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INSTITUTE FOR DEVELOPMENT STUDIES  
UNIVERSITY OF NAIROBI  
POLICY ANALYSIS  
THE KENYA  
CASE

INSTITUTE FOR DEVELOPMENT STUDIES  
UNIVERSITY OF NAIROBI

IDS

WORKING PAPER

AGRICULTURAL SECTOR MANAGEMENT  
REFORM AND POLICY ANALYSIS,  
THE KENYAN CASE

Proceedings of the Second Workshop  
Organised for the Training  
of Kenyan District  
Agricultural Officers

INSTITUTE FOR DEVELOPMENT STUDIES  
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## FOREWORD

This Occasional Paper No 63, Agricultural Sector Management and Policy Analysis is a report of the proceedings of a training workshop organized for District Agricultural Officers (DAOs) serving the Government of Kenya. The workshop was a joint venture by the Institute for Development Studies (IDS), University of Nairobi and the Economic Development Institute (EDI) of the World Bank. It was the second of two workshops undertaken to provide all the Kenyan DAOs with training on Agricultural Sector Management and Policy Analysis. The overall goal of the training programme is to enhance the ability of these local district level officers in conceptualising agricultural policy framework as well as in policy analysis and implementation.

The training was designed to raise the awareness of DAOs to key agricultural policy issues in Kenya and to expose them to appropriate analytical tools and skills. They were at the same time expected to apply the knowledge and

skills gained from their work experience. This necessitated a training methodology comprised of paper presentation and discussions, group exercises and assignments, lectures, tutorials and a field trip aimed at ensuring a blend of theory and practice. In the same vein there was a broad mix of resource persons to include policy makers/ practitioners, experts in policy analysis tools, notably Policy Analysis Matrix (PAM) and academicians. The rationale was that the various aspects of agricultural policy formulation and implementation processes be addressed.

## ACKNOWLEDGEMENT

The seminar was a rich source of ideas on agricultural policy and institutional reform which the Institute for Development Studies (IDS) consider appropriate to share with a wider audience of policy makers and practitioners, academicians, development agencies, etc. that are in various ways involved with the current transformation of the agricultural sector.

It is our hope at the IDS that the monograph will make interesting reading to students of Kenyan agriculture and policy reform within the sector. Furthermore the issues raised therein will hopefully promote dialogue between policy makers, practitioners, teachers and researchers. Finally the IDS is grateful to all those who have made contributions towards the realisation of the workshop and this monograph.

Professor Patrick Odera Alila,  
Director, IDS

## ACKNOWLEDGEMENT

The Seminar Coordinating Committee is grateful to those organizations which provided us with funds to carry out the seminar. Among them were the Ministry of Agriculture Livestock Development and Marketing (MALDM), Overseas Development Assistance (ODA) and the World Bank, through the Economic Development Institute (EDI). In the Ministry our special thanks go to the Permanent Secretary Eng. Peter Wambura who after realizing that our plans were running behind schedule intervened to ensure that the institutional procedures and requirements were fulfilled in the shortest possible time. We owe similar gratitude to Dr. Gerrard for doing the same at the EDI. He was particularly useful with respect to facilitating our discussions with the ODA over the funding arrangements.

We are also grateful to the Vice-Chancellor of the University of Nairobi Prof. Gichaga for taking time off his busy schedule to officiate in person at the opening of the seminar.

The Director of IDS, Prof. Alila throughout the planning and implementation stages of the seminar and EDI representative, Dr. Gerrard, during the seminar gave the Committee commendable administrative support and guidance. For these the Committee wishes to express its appreciation. The Committee also wishes to express thanks to the resource persons, participants and supportive staff hereby listed in the appendix. Finally, we wish to thank the

Management of Hotel Milimani whose good services enabled us to have adequate time to concentrate in the running of the Seminar.

Dr. Benjamin A. Okech  
Chairman, Seminar  
Coordinating Committee.

## ACKNOWLEDGEMENT

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### SECTION I

#### OFFICIAL OPENING SPEECHES

*A. Opening Remarks by Dr. Chris Gerrard, EDI  
Environment and Natural Resources Division of  
the World Bank.*

Ladies and Gentlemen.

On behalf of the Economic Development Institute (EDI) of the World Bank, I would like to wish you all a very warm welcome to this National Seminar on *Agricultural Sector Management and Policy Analysis: Creating an Environment for Growth and Development at the District Level*. In doing this, may I say how very pleased I am with the way in which three organizations the Ministry of Agriculture, Livestock Development and Marketing, the University of Nairobi, and EDI have come together once again to organize and to hold this national seminar.

I say "once again" because this seminar represents the sixth time since 1989 that IDS and EDI have worked together to organize and to hold a regional or a national seminar on agricultural policy analysis in Kenya the first four being regional seminars involving participants from a number of countries in the region, and the latter two being national seminars specifically for District Agricultural Officers in Kenya.

At the outset, I also wish to acknowledge the support of the British Overseas Development Administration (ODA) for their significant financial contribution towards the local costs of this seminar.

The Economic Development Institute is the external training department of the World Bank. Our mission is to invest in people and in ideas as the most powerful means of economic and social development. In this case, in terms of **people**, we are obviously investing in you the participants who play the leading role in the implementation of national agricultural policy at the district level.

In terms of **ideas**, the seminar is part of EDI's on going program on agricultural policy analysis and institutional reform in anglophone Africa. Begun in 1989, the **context** of this program is the continent-wide process of structural adjustment -- both macroeconomic and sectoral -- that is taking place throughout all of Africa in response both to changing international economic conditions and to domestic policies that have found to be unsustainable. Changing international economic conditions include the dramatic increase in world interest rates and the declining terms of trade for agricultural commodity exports which led to the debt crisis in the early 1980s. Unsustainable domestic policies include exchange rate, trade, and macroeconomic policies that, directly and indirectly, have taxed the agricultural sector excessively.

The long-term **objective** of our agricultural policy analysis program in Anglophone Africa is to build analytical and

training capacity, in both government and universities in agricultural policy analysis and institutional reform. While this process -- like other human resource development -- is a long one, we are more than eager to play a part, because we view such capacity building as vital for sustainable long-term development.

As the (national resource poor) East Asian nations have demonstrated, investment in people ultimately yields the highest rate of return on investment dollars. And as John Maynard Keynes (arguably the greatest economist of the 20th century) has said:

*The world is rule by little else [than idea]. Practical men, who believe themselves to be quite exempt from any intellectual influence, are usually the slaves of some defunct economist. Madmen in authority, who hear voices in the air, are distilling their frenzy from some academic scribbler of a few years back. I am sure that the power of vested interests is vastly exaggerated compared with the gradual encroachment of idea .... Soon or late, it is ideas, not vested interests, which are dangerous for good or evil.*

Six years into this program, we are now working closely with ministries of agriculture and universities in ten Anglophone African countries. We work closely with both ministries of agriculture and universities such as the University of Nairobi precisely because we are interested not only in building up the capacity (short-term) of government officials like yourselves to design and implement development policies and programs, but also in



building up the capacity (long-term) of local training institutions such as universities to conduct their own pre-service and in-service training.

We also started a similar program in Francophone Africa in 1993, and we are hoping to start a third program in Lusophone (Portuguese-speaking) Africa in the next two years.

While this may be the sixth training activity in agricultural policy analysis which we have supported in Kenya, I hasten to add that this particular seminar is taking place during a significant **turning point** in our program. For the past six years, in response to the most significant need during this period of time, we have focused this program on macroeconomic policy and agricultural pricing policy reform. Today, again in response identified needs, we are shifting the focus of our program to policy and institutional reform at the subsector and district levels -- what some people have called, the "second generation" issues of structural adjustment.

For while we have learned that favourable macroeconomic and agricultural pricing policies are necessary for broadly-based agricultural development, we have also learned that these are not sufficient for broadly-based agricultural development.

We also learned about the need for an effective partnership between the public and the private sectors (both for profit and non-profit) in the efficient provision of all kinds of

agricultural services -- from agricultural research and extension, to livestock service, to agricultural inputs such as seeds and fertilizers, to agricultural finance, and to agricultural marketing and processing -- each sector, public and private, supplying those services which it can most efficiently provide.

We have further learned not to view development projects as simply slices of public investment programs. In response to social and environmental concerns, and aiming at greater participation, development projects increasingly incorporate policy and institution-building features. At the World Bank, our Operation Evaluation Department has indeed uncovered a not-surprising relationship between successful institutional development in projects, successful projects, and sustainable projects. That is, **the success of projects, more often than not, hinges on success with respect to the institutional development aspects of projects.**

Having decided only in the last few months to shift the focus of our program in this direction, we have also embarked in the last few months on the process of developing new, appropriate training materials. Some of these materials we are using in this seminar. We encourage your constructive feedback so that we can improve them for future seminars -- both in Kenya and other African countries.

