prices no longer form the floor and ceiling prices. The commitment to the ideals established in setting up the NFSO and commercialization of the NCPB were shaken in 2000 when the country experienced prolonged food shortages and NCPB once again had to play a leading role in food imports and distribution.

Despite the role the NCPB continues to play in the market, administrative controls have been removed to facilitate the private sector's participation in marketing, but this is still being hampered by the overwhelming market domination capacity of the NCPB. Rationalization of the depot network is expected to reduce NCPB's operating costs and avail some of the assets to the private sector, therefore enhancing the participation of the private sector. Transfer of ownership of the NCPB from the central government to a Board of Directors will enable the NCPB to collaterize its assets for working capital and therefore increase its purchasing capacity. These changes have however not been fully effected.

Figure 5: Maize and wheat production (tons)



4.1.2 Impact of policy reforms on maize and wheat production and marketing

(i) Production levels

Both maize and wheat production have fluctuated and declined over the 1990s, but maize fluctuations have been higher (Figure 5).

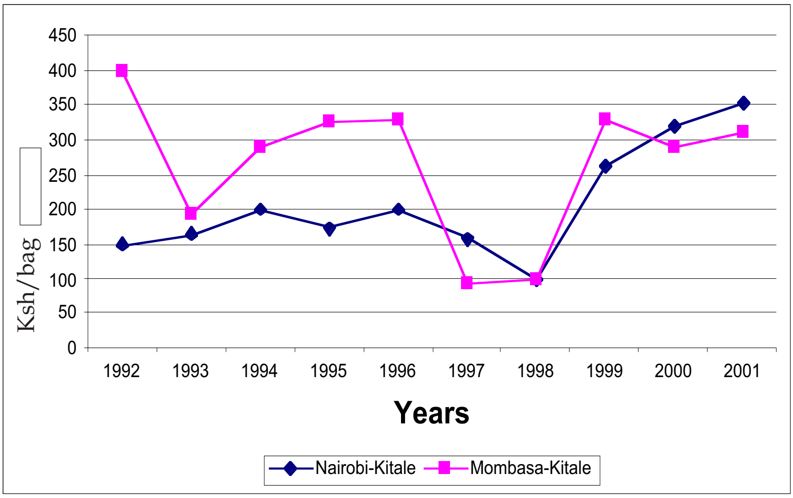
Although weather conditions have not been favourable, the prevailing policies have played a significant part in the fluctuation in production. The decline in wheat output for instance, may arise from lost production that was hitherto encouraged by the government through subsidies in credit, input distribution, and assured market outlets through the NCPB. The fluctuations in maize output on the other hand can be attributed mainly to intermittent policies on exports, which makes decision making at farm level difficult.

(ii) Price variability

The major impact expected from liberalization of the maize market was reduction of costs of long-distance transport as shipment sizes increased and administrative barriers to trade disappeared. In theory, lower transport costs should reduce marketing margins, raise returns to maize producers, lower prices to consumers, and result in greater integration of producing and consuming areas.

Price reforms included removal of uniform pricing, and were expected to lead to reduction of marketing margins between the surplus and deficit regions. While this was the case, there were big fluctuations in marketing margins between major producing and consuming regions in the 1990s. Figure 6 shows the trend between Kitale (a surplus production region) and major consuming urban centres of Nairobi and Mombasa. The margins between Kitale and Mombasa, for example, show wider fluctuations particularly between 1990 and 1997 with a range of Ksh. 100-400 per 90kg bag. During this period, the margins between Nairobi

Figure 6: Trends in marketing margins: 1992-2001



Source: Ministry of Agriculture, Marketing Division

and Kitale ranged between Ksh. 150 to 200 per 90kg bag. This indicates a poorly integrated maize market, and mainly so the Kitale-Mombasa market. The margins between Kitale and the two urban centres declined between 1996 and 1998, possibly because of maize surpluses in the country at large. However, the margins have been on the rise since 1998.

(iii) Increased competition

One of the impacts of the reforms has been increased competition especially in the milling industry. At the initial phase of liberalization (1989-1993), millers were allowed to source maize from other suppliers other than the NCPB, which led to increased competition and lowering of maize meal prices from Ksh. 51 per 2kg packet to Ksh. 35 by early 1995. Some large millers in the deficit areas were forced out of business because of the competition induced by liberalization whereby cheap maize meal imports from surplus producing regions were brought into deficit regions (Mukumbu, 1994). However, efficient millers continued as their capacity utilization improved. Furthermore, liberalization led to farm level investment in larger maize storage space. This suggests that a reduced role for the NCPB in maize storage need not lead to excessive swings in seasonal prices.