We also encourage you to have a frank and open discussion on policy and institutional issues in this seminar. While EDI is part of the World Bank, EDI is not tied to the policy

positions of the World Bank. Rather, we see our role as facilitating a learning dialogue through structured exchanges of ideas and experiences, in which we fully expect to learn much from you, and for you to learn as much, if not more from each other, as you learn from us and from your resource persons at this seminar. Your resource persons, too, are not tied to the World Bank's views on anything. Rather, their role is to provoke your thinking on the key policy and institutional issues that each of you are dealing with on a day-to-day basis.

While many institutions are involved in training, facilitating this learning dialogue among governments, universities, and other research and training institutions is precisely where we at EDI feel we have a comparative advantage. EDI has a global scope. It can facilitate the exchange of ideas of a global, regional, or national level. It can draw upon the successes and the failures of countries and donors throughout the world.

EDI also has unrivalled access to the operational experience, research, information, and statistics of the Bank and its member countries. For better or for worse, the Bank is the greatest depository in the world for information about development. EDI can provide access not only to the latest research (which may be several years out-of-date) on development issues, but also to the cutting edge of thought (prior to published research) on rapidly-moving development issues.

The three sponsoring organizations of this seminar have put together a challenging program for you. As you proceed through the week, I encourage you to keep in mind the objectives of this seminar. I encourage you to be thinking continuously how you can incorporate the concepts introduced, discussed, and learned in this seminar into your own work programs.

*Speech By Prof.F. J. Gichaga, Vice-Chancellor,  
University of Nairobi*

The Permanent Secretary,  
Ministry of Agriculture, Livestock  
Development and Marketing, Eng. Peter Wambura,

Economic Development Institute (EDI)

World Bank Officials and Dr. Chris Gerrard

Ladies and Gentlemen,

It gives me great pleasure to be at the official opening of this important Workshop on Agricultural Sector Management Reform and Policy Analysis.

The Institute for Development Studies (IDS) of the University of Nairobi and Economic Development Institute of the World Bank have had several years of fruitful collaboration dating back to 1986. Since then, several seminars offering training on policy analysis techniques to policy analysts and policy advisers from East, Central and Southern African countries have been conducted. This training workshop is designed to logically follow from the earlier IDS/EDI seminars.

The current workshop is therefore yet another cooperative effort between the University of Nairobi, the Government of Kenya, the World Bank/EDI with financial support this

time from the British Development Division in Eastern Africa (BDDEA) of the Overseas Development Administration (ODA).

The earlier seminars were mostly for senior public and private sector policy analysts from this region. However, the last workshop held in 1992 and the current one focus on the middle level agricultural personnel who actually translate policy into action. The District Agricultural Officers (DAOs) who have been the participants in the 1992 workshops and the present one are in daily contact with agricultural production and are best placed to assess the impact of macro adjustment policies in the sector.

This workshop is expected to contribute towards the understanding of macroeconomics, sectoral and macroeconomic linkages. In turn, this should improve capabilities to analyze and predict the impacts of national policy decisions on the agricultural sector. The specific purpose of the workshop is to enhance the use of Policy Analysis Matrix (PAM) technique in the Agricultural Sector Planning and Management through appropriate implementation, teaching and research.

PAM is a powerful analytical tool providing a framework for quantifying and analyzing the impact of macro-economic and price policies on agricultural and national growth. It addresses competitiveness in farm projects, efficiency in public investment and agricultural research. The introduction of the technique and utilization of the

computer in its application are an important addition to the policy analysis skills already possessed by participants.

As an analytical tool, you will learn that PAM is not only able to show which farmers are currently competitive and the effect of change of prices on their profits; but can also determine which commodity production system exhibits strong or weak comparative advantage. It is also capable of ascertaining how new investments might increase efficiency and accelerate growth. This technique can also help identify the most fruitful directions for primary and applied research aimed at raising crop yields, reducing social costs and subsequently increasing social benefits.

In February this year, the IDS participated in a seminar organized by EDI in Zimbabwe where major Agricultural Sector Policy Issues in Southern and Eastern Africa Region were identified. The seminar further identified appropriate analytical approaches for tackling these issues. These issues and approaches will be the subject of the core papers to be presented and subsequent discussion in this workshop. Specifically, the participants will be introduced to New Institutional Economics (NIE) which is one of the new approaches. A combination of PAM and NIE as tools of policy analysis will no doubt give this particular group of DAOs an added advantage in tackling agriculture and other institutional management issues.

It is my expectation that you are all conversant with the central role agriculture plays in the Kenyan economy. Over the last few years, Kenya like many other developing

countries has been experiencing economic hardships adversely affecting this very important sector. This workshop, therefore, comes at a time when the country has been trying to implement certain structural adjustment measures in an attempt to restore the economy on sound footing. In this connection, it needs to be recalled that capacity building has become an issue of major concern. Both analysts and policy makers have realized that gradual loss of policy formulation and implementation capacity has been an important factor in the development crisis over the last one and a half decades.

In the agricultural sector, as the dominant sector in the Kenyan economy, capacity building for policy analysis is particularly important in view of several economic reforms currently being implemented by the Kenya Government as part of the structural adjustment programmes. The agricultural sector is expected to respond to the reforms in particular ways and actually bear the burden of structural adjustment. However, the responses and viability of this key sector of the economy over time may prove difficult to assess unless the country's policy analysis in this sector is enhanced.

During the next ten days, you will be exposed to various agricultural sector issues as they affect management reforms, policy and performance of the agricultural sector in Kenya. You will appraise the case of food grain pricing, marketing policies and food security. You will also explore systematic approaches to the analysis of policy options, from an economic, social and institutional perspectives, as



well as the place of new technology and research in promoting agricultural growth and provision of farm inputs.

It is my hope that you will be able to share experiences from the various districts represented and to learn from the constructive inputs and thoughtful commentaries availed to you during the duration of this workshop.

In concluding, I would like to thank all of you for sparing time to attend this workshop. In particular, I want to acknowledge with appreciation, efforts of those who have made this workshop both financially and organizationally feasible through the pooling of human and material resources namely, Economic Development Institute (EDI) of the World Bank, British Development Division in Eastern Africa of ODA, Ministry of Agriculture, Livestock Development and Marketing (MOALDM) and the Institute for Development Studies (IDS), University of Nairobi.

I am conveying my best wishes for a productive and successful workshop.

**Thank you.**

***C. Official Opening Speech By Eng. Peter Wambura,  
Permanent Secretary, Ministry of Agriculture, Livestock  
Development and Marketing, Government of Kenya.***

The Vice-Chancellor, University of Nairobi,  
Prof. Francis Gichaga;

The Director, Institute for Development Studies,  
University of Nairobi, Prof. P.O. Alila.

The Chief, Agricultural Division, Economic Development  
Institute of the World Bank, Dr. Chris Gerrard.

Resource Persons.

Ministry Officials,

Participants,

Ladies and Gentlemen.

It is a pleasure for me to have been invited here today to open this important workshop on Agricultural Sector Management and Policy Analysis: Creating an Environment for Growth and Development at the District Level. The agricultural sector is undergoing structural transformation geared towards improving the performance of the sector in respect to production, processing, pricing, and marketing of various agricultural commodities and the efficient delivery of services within the sector. These programmes are being implemented on a gradual basis so as to enable the farmers

to absorb and understand the implication of each and every action being taken. It is your responsibility, as district agricultural officers, to enlighten the farmers on the implications of these policy changes. You are therefore expected to be well versed with all the reform measures that the government is undertaking within the agricultural sector.

This workshop will provide you with an opportunity to know and understand the various policy changes that are being implemented within the sector. It will also provide you with an opportunity to review the effectiveness of, and the means for analysing, alternative policy options for stimulating the agricultural sector to greater productivity. It will also enhance your capacity to analyse and interpret the policy impact as well as provide feedback to the policy formulators.

Let me highlight very briefly the role of the agricultural sector within the overall economy and the liberalisation process that have been taking place within the agricultural sector since the launching of the sessional paper No. 1 of 1986.

The agricultural sector is the engine of growth of Kenya's economy and will remain so in the foreseeable future. Currently it contributes 28 percent of the gross domestic product (GDP), generates over 60 percent of foreign earnings and employs over 70 percent of the population. Besides providing food to the ever increasing population, the sector provides raw materials to the agro-based

industries which account for 70 percent of all industries in the country. The Kenyan agricultural sector is characterised by smallholder farmers, 80 percent of whom own and farm less than two hectares of land but account for 75 percent of the output and 50 percent of the marketed surplus in both crops and livestock.

Kenya's agricultural development strategy is aimed at the continued expansion of productive investment, through growth in agricultural outputs and conservation of scarce national resources.

Over the past decade, much has been achieved by the agricultural sector. Agricultural production as a whole has grown at an average rate of 4.0 Per cent per annum. During the 1980s considerable progress in the expansion of food production was achieved through the use of hybrid maize and an increase in the number of improved cattle. Tea production grew from 73,000 tons in 1980 to 181,000 tons in 1990, making Kenya the world's third largest tea exporter. Coffee production over the same period increased from 51,900 tonnes to 78,334 tonnes. Both Kenyan tea and coffee are renowned for their quality and frequently trade on world markets at prices above those achieved by other major exporting countries. In 1990, these two crops earned the country k# 346.86 Million and k# 203.35 respectively. The production of other major crops such as sugar, rice and pyrethrum, has also increased. Therefore, agriculture will continue to be the major foreign exchange earner for the country for sometime to come. Much of the expansion of agricultural output has come from an increase

in smallholder production, as new land from ASAL areas has been incorporated into small holdings and large farms subdivided.

Despite these success, serious problems have emerged, particularly in more recent years. The terms of trade between agricultural exports and imports have deteriorated, reducing the real benefits to the nation of the expanded agricultural production. Most importantly, there has been a measured population growth which has absorbed the increases in food production thereby preventing improvement in per capita nutritional intake. Although Kenya has retained a capacity to be broadly self-sufficient in foodstuffs throughout the past decade, certain sectors of the population remain malnourished as a result of income inequalities, problems of distribution between geographical zones, seasonal fluctuations in supply and a lack of nutritional education among certain groups.

In the past the emphasis on development has been on projects "as the cutting edge of development". This approach was fashionable when there was adequate donor and government funding. However, this approach failed to emphasise the complementary role of the private sector and beneficiaries in the development process. It also resulted in duplication and multiplication of projects addressing the same problem and issues, without any focus on specific service. With the noticeable aid fatigue among some donor constituencies and the scarcity of government funds, there is need to change this approach. The new emphasis is on delivery of services apportioned between the government,

the private sector and the beneficiaries. The government will only put more emphasis on delivery of services that are of public good nature, where the public has comparative advantage over the private sector while progressively encouraging the private sector and beneficiaries to provide and pay for services of a private good nature. This approach was emphasised in Sessional Paper No. 1 Of 1986 on Economic Management for Renewed Growth, and the recent Food Policy Paper No. 2 of 1994 and is the cornerstone to the development strategies outlined in the current development plan.

To improve the overall performance of the Kenyan economy, the government has since 1987 implemented structural adjustment programmes. In the agricultural sector, a concerted programme was embarked on to overcome some of the major problems through market reforms. Consequently, between 1986 and 1994, prices of major inputs and outputs in the agricultural sector were decontrolled. Prices were decontrolled in respect to pesticides, all categories of farm machinery and spares, animal feeds, fertiliser, agricultural chemicals. Veterinary services were the first to be privatized. It was hoped to give better professional services and encourage rural commercialisation of economic activities. Maize marketing has been partially liberalised to give farmers alternative avenues for their produce in an effort to encourage more production. Projects and programmes geared towards promoting agricultural production will be set with a view to becoming self-propelling while their sustainability will be exacting now more than before, due to economic reforms.

The ministry is undertaking an agricultural sector review with a view to identifying the development constraints within the sector. It is expected that a future investment portfolio within the agricultural sector will be developed.

Mr. Vice chancellor, I wish to thank you and through you the Institute for Development Studies, University of Nairobi, for having organised this workshop, in conjunction with officers from the ministry, and for your financial contribution towards this worthy cause. I would also wish to thank the Economic Development Institute of the World Bank for their continued assistance in financing such workshops and in particular this one for District Agricultural Officers. Noting that this is the second workshop to be held after the first one in 1992, I expect it to assist the participants in applying their new knowledge and skills to their own work programmes.

These two workshops have only covered officers within one department of the ministry. Officers in other departments will also get an opportunity to train at a later date. It is hoped that you will also consider our request for assistance in holding such other workshops, favourably.

With these remarks, Mr. Chairman, I wish you success in this agricultural sector management and policy analysis seminar and declare it officially opened.

Thank you.

**SECTION II****AGRICULTURAL SECTOR MANAGEMENT  
REFORM****AND POLICY ANALYSIS SEMINAR****BACKGROUND AND INTRODUCTION**

*Dr. Benjamin A. Okech*

*Institute for Development Studies*

*University of Nairobi*

The management of the Kenya's economy faces two major challenges. The first is that the country's strategies in planning and development have been changing from the top-bottom to bottom-up approach in which the districts have been made the centre points for rural development. The second is that the economy is undergoing numerous reforms eventually aimed at making the economy more free market oriented.

These developments have necessarily introduced new needs in the task of economic management. New approaches must be adopted. A competent human capital must be developed, not only at the national level but much more so at the lower levels. These can be achieved mainly by producing new human capital and also by improving the



quality of the existing human capital, by retraining and exposure to new concepts and approaches befitting the emerging planning and management challenges introduced by new strategies and the on-going process of socio-economic reforms.

The Agricultural sector is the mainstay of Kenya's economy. It is also the main fuel of the country's rural economy. In this position it is perhaps the hardest pressed. Therefore the sector should be equipped with adequately endowed human capital so as to enable it to continue playing the leading role and sustain the emerging development scenario. In other words, the sector needs people who can understand, interpret, implement, monitor, and evaluate new policies at all levels of economic management. This is much more important at the district level where management of development planning is centred. These experts should also be involved in policy formulation from the word go. This should be a departure from the past practice in which policy formulation remained the domain of the Ministries where in turn the policy formulation remained largely a sectoral responsibility in their headquarters, with mid-level management, in the provincial and district offices and departments remaining mere policy recipients and implementers.

It's against the foregoing background that the Institute for Development Study (IDS) of University of Nairobi conceived and has conducted two seminars on Agricultural Sector Management and Policy Analysis for the District Agricultural Officers (DAOs). The first seminar was held,

in July 1992 in Mombasa for the first group of 29 (DAOs). This report is on the Second seminar which was held in July 1995 in Nairobi. This seminar was held for the remaining 34 DAO's.

It is noted that although the focus of the two seminars remained essentially the same in terms of conceptual framework, the issues were bound to be rather different. This was because the first seminar was held at the beginning of some major reforms initiatives, whereas the last one was held when some reforms had already taken off thereby yielding some new experiences and expectations for the future.

#### Seminar Objectives

The immediate seminar objectives included:

- o. Enhancing the capacity of participants to undertake and present policy analysis for the agricultural sector and related activities.
- o. Improving the knowledge base of participants in order to facilitate communication between agricultural sector officials and those of other Ministries such as Finance and Planning.
- o. Sharing experiences on how problems of economic adjustment are being handled in different regions of Kenya.

The seminar applied several methods of instruction. They included:

- o. Lecturers
- o. Tutorial
- o. Group exercises and assignments
- o. Paper presentation and discussions
- o. Field trip.

#### Lectures

The following were the lecture topics:

- o. Agricultural Policy Analysis: An Overview of Policy Issues and Approaches to Policy Issues.
- o. Macroeconomic Framework for Agricultural Policy Analysis in Sub-Saharan Africa.
- o. Historical Experience with Macro-economic Policy in Sub-Saharan Africa.
- o. Public Enterprise Reform in Less Developed and Transition Economies.
- o. Public Enterprise Reforms in Ghana and Ethiopia.
- o. Policy Analysis Matrix as a Framework for Organising Information at the Micro-economic

Level. It covered PAM's role as a model for economic analysis; PAM as a commodity System Model and PAM as a tool for case studies.

- o. Public Sector and Institutional Economics: Introduction to the Concepts.

#### Tutorials

On the other hand the tutorials focused on:

- o. PAM Based Data Analysis
- o. PAM and Computer Applications.

#### Group Exercises and Assignments

Group exercises were given on the following issue:

- o. Obstacles to the implementation of national agricultural policy at the district level.
- o. Elements of PAM as a Policy Analytical Tool.
- o. Agricultural Research Services in Kenya.
- o. Restructuring of the Ministry of Agriculture
- o. "The Indonesia People's Bank": Rural Financial

Institutions.

### Paper Presentation

The purpose of the presentation of papers was to provide case studies on key issues considered critical and important to the current sector reform initiatives. The broad themes of the papers were:

- o. Past Sector Performance and Future Expectations
- o. Marketing of Agricultural Products
- o. Marketing of Agricultural Inputs, and
- o. Agricultural Services. Respective papers presented under these theme are summarise below.

#### 1. Agricultural Sector Performance in Kenya. Its Institutional Setting and Constraints

This paper gave an over view of Kenya's agricultural sector prior to and after independence. In underscoring the significance of the sector, the paper noted that the sector accounts for 25 per cent and 60 per cent of GDP and foreign exchange earning respectively, while accounting for 70 per cent of employment. It indicated that over 70 per cent of industries providing employment are agro-based.