One area where liberalization has had the greatest impact is in consumption patterns of maize meal. Consumption of milled maize before reforms was predominantly in form of sifted maize meal from a few large-scale roller-milling firms. The government fixed the miller and retailer margins based on the stated cost structure of the millers. This resulted in about 30-50 percent of the retail price being composed of milling margins. Household surveys (Jayne et al., 1997) carried out between 1993 and 1995 indicated that consumers shifted quickly to hammer-milled (posho) meal after the removal of controls, with millers recording a loss of 25-40 percent of their market to posho mills within four months of liberalization. The posho mills produced whole meal whose cost was less than half that of sifted maize meal. Milling margins for posho have increased by 20 percent since 1995 (Nyoro et al., 1999), while that of the large-scale millers have not changed. This is because of competition in the milling sector after liberalization where consumers shifted from sifted to whole meal. The availability of the latter at a cost which is 60-70 percent lower than that of the roller mills eliminated the adverse effect the removal of subsidies would have had on consumers.

For the case of wheat, imports dramatically increased after liberalization. The role of the private sector in wheat marketing increased because millers were free to buy wheat grain from the cheapest source. Furthermore, the relaxation of export controls in December 1994 led to better capacity utilization by millers. Working capital requirements reduced because millers could obtain wheat from local and international suppliers on credit. Reduction in losses resulting from poor quality wheat and delivery of underweight consignments to millers from the NCPB also meant reduced wheat milling costs.

More evidence of increased competition within the cereal sector is shown by a study conducted by the Tegemeo Institute of Egerton University in 1998 (Nyoro et al., 1999). The study showed that most stages of the maize marketing chain have concentration ratios of less than 40 percent. This indicates that the different stages of the marketing system are relatively competitive and reveals the absence of major barriers to entry into business. However, for the private sector to develop fully, the following issues must be addressed:

- Government rules and regulations for entering the maize business including licensing, trade controls on imports and exports.

These have hindered the liberalization process because the NCPB Act has not yet been reviewed.

- Information on sources and outlets of maize, prevailing market prices and the cost structure.

This is vital for efficient marketing. There is evidence, however that there is information asymmetry and the relevant infrastructure is not functioning well.

- Access to working capital for production and marketing.

This financial barrier to production is attributed to lack of an organized system of availing credit to the traders. The Agricultural Finance Corporation (AFC) and commercial banks have not supported maize and wheat farmers adequately.

(iv) Reduction of risks and uncertainties for the private sector

Traders avoid buying and stocking huge stocks of grain due to price volatility. Government intervention in price stabilization and lack of a clear policy on pricing is an impediment to private sector activities. In mid 1999, for example, an imposed suspended duty discouraged maize imports even when all indications pointed to a looming food shortage.

In June 1999, a bag of maize from Kitale was costing Ksh. 1700 in Mombasa while the same bag of imported maize from South Africa was costing Ksh. 1670 inclusive of an import duty of 32.5 percent. Without import duty, maize in Mombasa would have costed Ksh. 1303 per 90kg bag, about Ksh. 50 less than in Nairobi at the same time. Therefore, government activities have at times caused uncertainties in the market, which has made long term decision making difficult for the private sector. Inability to predict government policy with certainty impacts negatively on private market development.

The constraints faced in integrating the private sector in maize marketing, and the problems of price variability, raise the issue of whether liberalized polices alone can lead to an efficient food marketing system, stabilize prices, and ensure food security in the country. Experience from India and China indicates that government-controlled food distribution systems have been successful in stabilizing domestic prices for the benefit of producers and consumers (Zhou and Gandhi, 2000). The Food Corporation of India (a government agency), for example, purchases food from farmers and manages stocks and distribution to various regions alongside the private sector. This is part of a price support system to farmers, that also targets poor households for food security purposes. Kenya could borrow this lesson in order to develop a system where the National Cereals and Produce Board (NCPB) can operate alongside the private sector to improve the efficiency of food marketing, pricing and distribution.

(v) Cropping patterns

A major objective of decontrolling the market was to encourage efficient utilization of resources by shifting production to areas best suited for particular crops. Recent studies indicate a shift in cropping patterns with areas less suited to maize production decreasing their involvement with the crop (e.g. Kilungo et al., 1999; Nyoro et al., 1999). Movement restrictions of maize during the control period may have helped farmers achieve local self-sufficiency in maize production. The government through its price support operations for both inputs and outputs may have encouraged production in areas less suited to maize. With liberalization, farmers have reduced maize production especially in the grain-deficit areas of the Coast, Eastern and Western lowlands.