During the colonial period, agricultural policies focused on large scale farming dominated by white settlers. However, the post independence period has witnessed a shift on the focus to small-scale producers. It was indicated that in

terms of economic performance during the 1963 - 1980 period which was characterised by rapid growth and high subsidies, the remarkable contribution of agricultural sector was due to number of factors. These included:

- . Intensification of farming
- . Expansion into new areas
- . Land Reforms
- . Introduction of high yield crops through research
- . Accelerated use of inputs
- . Development of markets and infrastructure
- . Donor support and subsidised services.

In the area of livestock development, use of Artificial Insemination (AI) was expanded from large-scale European farmers to African small-scale farmers and by 1980, AI services increased to cover 537,000 livestock. Another new development was the improvement in the marketing of African livestock, milk and pigs.

It was further noted that from 1980 economic and agricultural performance started reversing its trend. This situation was attributed to a number of factors, namely:

- . Draught
- . Declining terms of trade
- . *Structural* adjustment programmes
- . Political changes
- . World trade order.

In the agricultural sector, in particular, price controls through protection, restrictions of trade and poor weather

were seen as key factors which reduced investment in the sector.

It was also noted that a major institutional factor which constrained performance during this period was the inability of parastatals to respond to the prevailing situation. Thus, these organisations remained what they were in the 1960s, and despite their poor performance they were still protected through price controls and lack of incentives for private sector participation.

Finally, for the future, it was stated that the objective of the Government is to intensify farming and provide advisory services in order to achieve a self sustaining growth. The focus is on appropriate policies and support for infrastructure development. The government aims at removing unnecessary controls, relaxing trade, and promoting regional trade organisations. The market is supposed to eventually become liberal with the Government limiting itself to facilitation, research, extension, disease control and assistance to the private sector in management of food security.

## 2. Price Discovering Institutions and Processing of Agricultural commodities in Kenya

Regarding marketing of Agricultural product, the paper covered *The Marketing and Processing of Food and Industrial crops in Kenya*. The main focus was on the dynamics of agricultural production, marketing policies and price discovery institutions. It was noted that marketing

dynamics occur in three stages; subsistence, transitional and market oriented, with each stage having unique marketing problems and therefore giving rise to diversity of price discovery institutions.

However, recent policy changes have led to emphasis on a balanced policy mix based on public, private sector and beneficiary participation. The policy measures can be grouped in five categories:

- o. Price decontrols and market liberalization
- o. Beneficiary participation and cost-sharing
- o. Marketing incentives
- o. Restructuring of parastatals
- o. Legal reforms

Price discovery institutions consider actors in the market process and the process within which buyers and sellers arrive at specific prices. Efficiency of institutions is measured by pricing efficiency with respect to time, place and form. Individual price negotiations are the most common institution for most food items and has many buyers and sellers. Prices vary by each transaction though costs of transactions are minimal due to low volumes traded. Usually individuals have limitations of market information. In agriculture, most of these individuals are small producers. Joint efforts among these producers can



achieve better results. With less Government intervention, groups are critical for negotiating with processors.

In Kenyan agriculture auctions are well developed in coffee and tea but poorly developed in other commodities. The benefits of auctions are that they are transparent, competitive and generate confidence as prices are known.

Commodity future exchange are not common in Africa except in South Africa and Zambia. Future pricing is not very common but was used in setting fertiliser prices before 1991. This is based on various bench marks i.e. c.i.f. price, central market prices and biological or microbiological base. Formula pricing facilitates direct buying, lower transaction costs and is easily adjustable as variables change.

Administrative price discovery institutions are mostly Government or marketing boards. Governments are involved for various reasons i.e. reducing price and income instability, allocation of resources, increasing self sufficiency in food and raising average prices and incomes.

In the case of Government intervention in maize marketing in Kenya, the objective has been the maintenance of an efficient market and stable prices. This was interpreted to mean physical controls over supplies. Several studies have been undertaken since 1966, and the issues raised have been the same, i.e. removal of controls on movement, pricing reform, private sector development and operations of

NCPB. There have been major policy decisions in regard to these issues since 1988.

The paper made a number of conclusions and recommendations with respect to price discovery institutions. First, it was noted that with the liberalization individual negotiations in price discovery institution can approach some degree of perfect competition. But the paper further noted that some constraints which need to be addressed still exist. It recommended that the government should develop an enabling environment to provide a line of credit for actors in the system, system for disseminating information to buyers and sellers, consistent policy training programme and adequate infrastructure.

On group bargaining it was noted that the institution faces various problems related to finance, market information as well as management and organisational inefficiencies. It was acknowledged that in a liberalised environment groups can become a strong countervailing force and an enabling environment has to be created for strengthening their bargaining by providing market information, improving the management and organisational skills through training and finally availing credit for operations. On the other hand, on spot or cash auctions, the paper concluded that agricultural standards are only meaningful and sustainable if the actors involved (producers, sellers, buyers and consumers) follow a circle of agreements in which producers/sellers produce and sell, marketing agents and consumers buy, on grade specifications.

### 3. The Provision of Agricultural Inputs in Kenya

Regarding the issue of the marketing agricultural inputs, the presentation focused on *The provision of crop inputs*. The focus was on the provision of fertilisers and seeds. The discussion was confined to the provision of these outputs to Kenya's staple commodity, maize. But it was noted that the issues addressed can apply to other crops.

The paper pointed out that, with exception of small quantity of single super phosphate being produced in the country, virtually all chemical fertilisers used in Kenya are imported due to lack of Kenya-owned fertiliser manufacturing plants. They are obtained from either commercial sources or through donor aid.

Before 1989 the government controlled inputs of prices of fertilisers. But following the liberalization, a number of commercial firms, parastatals and small stockists became involved in the distribution. The paper called for the promotion of a wide range of institutions through incentives to participate in the distribution in order to develop market channels. An array of factors were identified as having contributed to the increased use of fertiliser in 1993/94. These included favourable weather conditions for crop production, improved prices of coffee, lower fertiliser prices, and relatively improved availability of fertiliser.

The paper recommended that (a) financial returns to fertiliser use should be increased and extension services strengthened; (b) use of high analysis fertiliser should be

promoted; (c) late payment should be avoided; (d) research on smallholder production should be initiated; (e) use of fertiliser should be promoted through media and; (f) fertiliser legislation should be reviewed.

Regarding the provision and use of seeds. It was noted that Kenya Seed Company (KSC) has been a key player in production and distribution of manufactured seeds; whereas National and Seed Quality Control Services (NSQCS) regulate its production and distribution. All players in the seed production and distribution aim at providing good quality seed to farmers. The paper acknowledged that adoption of hybrid seeds depends on demonstrated good economic returns, good communication network, stockists and motivated extension workers.

Seed marketing and distribution network has been established by KSC and its subsidiaries. Distribution was largely done by the then KGGCU, the sub-agents mainly cooperative societies and a network of almost 4,000 stockists. Seasonal problems include, cold storage at the coast, shift of demand for seed varieties, depending on season. The paper further noted that there was need for seed reserve to supply domestic and export market.

It was observed that there has been persistent complain over quality of seed. This was attributed to multiplication being contracted to unqualified farmers, lack of inspection of fields, shortage of packaging materials, repackaging without proper labels, sale of rejected uncertified seeds and inadequately equipped NSQCS among others

Recommendations on seed marketing and distribution included; establishment of more seed companies, review of KSC, introduction of certification fees, strengthening of research programmes, credit to stockists, establishment of a National Seed Reserve, effective legislation, improvement of infrastructure and intensified extension service.

#### 4. Agricultural Research and Extension in Kenya

The paper on agricultural services focused on agricultural research and extension in Kenya. It was noted that research as a service area started developing with the establishment of various research stations and setting of a policy framework. With respect to extension, the services were focused on the study of farm activities, research demonstration, transfer of technology and enforcement of regulatory laws.

The public sector played a major role in research because the private sector remained undeveloped in this area. The roles of the public have covered the provision of infrastructure and procurement of funds. The few existing private sector initiatives focus on specific partisan commercial ventures.

It was indicated that the current policy of the government was to ensure self-sufficiency, food security, employment generation, provision of an enabling environment and to provide an appropriate policy framework for privatization and liberalization. The overall aim of the government is to improve effectiveness and efficiency in agriculture. He

noted that for the goal to be attained, political support had to be built.

In the area of research, both public and private sectors were noted to be working together, undertaking a range of activities in the area of assorted crops and livestock. Areas being looked into include soil, water, biotechnology, phenology, nutrient, vaccines and drugs.

On extension, the government's objectives include: enhanced productivity, environmental conservation, appropriate production, marketing, regulatory and protection policies.