4.2 Rice Industry

Rice development in Kenya started in 1946 under the African Land Development Unit (ALDEV) which started a broad agricultural rehabilitation programme that included irrigation. This was driven by the need to contain African agitation for land occupied by European settlers. The Unit initiated a number of irrigation schemes, including Mwea, Hola, Perkerra, Ishiara and Yatta, using cheap labour from the Mau Mau detainees. After independence, these schemes were taken over by a department in the then Ministry of Agriculture.

4.2.1 Regulatory framework for the rice subsector

The government established the National Irrigation Board (NIB) in 1966 under the Irrigation Act, CAP 347 of the Laws of Kenya, with powers to raise funds, execute policy and determine the number of settlers in national irrigation schemes. Rice is the major crop produced under the rice schemes, namely Mwea Tebere, Ahero, West Kano and Bunyala. Rice is also produced under rain-fed conditions mainly in Western and Nyanza provinces, and mainly on individual farms. However, irrigated rice accounts for about 90 percent of the total rice production in Kenya (SAMEZ, 1994).

For many years, the National Irrigation Board (NIB) controlled the rice industry in Kenya. The Board was charged with, among others, the responsibility of conducting research and investigation; formulating policy, coordinating and supervising schemes; providing land for public purposes; and marketing of crops and produce grown in the schemes. The government controlled the prices and movement of the produce. The NCPB was on the other hand charged with the responsibility of acquiring, marketing and distributing all rice produced in the country.

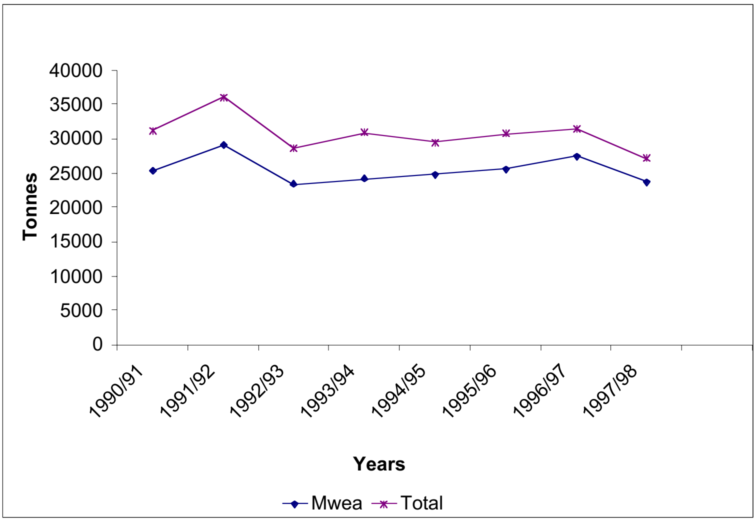
Before 1992, the government used to set prices of rice on a cost plus basis, and domestic rice production was heavily subsidized and protected. The subsidies, such as NIB under-recovering its management costs, were indirect. Prohibitive import duties (200 percent) for aromatic *Basmati* and *Sindano* rice (80 percent) ensured that local rice production faced no serious competition.

On 17 January 1992, the government removed price controls and liberalized the marketing of rice through Legal Notice No. 13. This meant that the NCPB could no longer compulsorily acquire the rice produced in the country. However, the marketing segment between farmer and the NIB did not change as CAP 347 still empowered the Board to acquire all rice produced in the national irrigation schemes.

Recent developments in the Mwea Irrigation Scheme in particular have made the handing over of functions hitherto performed by the NIB to farmers urgent. The legal framework created a licensee system of land tenure which has become very unpopular with the farmers. This is a factor that inhibits private initiatives to develop the plots of land allocated to farmers. With liberalization, paddy deliveries to the Board have been declining because private millers have set up businesses near the schemes (Figure 7). The trend of total deliveries in the country follows closely that of Mwea since it is the largest producer of rice.

The Irrigation Act, CAP 347 does not give powers to the National Irrigation Board (NIB) to license rice millers, but these licenses are given by the provincial administration. The NIB was given the responsibility of administering and supervising national irrigation schemes. Over the years, it acquired the necessary human resources to undertake these roles but farmers are expected to supervise production activities under liberalization and this has therefore rendered the NIB personnel

Figure 7: Paddy deliveries to National Irrigation Board (tons)



redundant.

Other than the removal of price controls and monopoly of government institutions, no major reforms have been effected in the rice subsector. The rice subsector is predominantly irrigated agriculture. It is therefore important that proposed reforms target the NIB closely. Irrigation provides an alternative option for intensified agricultural production and can, if well considered and implemented, have a major impact on the livelihood of the majority of the rural population.

4.2.2 Performance of the rice subsector

Rice is the main crop grown in Mwea, Ahero, West Kano and Bunyala national irrigation schemes. The NIB signs agreements with the farmers to deliver the entire crop, other than that permitted for home consumption, to the Board. Over the years, the NIB has not been able to develop new schemes due to low funding by the government. This is made worse by the fact that other than the Mwea Irrigation Scheme, the other schemes have been making losses (Table 5). The NIB used proceeds from Mwea to fund its operations in other schemes. The financial position of NIB is bound to be strained further given that with liberalization, a parallel market has evolved with the establishment of private mills around the schemes. These private mills illegally purchase paddy grown using the NIB's subsidized services.

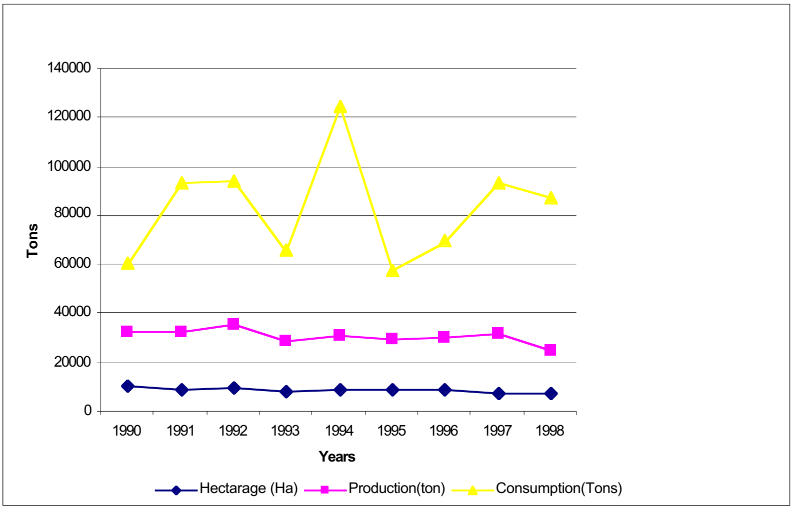
Table 5: Deficits and surpluses for the rice schemes (Kshs. '000): 1990/91 to 1997/98

Year	Head Office	Mwea	Pekera	Tana	Ahero	West Kano	Bunyala
*1990/91	98 578	-19 475	-4 354	-6 249	-9 023	-3 951	2 355
*1991/92	5 465	-871	-288	-377	-740	-973	-148
*1992/93	6 967	-1 984	-490	-376	-1 014	-931	-223
*1993/94	4 908	-2 969	-611	-375	-988	-1 014	-361
*1994/95	5 686	-1 365	-658	-336	-1 373	-1 362	-257
1995/96	296	1 601	-644	-278	-1 473	-920	-352
1996/97	-16 009	78030	-1502	-4 998	-30 806	-32 250	-11560
1997/98	-29 705	38 304	-16963	-5 857	-29868	-18 462	-11 090

Source: NIB Annual Reports.*Income from rice for all schemes was included in the accounts of the Head Office. Therefore, even Mwea showed a loss in these years.

Rice production has been declining gently since 1992 (Figure 8). This is despite the fact that the area under rice has remained more or less constant. This means that yields per hectare have reduced over the years. As a result of the decline in domestic rice production, the country meets about 50 perecent of its domestic requirements from imports. The NIB's withdrawal of services from the Mwea Irrigation Scheme in 1998 may have resulted in further decline in rice production. The farmers' cooperative society or individual farmers currently undertake field operations. Indications are that the cooperative does not have the capacity to cope with demand, and delays in land preparation have been experienced. The implication is that there may be continuous cropping through out the year, which may lead to build up of diseases and pests. Shortages of rice may also be experienced due to small harvests entering the market at any one time of the year. Provision of certified seed, which was previously the responsibility of the NIB is also threatened. This may lead to mix up of varieties.