But it was observed that there was need for efficient management of resources. The most important government intervention should be to ensure an efficient delivery system. This can be achieved by focusing on the media, demonstrations, feed back, research extension, farmer meetings, adaptability trials, seed bulking, group mobilization, training and staff mobilization.

It was recommended that public research priorities should include areas not favourable to private sector. Other areas include; basic research, strategic laboratories, national breeding stocks, environmental concern, public 'good' for

vulnerable commodities, pesticides and endangered species conservation, examination of the regulatory framework and financing agricultural research.

Important changes in the agricultural sector were noted and problem areas isolated as: the unreadiness of the private sector to take up agricultural services, remote districts not receiving attention, preference of imports, dumping of cheap produce, imported contaminated products, exploitation of loop holes and flooding of the market.

Finally, it was acknowledged that there are numerous new issues (challenges); decentralization of inspectorate, assisting producers, private sector to complement government efforts, financial institutions to support the industry, government to manage the transition period, play a central role in pricing of products, produce and regulate their movement. The paper recommended that inputs should be locally manufactured, their import procedures be hastened, and farmers guaranteed credit and appropriate legislation. Local competition facilitated, and quality output services strengthened. In cases where inputs have to be imported, their farmers guaranteed credit and appropriate legislation. In cases where inputs have to be imported, Local competition should be facilitated and quality output services strengthened.

#### Field Trip

Participants made a one day field trip to Machakos District. The following sites were visited:

1. Katumani Research Station. The purpose for the visit was to update the participants information on current adaptive research on various crops.
2. ICRAF centre. Here the participants observed the implementation of agro-forestry research findings by local communities.
3. Two small scale farms. The purpose was to observe how the farmers were practising water and soil conservation.

#### Text Organization

The subsequent text of this document is organized in four parts: Section III contains papers which were presented. They were edited and hve been organized thematically. Section IV carries the summary of discussions based on Rapporteur's report and the closing address. Seminar recommendations are carried in Section V and Section VI carries appendices.



**SECTION III****WORKSHOP PAPERS****AGRICULTURAL SECTOR PERFORMANCE  
IN KENYA, ITS INSTITUTIONAL  
SETTING AND CONSTRAINTS.**

*M.K. Chemengich*

*Head: Development Planning Division  
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**INTRODUCTION**

Since independence in 1963, Kenya's agriculture has shown tremendous growth despite various external and internal problems. The sector still remains the engine for the growth of the whole economy and will remain so in the foreseeable future. The dominance of the sector is shown by such important indicators as:-

- 1) Contribution of about 25 per cent of gross domestic product (GDP),
- 2) Generation of over 60 per cent of foreign exchange earnings,
- 3) Provision of employment to over 70 per cent of the total population,
- 4) Provision of raw materials for agro-industries which account for about 70 per cent of all industries,
- 5) And provision of almost all the food consumed in the domestic market.

Prior to independence, commercial agriculture was in the hands of large-scale farms, mostly by white settlers, but one of the major achievements of the Kenya Government in the last 30 years has been the development of one of the most successful and robust small-scale agriculture in the Sub-Saharan Africa. Currently smallholder production predominate Kenya's agricultural sector. There are about three million smallholder farms of which 80 per cent are less than two hectares. Despite their small sizes, smallholders account for over 75 per cent of total production and over 50 per cent of marketed production. They also account for the production of over 70 per cent of maize; over 65 per cent of coffee; over 50 per cent of tea; over 80 per cent of all milk; over 70 per cent of beef and other meat, and production of all pyrethrum, cotton and most of the other food crops.

Kenya's agriculture is constrained by various limiting factors, the most important being the limited arable land of high agricultural potential. Of the country's total arable land, only 20 per cent is of high or medium potential, while the rest is Arid and Semi-Arid Lands (ASALS). Kenya has also one of the highest population growth rates in Africa and the effects of this have been manifested in land scarcity in high potential areas and encroachment of the fragile ASAL areas by farming activities, with resultant environmental degradation. Within these constraints, Government efforts in the last 30 years have been aimed at promoting intensified farming and provision of advisory services for the development of a sustainable agriculture.

From independence, the Government's macroeconomic policy has been geared to the balanced and supportive development of all sectors. In the industrialisation policy, the key role of agriculture as the supplier of raw materials has been emphasised, while in the export promotion strategy, the pivotal role of agriculture has been recognised. In the overall development of rural areas, agriculture especially smallholder agriculture, has been given the dominant role in leading rural development. Government has therefore followed a policy of providing rural infrastructure to benefit all the sectors.

Past growth in the agricultural sector can be categorised into two distinct periods. The first period is from 1963 to 1980, which was characterised by the rapid growth of the sector, fuelled by heavy Government and donor involvement through subsidised services and inputs. The second period is from 1980 to the present where the sector has faced major crises due to scarcity of funds, fluctuations in international prices, and inflation which have caused decline in growth rates, plummeting to an all time low of minus 4 per cent sectoral growth rate in 1993. These two periods are briefly discussed below.

#### **Period from 1963 to 1980**

##### **Crops Sector**

Various factors contributing to agricultural growth crop production during this period expanded tremendously and are outlined below:-

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### ***Expansion of Area***

From 1963, there was expansion in cultivated land which was progressively brought under agriculture. New settlement and irrigation schemes also brought some land under cultivation. This area expansion is estimated to have contributed 60 per cent of growth during the twenty years period. However, by the end of the reference period most of the 8.6 million hectares of Kenya's high to medium agricultural potential was almost utilised for the growing of crops or for livestock production.

### ***Land Reforms***

During the same period, the Government undertook a series of land reforms which stimulated agricultural growth. Large farms, many of which were under-utilised were subdivided into settlement schemes based on small-holdings. A notable case was the one million acres settlement program. This encouraged intensive use of land resulting to large increases in the volume of agricultural production, especially in the former white highlands.

### ***Introduction of High Value Crops to Smallholders***

There was increased emphasis in switching land from low-value food crops to higher value export crops. The most notable manifestation of this was the rapid growth of smallholder tea and coffee, and in recent years that of horticulture.

### *Introduction of High Yielding Crops*

Government put heavy emphasis on crop and research, continuing with the implementation of research undertaken from the 1950s. This has resulted in significant increases in yields in crops output. The most commendable achievement has been in the releases of various hybrid varieties for medium to high altitude areas and Katumani maize varieties for low rainfall areas, starting from 1966. Individual crop research was also undertaken outside Government, exemplified by the coffee and tea research foundations. The work of the two bodies has led to a significant increase in yields per unit area cultivated. In recent years, the Coffee Research Foundation has released the disease resistant Ruiru 11 coffee variety which is expected to save the country a considerable amount of foreign exchange that would normally be used for importing disease control chemicals. In the livestock sector research has concentrated in introducing improved breeds and cross-breeding for improved performance and disease resistance.

### *Accelerated Supply of Inputs*

After the introduction of improved varieties, there was increased extension in the use of and adoption of improved packages especially improved seeds and inputs. The most notable case was the increase in usage of fertilisers by smallholders in maize, coffee and tea. Institutions for marketing and distribution expanded their networks from the white highlands to smallholder areas, the most notable being Kenya Farmers Association (KFA) later Kenya Grain

Growers Cooperative Union (KGGCU). Farmers cooperatives especially in coffee also accelerated their input supply networks, not only supplying coffee inputs but also food crop inputs. In the case of tea, the Kenya Tea Development Authority (KTDA) developed a system for serving smallholders with both inputs and extension, which has resulted in one of the most successful smallholder tea development initiatives.

#### *Development of Marketing Infrastructure (Crops)*

Crop marketing boards developed before 1963 mainly served large-scale farmers, but after 1963 they were expanded to serve small-scale farmers. The main boards included; the Produce Marketing Board (PMB) now the National Cereals and Produce Board (NCPB) dealing with maize and other cereals; the Coffee Board and the Kenya Planters Cooperative Union serving coffee farmers; the Cotton Lint and Seed Marketing Board for cotton, and the KTDA for smallholder tea, amongst others. The transport infrastructure has been expanded with considerable emphasis on rural feeder roads.

#### *Donor Support*

Donor support, both unilateral and bilateral was in terms of support to projects and technical assistance. In the food crops sub-sector, these supported mostly integrated rural development projects in the first decade, and later specific crops or components related to specific crops e.g. maize research.



### ***Subsidised Services***

In the two decades, Government and donors supported the provision of subsidised or free services to the farmers. These included mainly, farmers training, training of extension staff and field services. Inputs like fertilisers and seeds were also provided to farmers at subsidised prices. This approach was used to encourage farmers, especially smallholders, to take up improved farming packages especially in maize. Subsidised credit through various crops specific projects and through the Agricultural Finance Corporation, the Cooperative Bank and other institutions was also instrumental in the rapid development of modern farming.

### **Livestock Sub-Sector**

Growth in the livestock sector was accelerated rapidly after independence. In 1963, almost all of the smallholder herd was under traditional herding systems and commercial farming was only in large-scale farms. From 1963, Government effort was concentrated in improving smallholder livestock through provision of improved stock, improved extension and management, provision of subsidised inputs and services, notably A.I., clinical and dipping services and provision of marketing infrastructure. These are briefly discussed below:-

### *A I Services*

AI Services for cattle was started in Kenya in 1935. The service was aimed at reducing the importation of dairy stock by upgrading the existing stock to reduce the occurrence of breeding diseases and generally to improve milk and beef production in the (then) settler farms in Kenya. The Central Artificial Insemination Station [CAIS] was started in 1946 as a central station for collection and distribution of semen throughout Kenya. This made AI schemes for large-scale farmers to be started all over Kenya.

The first AI scheme for African smallholders was started in Karatina in Nyeri District of central Kenya in 1952. The Kenya National AI [KNAIS] was created later in July 1966 through a bilateral agreement between the governments of Kenya and Sweden. Until 1966 the AI services in Kenya were financed by means of AI fees paid by farmers. The Government met the cost of training of inseminators and general supervision of the service. In 1966 the Government took over the service and started subsidising the service by lowering costs.

The number of inseminations between 1968 to 1980 rose from 162,000 to 537,000 and averaged at 422,000 per year. Provision of artificial insemination services proved to be an appropriate factor in the dairy sector development especially in smallholder areas, but its success has been achieved at a high cost in subsidies. Due to scarcity of both Government and donor funds its sustainability became questionable from the 1980s.

### *Clinical Services and Control of Major Infectious Diseases*

Clinical services, under Government came into being in 1974 when the first clinical centre was opened to cater for small-scale farmers who found private charges very high and as such Government started subsidising the services. By 1974, 18 centres were operational rising to 26 by 1983. In 1979 it was decided to expand the service countrywide to every division or busy location by providing veterinary personnel without much infrastructure in buildings, etc. The Government subsidised both the costs of drugs and provision of services and as in the case of AI services, their sustainability became questionable in the 1980's.

Under the Animal Diseases Act of 1965 and Animal Diseases Rules of 1968, several diseases are notifiable. These include Anthrax, Contagious Bovine Pleura-Pneumonia (CBPP), East Coast Fever (ECF), Foot and Mouth Disease (FMD), Heartwater, Lumpy Skin Diseases, Rinderpest, etc. The Veterinary Department has concentrated on compulsory vaccinations for CBPP, FMD and Rinderpest, in certain districts. Vaccinations for FMD peaked at 4 million in 1980 but thereafter started declining. In the case of Rinderpest about 2 million animals have to be vaccinated annually but the number has been fluctuating; while in the case of CBPP, the ne and Public Service

The private and the public sectors have to provide various essentials and accelerators of agricultural development in place to activate the commercialization of farmers and farm business. These include improved markets, rural

infrastructure, supply of appropriate technology and inputs, provision of credit, farmers education and an enabling policy and incentives environment. The future agricultural development has to be a joint effort between farmers, private and public sector.

### ***Regional Trade "Dimensions"***

The agricultural sector needs to grow within an environment that links its growth opportunities to the rest of the World. The liberalization of the trade regime, removal of trade barriers (Exports and Imports) in almost all commodities and the ongoing regional co-operative initiatives such as the COMESA, the EA Cooperation will have positive impacts on the growth of the agricultural sector.

### **ROLE OF DAO'S IN THE NEW SETTING FOR AGRICULTURAL DEVELOPMENT**

As indicated above, future development of agriculture will involve a new outlook and approach where the government will provide limited but essential services while essentially promoting increased participation of producers, and other intermediaries. An anticipated structural change will be in the outlook of the Ministry of Agriculture and Livestock Development & Marketing, particularly in the delivery of services to the farming community.

The District Agriculture Officer (DAO) is the ultimate manager of both the delivery system to farmers and backwards from farmers to the policy formulators. In

addition, the DAO is also the link between policy formulation and implementation as well as a co-ordinator of agriculture and other rural development activities that have direct implications on agricultural development. When farmers cannot sell their produce due to a marketing problem this is a concern and an issue for the DAO. If army worms are spotted in a particular locality, the DAO must be involved.

The DAO is thus an information centre, an extension manager as well as a crops specialist to advice on crop performance at the district level. The DAO represents the "sales force" that is responsible for the realization of the ministry's goals. These sales efforts are directed both to the final consumers, farmers and other facilitators.

In the new set up for the ministry, it is expected that the outlook will be "Front line first" with all other functions performing their tasks to support their delivery system. Such an approach will even mean a change in the budgeting system so that the front line becomes the focal budgeting point for effective delivery of extension services.

**PRICE DISCOVERY INSTITUTIONS IN THE  
MARKETING AND PROCESSING  
AGRICULTURAL COMMODITIES IN KENYA:  
Past experiences and  
Potential Future Development in a Liberalised  
Agricultural Sector.**

*Dr. A. M. Muthee  
Ministry of Agriculture, Livestock  
Development and Marketing, Kenya*

**INTRODUCTION:**

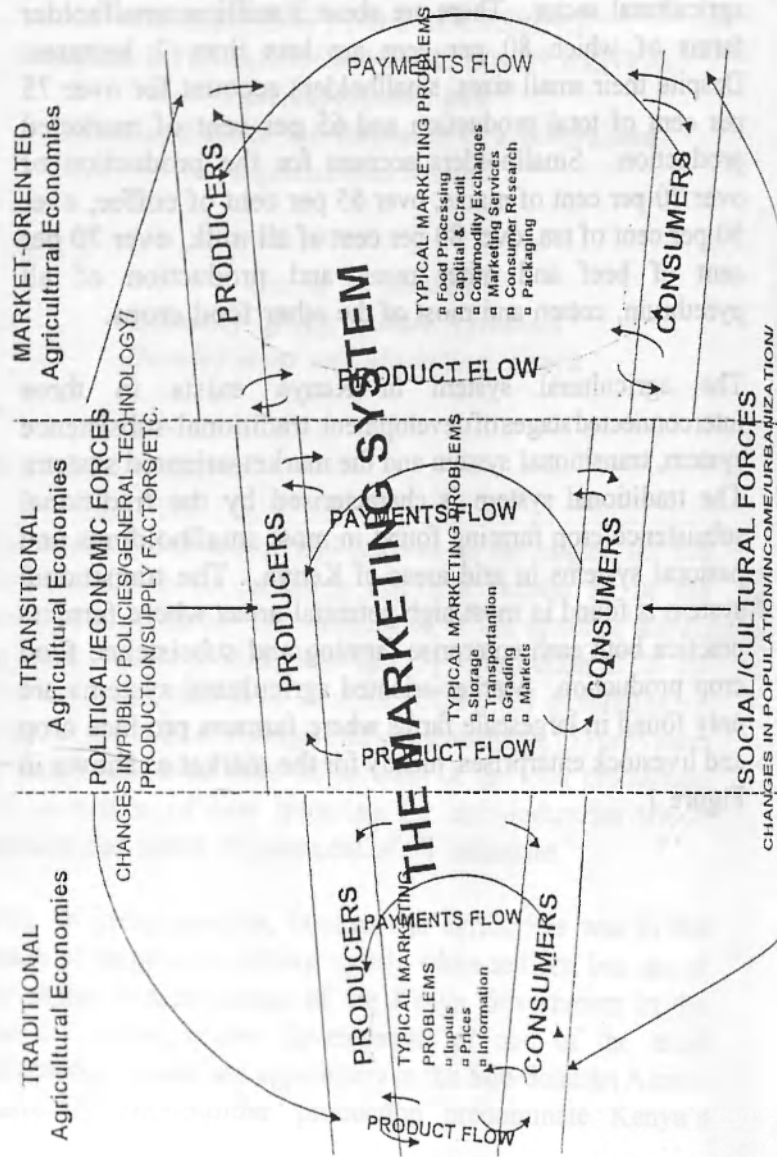
The agricultural sector still remains as the engine for the growth of whole economy and will remain so in the foreseeable future. The dominance of the sector is shown by such important indicators as:- [1] contribution of 25 per cent of gross domestic product (GDP), [2] generation of over 60 per cent of foreign exchange earnings, [3] provision of employment to over 70 per cent of the total production [4] provision of raw materials for agro-industries which account for about 70 per cent of all industries.