Figure 8: Performance of the rice industry



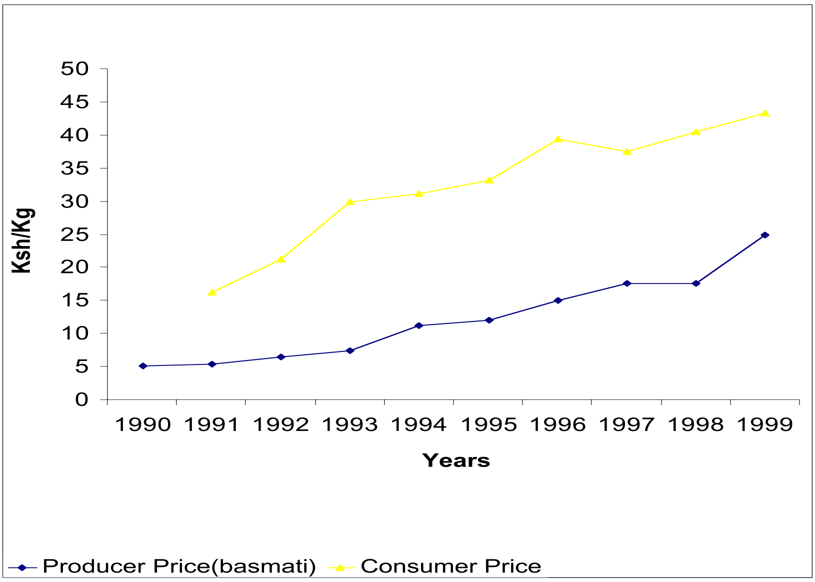
The Mwea Irrigation Scheme is reportedly experiencing a water management problem[6] . Unclogging of the main and primary canals requires heavy machinery which only the NIB had the capacity. Gradual siltation of these canals will mean more delays in land preparation. The fact that these canals pass through farms, which do not grow rice, may give rise to conflicts in water use. Previously, the NIB was able to ensure enough water for rice irrigation through control of water diversions for other uses by such farms.

[6]Communication with Ministry of Agriculture and Livestock Development officials

4.2.3 Prices

The National Irrigation Board determined the producer prices for rice. An indication of the trend of price movement for both producers and consumers is shown in Figure 9. The consumer price has had a higher rate of increase (double) than the producer price. The increase in the price margin may be a reflection of inefficiencies in the marketing chain. There is need therefore for an assessment of the efficiency of the marketing system(s) for rice to ensure that farmers maximize future returns.

Figure 9: Movement of rice



5. CONCLUSION AND RECOMMENDATIONS

This paper has reviewed the institutional and regulatory frameworks for the food crops subsector, and specifically maize, wheat and rice industries. The performance of the food crops is assessed prior to and during the period of policy reforms. While the major objective of the reforms was to provide incentives for increased production, this has generally not been so. Volumes of marketed output have been fluctuating and imports of foodstuffs have been on the increase.

A review of the regulatory and policy frameworks and performance of the maize and wheat industries reveals that:

(i) Restrictive trade policies still exist. Although maize and wheat trade has in principle been liberalized, government approval is still required to export maize. This policy requirement needs to be reviewed to allow exports.

(ii) The National Cereals and Produce Board (NCPB) Act, CAP 338 should be repealed in line with liberalization and a new Act to govern the regulation of the subsector put in place. The Board requires a new regulatory framework consistent with its commercial mandate. The Board of Directors should be made autonomous to allow them make commercial decisions.

(iii) Restructuring of the NCPB should be given priority to reduce its overhead costs and make the depot network available to the private sector. This will increase private sector capacity to participate in marketing by improving access to long-term storage facilities.

(iv) The government should play a major role in providing market information and other infrastructure to increase productivity in the maize and wheat subsectors.

(v) Unclear policy on maize and wheat imports under varied restrictions and tariffs creates price uncertainty to importers and producers and in production. The policy on imports and tariff levels, for example, should be made clear.

(vi) The government should empower the NCPB to play a leading role in managing maize stocks and distribution to different parts of the country for purposes of maintaining food prices at a level attractive to farmers and affordable to consumers, and also to ensure food security to low-income consumers. For this policy to work, there is need for clear policies under which the NCPB will operate.

The performance of the rice industry exhibits uncertainties in provision of services for production to farmers by the National Irrigation Board and in marketing of the crop. Besides this, a number of constraints face the industry:

(i) The government's intention to promote irrigation development has not been backed by a commensurate level of funding. The Board has therefore not been able to develop new schemes and expand pilot schemes to sustainable scales. Since the country has a large potential for irrigation, the government should provide the necessary funding to expand pilot schemes after which they should be handed over to the farmers.

(ii) All schemes apart from Mwea have been making losses. The National Irrigation Board has had to use proceeds from the Mwea Irrigation Scheme to fund its operations in the other schemes. Subsidizing of farmers from certain regions by other farmers could have very serious political repercussions in the country. In economic terms, it leads to unoptimal *Pareto* resource utilization that encourages inefficiency in production.

(iii) The legal framework under which the National Irrigation Baord operates created a licensee system of land tenure that has become very unpopular. Further, due to cultural values and norms, the initial farms have since been sub-divided by farmers into plots among their children, rendering them uneconomical for rice production. The licensing system needs to be reviewed in order to make rice production economically viable.

(iv) The law specifies the timeframe in which a tenant automatically acquires rights to land. The national irrigation schemes were set up more than 20 years ago, a period considered sufficient to grant land rights to licensees. As such, the government through the National Irrigation Board should consider providing titles to tenants, so as to provide incentives for efficient land use.

(v) Amendments to the Irrigation Act, CAP 347 are required to give clear provisions for the management and coordination of irrigation activities.

(vi) Separation of the regulatory, research and production functions of the NIB should entail the establishment of an institution to manage the irrigation and drainage activities. The institution should also be involved in the management of water supply, storage and roads. Production activities should be the responsibility of farmers.

(vii) Farmers should be encouraged to form viable organizations, for example cooperatives or limited liability companies, to undertake agricultural activities such as land preparation, water management, input supply, credit advances, processing and marketing of the crops.

(viii) The National Irrigation Board should divest itself from Mwea and Western Kenya rice mills by selling its shareholding to the farmers through their organizations. This will be in line with the general economic reforms where the government is moving away from those activities that are better undertaken by the private sector. As it is now, the NIB is a monopoly in rice milling since it owns all the major rice mills in Kenya.

The salient conclusions from the analysis of this study are:

(i) While the general policy has been to liberalize the food crops subsector, the regulatory framework still supports controls and therefore conflicts with the commercial mandate of the institutions supporting the prodution and marketing of such food crops.

(ii) The NCPB and NIB still dominate marketing of the cereals. However, the transaction costs are quite high, an indication of inefficiencies of operation of the organizations. There is need for restructuring both the NCPB and the NIB so as to reduce their overhead costs and avail the storage network to the private sector. This would increase the participation of the private sector in marketing of the commodities.

(iii) There is an urgent need for changes in the tenure system in rice growing schemes. The current landlord tenancy system is inefficient, as it does not provide adequate incentives to tenants to increase production. Farmers should be assured of ownership of the land they use.

(iv) Poor infrastructure and lack of information contributes to the poor productivity in the food crops subsector. This is an area the government needs to invest in urgently.

(v) The government needs to create a stable policy environment especially where it relates to imports and export of foodstuffs if the private sector is to consistently invest in the sector.

In conclusion, the poor response of the food crops subsector in Kenya can be explained by both structural and institutional constrains. There is an urgent need for harmonization and rationalization of the policies in the food crops subsector if the full benefits of reforms are to be realized.

References

Binswanger, H. (1990). 'The policy response in agriculture'. *Proceedings of the World Bank Annual Conference on Development Economics*, Supplement to the World Bank Economic Review, 4: 231-258.

Barret C. and M. Carter (1997). 'Microeconomically coherent agricultural policy reform in Africa.' In *The role of the state in key markets*. Paulson J. (ed). Macmillan, London.

Block, Steven and C. Peter Timmer (1994). 'Agriculture and economic growth: Conceptual issues and the Kenyan experience.' Consulting Assistance on Economic Reform Project, USAID.

Cleaver, K. (1985). *The impact of exchange rate policies on agriculture in sub-Saharan Africa*. World Bank Staff Working Paper No. 728. The World Bank, Washington D.C.

Coase, R. H. (1963). 'The problem of social cost'. *Journal of law and economics*, Volume 3: 1-44.

Delgado, C. L. (1998). 'Sources of growth in smallholder agriculture in sub-Saharan Africa: The role of vertical integration of smallholders with processors and markets of high value-added items.' Unpublished paper presented at the Inter-conference Symposium of the IAAE, Badplas, South Africa.

Harris, B. (1993). 'There is method in my madness: or is it vice versa? Measuring agricultural market performance." In Abbort, J. (ed). *Agricultural and food marketing countries: selected readings*. C.A.B. International, Wallingford UK.

Ikiara, G. K., M. A. Juma and J. O. Amadi (1993). 'Agricultural decline, politics and structural adjusment in Kenya.' In P. Gibbon (ed). *Social change and economic reform in Africa*. Nordiska Africaintituete, Uppsala.

Jaffee, S. and Morton, J. (1995). *Marketing Africa's high-value foods: comparative experiences of an emergent private sector*. Kendall/Hunt Publishing Company, Iowa.

Jayne, T. S., and S. P. Jones (1997). *Food marketing and pricing policy in Eastern and Southern Africa: a survey*. World Development, 25.9.

Kilungo, K. K., K. M. Muendo and Z. Mairira (1999). 'The role of agricultural marketing for smallholder farmers in Kenya: an economic analysis of land management technological adoption.' Research paper prepared for RELMA/SIDA.

Kodhek, G. A. (1994). 'Towards a framework for maize sector policy in Kenya: issues, options and consequences.' In *Proceedings of the conference on market reforms, agricultural production and food security*. Egerton University/PAM, June 1994.

Mukumbu, M. (1994). 'Consumer and milling industry responses to market reform in Kenya.' In *Proceedings of the conference on market reforms, agricultural production and food security*. Egerton University/PAM, June 1994.