Prior to independence, commercial agriculture was in the hands of large scale farms, mostly white settlers, but one of the major achievements of the Kenya Government in the last 30 years is the development of one of the most successful smallscale agriculture in the Sub-Saharan Africa. Currently smallholder production predominate Kenya's

agricultural sector. There are about 3 million smallholder farms of which 80 per cent are less than 2 hectares. Despite their small sizes, smallholders account for over 75 per cent of total production and 65 per cent of marketed production. Smallholders account for the production of over 70 per cent of maize, over 65 per cent of coffee, over 50 per cent of tea, over 80 per cent of all milk, over 70 per cent of beef and other meat, and production of all pyrethrum, cotton and most of the other food crops.

The agricultural system in Kenya exists in three interconnected stages of development: traditional-subsistence system, transitional system and the market-oriented system. The traditional system is characterised by the traditional subsistence crop farming found in most smallholdings and pastoral systems in arid areas of Kenya. The transitional system is found in most high potential areas where farmers practice both cash enterprise farming and subsistence food crop production. Market-oriented agricultural systems are only found in largescale farms where farmers produce crop and livestock enterprises, mostly for the market as shown in Figure 1.

**Fig. 1 EVOLUTION OF MARKETING SYSTEMS**  
 With Economic Growth of the Agriculture | Sec. 01





The development of agricultural systems also follow similar stages. In a purely subsistence agricultural production system exchange of goods is between individual negotiations. In the transitional stage characterised by the subsistence-cash enterprise farming systems price discovery tends towards group bargaining approaches as characterised by cooperatives which have to look into the problems of storage, transportation, grading and markets. In the market-oriented stage as in the case of cash crops like coffee, the issues of grading and auctions become more pronounced.

#### **Recent Policy Changes in the Agricultural Sector.**

In the last decade it has been realised that Government expenditure has become over stretched and that there was a need for more beneficiary participation, through cost-sharing, full cost recovery and gradual privatisation. The need for less Government intervention has also been realised and in pursuance of this change, various policy changes have been effected in meat, milk, animal feeds, dipping and others are in the pipeline in the areas of artificial insemination and clinical services.

In the future the emphasis will be to pursue a *balanced policy mix based on public, private sector and beneficiary participation to build a self-sustaining system through the continuation of the ongoing policies on cost-sharing and privatisation as well as strengthening the Government role in performing the strategic functions.* This approach emphasises the complementary role of the Government, private sector and beneficiaries in the agricultural development process.

The policy measures which have been implemented or are being implemented in the sector can be grouped in five categories, viz. price decontrols and market liberalisation; beneficiary participation and cost-sharing; marketing incentives; restructuring of parastatals; and reforms in the legal framework.

### ***Price Decontrols and Market Liberalisation***

#### ***Meat:***

Decontrol of meat prices and liberalisation of the market was done in 1987. The effects of these changes have been positive and meat prices have not increased in real terms. Government has also made steps to attract an investor for rehabilitation of the Government-owned processing plant with eventual divestiture by Government.

#### ***Animal Feeds:***

Decontrol of prices of animal feeds was done in 1989. This policy change didn't have the desired effect due to lack of raw materials, especially cereals and oilseed cakes. Prices have been on the increase. However, feeds have been generally available for the pig, poultry and dairy industries.

#### ***Fertilisers***

Decontrol of fertiliser prices and liberalisation of the industry was done in January 1991. This policy change had the desired effects in 1991 and early 1992, but with the

depreciation of the Kenya shilling the prices of fertilisers went up in late 1992 and this has affected their usage by farmers. This is an area of concern to the Government as it will greatly affect the food security situation.

#### *Minor Crops*

In 1991 prices of minor crops like millet, sorghum, beans and other pulses were rescheduled and their marketing liberalised. Apart from the problems related to adverse weather conditions the impacts have been positive.

#### *Domestically Marketed Tea, Rice, and Wheat*

Decontrol of the consumer price of domestically marketed tea as well as the liberalisation of the marketing of rice and wheat was done in 1991. In the case of wheat, only floor prices are now set. The Government also introduced variable levies to protect the domestic producers. In general, the impact of these changes has been positive.

#### *Cotton*

In January 1992, the Government liberalised the marketing of seed cotton and cotton lint, and started the process of restructuring the Cotton Board, and selling the ginneries to the private sector. Although the private sector is taking the challenge, problems are being experienced in the supply of planting seeds as the private ginners have not developed a seed supply system. Due to this problem the sub-sector is being studied to define the role of the Board and to make

sure that seeds are available to farmers.

#### *Dairy Industry*

In May 1992 the prices of milk were decontrolled and the dairy sector liberalised. Although the time period to analyse the effects of these changes is too short, there has been some positive effects especially in increases in the number of processors and traders. Despite the drought conditions the sector has managed to serve the public without a major outcry, except for KCC failing to pay farmers.

#### *Sugar*

In May 1992 Government also liberalised the pricing and marketing of sugar. The modalities of selling the factories is also being studied towards an eventual privatisation of the sugar factories.

#### *Maize*

Maize is Kenya's major staple food. Prices were decontrolled in December, 1993 and the market liberalised. It is still too early to analyse the impacts, especially as the country has been experiencing a serious drought, which resulted in massive importation of maize in 1994.

### *Beneficiary Participation and Cost-Sharing*

#### *Dipping Services*

Dipping services were handed over to farmer communities in July 1991. For most of 1991 and 1992, this change was working very well and most of the dips were operated by the communities. However, the depreciation of the shilling in 1993 caused a drastic increase in the prices of acaricides which eroded the revolving accounts kept by the dip committees, and communities could not purchase acaricides as programmed.

#### *Gradual Privatisation of Artificial Insemination and Clinical Services*

Since 1991, Government has indicated its willingness to start privatisation of A.I. and clinical services, which are currently almost inoperational due to inadequacy of funding. It must be noted that some private individuals and cooperatives are already providing the services, but these are hardly adequate for the majority of farmers. There is great concern that the progress made in the livestock sector may be jeopardised due to unavailability of these services. Due to this concern, the Government is aiming at a phased programme of privatisation of these essential services to be undertaken after the Government has seriously analysed the services and determined their viability and sustainability.

### ***Marketing Incentives***

#### ***Auctioning of Tea and coffee***

In November 1992, the Government directed that the auctioning of coffee and tea be conducted in foreign currency and this policy together with the operation of foreign exchange retention accounts has been welcome by farmers.

#### ***Restructuring of parastatals***

Other changes are going on in the sector especially in the reform and divestiture from some of the 25 agricultural parastatals, through the Parastatal Reform Programme Committee.

#### ***Rationalisation of the Public Sector***

The Government has started the process of civil service reform, with an emphasis of identifying the services which are of strategic in nature, to be fully funded and staffed by Government. Early retirement schemes for civil servants are also being worked out. The main emphasis is improving efficiency in management.

#### ***Reforms in the Legal Framework***

To accommodate the above changes related to liberalisation, Government is continuing to review the various Acts and Ordinances in the agricultural sector. The emphasis is on

identifying areas which are a hindrance to the smooth operation of a liberalised economy, and areas which are regulatory in relation to consumer and environmental safety.

The diversity and dynamic nature of agricultural production, marketing and processing as discussed above implies diverse "price discovery" methods'. The vested interests of various interest groups, the weakness of various groups relative to others also complicate the system further. Furthermore, the recent policy changes in the agricultural sector have caught many actors unprepared and the process of price discovery is still in a transitory stage.

#### *Price Discovery Institutions*

The approach used in price discovery is to consider 'who' does what in the marketing process i.e. nature and characteristics of various actors, arrangements in the marketing machinery and in general, the process by which institutions within buyers and sellers arrive at specific prices and terms of trade. In general, this is the human element in marketing and processing.

The human element involved in agricultural marketing include:

- 1) the product/seller,
- 2) traders (wholesalers and retailers),
- 3) agent middlemen [brokers and commission agents],
- 4) speculators,
- 5) processors and manufacturers,
- 6) facilitating institutions and
- 7) buyers.

In a country like Kenya not all these may be well established but in other cases, they are well established. However, price discovery institutions as in the case of market actors are in various stages of development. These include:

- 1) the individual negotiations common in all commodities,
- 2) exchanges and auctions, where auctions are common in coffee and tea,
- 3) group bargaining by farmers groups and cooperative,
- 4) formula pricing and
- 5) administrative decisions either by the public or the private sector.

### **INDIVIDUAL NEGOTIATIONS**

Individual negotiations in price discovery is the most common institution for most food items in most countries. It can range from the straight on-farm sales, producer/seller selling to buyers in the nearest local market or consuming institutions, and direct sales to processors and manufacturers.

#### **Mechanisms of Operation**

The system is a decentralised one implying many buyers and sellers. Prices negotiated vary by each transaction and reflect some form of efficiency in respect to time i.e. they are low during the harvesting season and gradually increase in the post-harvest period. The negotiations in prices also reflect spatial aspects: i.e. they are low in surplus areas and high in deficit areas. Costs of negotiations are minimal



with the low volumes traded but if volumes increase the costs increase and the opportunity cost of time is commercialised. Costs of marketing can also vary according to the channel utilised. On-farm sales incur least costs (possibly only the cost of the container). If the producer sells in the market consuming institution, or processing facility, cost in respect to transport, market fees and opportunity cost of time in selling all count.