Mose, L. O., H. O. Nyangito and L. G. Mugumieri (1997). 'An analysis of the socio-economic factors which Influence chemical fertilizer use among smallholder producers in Western Kenya.' In Ransom J. K. et al (eds). *Maize productivity gains through research and technology dissemination: Proceedings of the fifth Eastern and Southern Africa regional maize conference*. Arusha, Tanzania, June 1996.

Nyangito, H. O. (1997). 'A review of policies on maize subsector in Kenya.' IPAR Discussion Paper No. 008/97.

Nyangito, H. O. and L. Ndirangu (1997). 'Farmers' response to reforms in marketing of maize in Kenya: A case study of Trans Nzoia District.' IPAR Discussion Paper No. 003/97.

Nyangito, H. O. and J. J. Okello (1998). 'Kenya's agricultural policy and sector performance: 1964-1996.' *IPAR Occasional Paper No. OP/04/98*.

Nyangito, H. O. (1999). 'Agricultural sector performance in a changing policy environment.' In P. Kimuyu et al (eds). *Kenya's strategic policies for the 21st century*. IPAR, Nairobi.

Nyoro, J. K., M. W. Kiiru and T. S. Jayne (1999). 'Evolution of Kenya's maize marketing systems in the post-liberalization era.' Paper presented at the 4th agricultural transformation workshop. Nairobi, Kenya, June 1999.

Reardon, T., V. Kelly, E. Crawford, T. Jayne, K. Savadogo, and D. Clay (1996). Determinants of farm productivity in Africa: a synthesis of four case studies.' *MSU International Development Paper No. 22*. Michigan State University, East Lansing.

Reardon, T. et al (1997). *Promoting sustainable intensification and productivity growth in Sahel agriculture after macroeconomic policy reform*. Food Policy 22.4:317-328.

SAMEZ (1994). 'Demand study irrigated rice production in the Lake region.' Report on inventory of schemes and priority ranking. Irrigation and Drainage Branch, Ministry of Agriculture, Livestock Development and Marketing, Nairobi.

Staatz, J. M. and M. Ba (1996). *Fostering agricultural and food system transformation in Africa*. MSU Policy Synthesis No. 13, Michigan State University, East Lansing.

Swamy, G. (1994). 'Kenya: Patchy, intermittent commitment.' In Husain and Faruqee (eds). *Adjusment in Africa: Lessons from country case studies*. The International Bank for Reconstruction and Development and the World Bank, Oxford University Press, New York.

Zhou Y. Zhang and V. P. Gandhi (2000). 'Are expenditures in a government food distribution system justified in developing countries?' Perspectives from a comparative study of India and China. Unpublished Paper presented during XXVII IAAE conference, Berlin, Germany.

KIPPRA Publications

Conference Proceedings

Report of the proceedings of the AERC-KIPPRA World Trade Organization (WTO) Workshop, 2000.

Report of the proceedings of the International Conference on Finance and Development: Evidence and Policy Issues, 2001.

Discussion Papers

The exchange rate and the interest rate differential in Kenya: a monetary and fiscal policy dilemma. Njuguna S. Ndung'u, DP No. 1, 2000: ISBN 9966 949 00 3.

Macro models of the Kenyan economy: a review. Stephen N. Karingi and Njuguna S. Ndung'u. DP No. 2, 2000: ISBN 9966 949 01 1.

A review of Kenya's current industrialization policy. Eric E. Ronge and Hezron O. Nyangito. DP No. 3, 2000: ISBN 9966 949 02 X.

Delivery of services to smallholder coffee farmers and impacts on production under liberalization in Kenya. Hezron O. Nyangito. DP No. 4, 2001: ISBN 9966 949 03 8.

Banking sector interest rate spread in Kenya. Njuguna S. Ndungu and Rose W. Ngugi. DP No. 5, 2000: ISBN 9966 949 04 6.

Beer taxation in Kenya: an assessment. Stephen N. Karingi, Mwangi S. Kimenyi, Njuguna S. Ndung'u. DP No. 6, 2001: ISBN 9966 949 09 7.

Vision and long term development strategy for Kenya's tourism industry. Moses M. Ikiara. DP No. 7, 2001: ISBN 9966 949 15 1.

Specifying and estimating partial equilibrium models for use in macro models: a road map for the KIPPRA-Treasury Macro Model. Alemayehu Geda and Njuguna S. Ndung'u. DP No. 8, 2001: ISBN 9966 949 16 X.

Determinants of poverty in Kenya: household-level analysis. Alemayehu Geda, Niek de Jong, Germano Mwabu and Mwangi S. Kimenyi. DP No. 9, 2001: ISBN 9966 949 17 8.

Kenya's exchange rate movement in a liberalized environment: an empirical analysis. Maureen Were, Alemayehu Geda, Stephen N. Karingi and Njuguna S. Ndungu. DP No. 10, 2001: ISBN 9966 949 24 0.

Theoretical base for the Kenya macro model: the KIPPRA-Treasury macro model. Free Huizinga, Alemayehu Geda, Njuguna S. Ndun'gu and Stephen N. Karingi. DP No. 11, 2001: ISBN 9966 949 25 9.

Predicting household poverty: a methodological note with a Kenyan example. Germano Mwabu, Mwangi S. Kimenyi, Paul Kimalu, Nancy Nafula and Damiano Kulundu Manda. DP No. 12, 2002: ISBN 9966 949 28 3.

Human capital externalities and returns to education in Kenya. Damiano Kulundu Manda, Germano Mwabu, Mwangi S. Kimenyi. DP. No. 13, 2002: ISBN 9966 949 18 6.

The decline in primary school enrolment in Kenya. Arjun Bedi, Paul Kieti Kimalu, Damiano Kulundu Manda, Nancy Nelima Nafula. DP No. 14, 2002: ISBN 9966 949 19 4.

Land laws and land use in Kenya: implications for agricultural development. Walter Odhiambo and Hezron Nyangito. DP No. 15, 2002: ISBN: 9966 949 23 2

Better understanding of the Kenyan economy: simulations from the KIPPRA-Treasury Macro Model. Maureen Were and Stephen Karingi. DP No. 16, 2002: ISBN 9966 949 31 3.

Performance of Kenya's wheat industry and prospects for regional trade in wheat products. Hezron Nyangito, Moses Ikiara and Eric Ronge. DP No. 17, 2002: ISBN 9966 949 35 6

Occassional Papers

Strengthening the link between policy research and implementation. Kange'the Wamaitha Gitu, 2001: ISBN 9966 949 07 0.

Effective private sector representation in policy formulation and implementation. Mwangi S. Kimenyi, 2001: ISBN 9966 949 27 3.

Agriculture, economic growth and poverty reduction. Mwangi S. Kimenyi, OP No. 3, 2002: ISBN 9966 949 32 1.

Post-Doha African challenges in the sanitary and phytosanitary and trade related intellectual property rights agreement. Hezron Nyangito, OP No. 4, 2002: ISBN 9966 949 34 8.

Policy Papers

Policy and legal framework for the tea subsector and the impact of liberalization in Kenya. Hezron O. Nyangito. PP No. 1, 2001: ISBN 9966 949 05 4.

Policy and legal framework for the coffee subsector and the impact of liberalization in Kenya. Hezron O. Nyangito. PP No. 2, 2001: ISBN 9966 949 06 2.

Special Reports

Legal and other constraints on access to financial services in Kenya: survey results. Private Sector Development Division, KIPPRA, 2001: ISBN 9966 949 08 9.

Thinking about regulating? The better regulation guide. Private Sector Development Division, KIPPRA, 2002: ISBN 9966 949 20 8.

Policy timeline and time series data for Kenya: an analytical data compendium. KIPPRA 2002: ISBN: 9966 949 30 5.

Working Papers

Road infrastructure policies in Kenya: historical trends and current challenges. Wilson S. K. Wasike. WP No. 1, 2001: ISBN 9966 949 11 9.

Policy framework of Kenya's tourism sector since independence and emerging policy concerns. Moses M. Ikiara. WP No. 2, 2001: ISBN 9966 949 12 7.

A review of poverty and antipoverty initiatives in Kenya. Damiano Kulundu Manda, Mwangi S. Kimenyi and Germano Mwabu. WP No. 3, 2001: ISBN 9966 949 13 5.

Education indicators in Kenya. Paul K. Kimalu, Nancy Nafula, Damiano Kulundu Manda, Germano Mwabu and Mwangi S. Kimenyi. WP No. 4, 2001: ISBN 9966 949 14 3.

Estimation procedure and estimated results of the KIPPRA-Treasury macro model. Alemayehu Geda, Stephen N. Karingi, Njuguna S. Ndung'u, Marein van Schaaijk, Maureen Were, Willis Wassala and John Obere. WP No. 5, 2001: ISBN 9966 949 26 7.

A situational analysis of poverty in Kenya. Paul Kimalu, Nancy Nafula, Damiano Kulundu Manda, Germano Mwabu and Mwangi S. Kimenyi. WP No. 6, 2002: ISBN 9966 949 29 1.

Budget reforms and the Medium-Term Expenditure Framework in Kenya. Jane Kiringai and Geoffrey West. WP No. 7, 2002: ISBN 9966 949 21 6.