The mechanisms of individual maize marketing has been studied by PAM (Gem Argwings-Kodhek 1992) and some data from these studies will be used to illustrate the various aspects of this trade i.e. actors involved, pricing efficiency in respect to time and space and transport costs. The main actors identified included, traders using bicycles, traders using donkeys, traders using matatus, traders using own or hired lorries and retailers with own stores. The calculated trading margins are as shown in Table 1.

Table 1: Trading for Various Actors in Maize Trade

System	Buy Transport				Margin per bag	Monthly Trading Income
	Other	Sell				
1.	410		460		50	600
2.	351		460		109	1303
3.	400	30	25	500	45	2160
4.	300	20	-	400	80	14280
5.	280	48	4	410	78	56340
6.	400	50	1	480	29	51660
7.	280	51	20	400	49	140540
8.	280	80	20	400	20	40000
9.	490	-	3	520	27	9189

Source: (Ref 1.)

KEY:

- 1: Bicycle Trader from Store
- 2: Bicycle Trader from NCPB
- 3: Woman on Matatu: Nandi - Kakamega
- 4: Donkey Trader: Njipijip - Kisii
- 5: Canter: Nairage - Nairobi
- 6: Lorry: Kitale - Yala Division
- 7: Owned Lorry: Kitale - Machakos
- 8: Hired Lorry: Kitale - Machakos
- 9: Store Owner: Mumias

NB: *Other includes County Council Cess, bribes etc.*

Systems 1 to 4 depict free trade while systems 5-8 deducted restricted trade. The difference between 1 and 2 shows how excess profits can be made by buying from cheap sources.

In all cases (except system 7) the trading margins were over Kshs.25/bag the indicated price differential to induce trading in maize. Any margin above Kshs. 25 was considered as profit but this does not take account of opportunity cost of time, risks of physical loss, bribes for carrying beyond legal limits. Taking into account the opportunity cost of time (assuming a salary of Kshs.4000/month for trader) shows how actual profits can be determined in the case of Naurage Engare to Nairobi route using a 4 ton lorry carrying 60 bags. Trading costs were calculated at Kshs. 55.81/bag but by including the opportunity cost of time at Kshs. 2.50/bag raised the traders cost to Kshs. 58.31/bag. The average margin/bag was calculated at Kshs. 90/bag giving the trading margin of Kshs. 31.69. Assuming the minimum inducement is Kshs.25/bag the profit per bag was calculated at Kshs. 9.19/bag.

#### **Relationship to Economic Criterion**

This system is decentralised so prices are assumed to approach equilibrium prices implicit in a competitive market. The classical economic model for perfect competition assumes the following:

- 1) numerous buyers and sellers so that none exerts significant influence on price.
- 2) goods are homogeneous meaning that consumers are indifferent to sales by each seller.
- 3) no barriers to price determination, free entry and exit and no government intervention.

- 4) perfect information on prices and quantities available.

The proof of this can be demonstrated by the Kitale (surplus area) and Machakos (deficit area) separated by 500 km. Several points can be noted. First, sellers are individual farmers in Kitale and buyers are consumers trading centres of Machakos. Sellers can possibly influence prices as they are largescale farmers with clout (note the current issue of Kshs. 950/bag which is above the market price), while buyers cannot influence prices. Second, the homogeneity assumption is met as buyers are indifferent to sales outlets. Third, maize-trading whether in a liberalised system or not has some barriers to entry (except possibly in localised areas). The main barrier is the initial capital requirement (for purchase of produce, storage and transport). A recent survey (MOALDM 1995) on privatization showed that of the eight groups interviewed, seven (88%) indicated inadequate capital as a constraint. So this is a barrier as shown in table 2. Fourth, buyers (consumers) and sellers (farmers) do not have perfect market information as they are separated by 500 km. The exception are the traders who are aware of both ends of the market and can gain profit from this lack of information.

With liberalisation, this price discovery institution can approach some degree of perfect competition but some constraints as shown in Table 2 need to be addressed. Government should develop an enabling environment to provide a line of credit actors in the system, a system for disseminating information to buyers and sellers, consistent

policy, training program, and provision of infrastructure.

Table 2: Constraints and their Order of Importance by Participant Constraint and Indicative Order of Importance

Table 2: Constraints and their Order of Importance by Participant Constraint and Indicative Order of Importance

Participant (Existing & Potential)	Inadequate Financial Resources	Inadequate Market Information	Lack adequate Managements & Tech Skills	Lack of Policy Awareness & Preparedness	Infrastructure & Organizational Problems
Small Farmers	1	2	4	5	3
Large Farmers	1	2	3	5	4
Farmer Groups Organizations	1	2	4	5	3
Coop Unions and Societies	1	4	2	5	3
Millers (Sifted)	3	1	4	2	N/A
Posho Millers	1	3	4	5	2
Traders	1	3	2	4	5
Transporters	1	4	2	3	5

Source: (Ref.6)

*Note: The most constraining problem is indicated by 1 while the least constraining by 5. For sifted millers, the issue of organization is indicated as N/A (Not applicable) as it does not arise. Infrastructure relates to roads, stores, market centres, power especially electricity, etc.*

## **GROUP BARGAINING AS A PRICE DISCOVERY INSTITUTION**

Individual buyers and sellers have limitations in negotiating prices as they do not have adequate information. So the logical approach is to form groups, associations and cooperatives with the objective that with joint efforts they can achieve better prices and terms of exchange. Group negotiations have been well developed in labour unions but in agriculture the concept is not well developed. With liberalisation this price discovery mechanism needs to be developed as individual farmers cannot effectively deal with processors and manufacturers.

### **Mechanisms of Group Bargaining**

The critical variable in group bargaining is the bargaining power or the ability to influence the terms of trade or exchange. Alternatively this can be called countervailing power of those subject to it. The potential sources of power can be categorized into three:

#### ***Gains Secured from Improved Production or Marketing***

In this case both groups agree on how to share the benefits of any changes. In Kenya, the case of contracted growing of barley and tobacco are illustrative. Contract farmers and processors agree on prices through contracts. Any changes during the duration of the contract are reflected in the next

contract. However, with a monopolistic situation farmers may get a poor deal as demonstrated in the case of tobacco where the entry of a second firm caused an increase in prices to farmers.

### ***Gains are Secured from Opponent***

This reverts to the strength and organization of one group to coerce the other. This case is well illustrated by labour unions which if wage negotiations fail can force the employers to agree by calling strikes. Agricultural producers are disadvantaged in that most of their products are perishable and that there is no legislation to empower negotiations. With liberalization there is need for such legislation.

### ***Secure Gains from a Third Party***

The third party can be the consumer, a marketing agency or government. This case is well illustrated by the current situation in the maize markets. Maize producers (large scale) with the support of KNFU have used the concept of costs of production being high to coerce the NCPB/Government to maintain the price at Kshs. 950/bag while the current market prices are between KShs. 650 and 800/bag. Consumers suffer by paying a higher price as they do not have bargaining power.

Overall, the weakness of groups is due to their weakness in organizing members. Some members due to short term gains sell to outside groups thus weakening the bargaining capability.

### **Economic Rationale in Group Bargaining**

In economic terms the ability to negotiate better terms depends on:

- 1) Ability of group to control substantial supply of both current and future production. The case of sugar can be used to illustrate this case. Out of the estimated 3.3 million tonnes crushed in 1994, factory estates only produced 388.00 MT Or 11.7 per cent while the rest was controlled by large farms (7.8%), smallholders (70.6%) cooperatives societies (6.3%) and settlement schemes (3.6%) as shown in table 3.

Table 3. Cane Production by Type of Grower

Type of Grower	Cane (000)	% of Total
Factory Estates	387.9	11.7
Large Farms	258.1	7.8
Smallholders	2336.5	70.6
Cooperatives	206.9	6.3
Settlement Schemes	118.7	3.6
Total	3308.1	100

*Source: Economic Survey 1995*



The combined production of smallholders, cooperatives and settlement schemes is 80.5 per cent of the total production. If the three groups were organized they could bargain for favourable terms with sugar factories. Currently, the Kenya Sugar Authority commissions an independent annual study on all aspects of sugar production, processing and marketing which is discussed by the Kenya Sugar Cane Millers Association (KESMA) and Kenya Sugar Cane Growers Association (KESGA) until they agree on the price.

Experiences in the past show that the processor can completely control all production e.g. Kenya Cannery or increasingly produce more and finally eliminate farmers as in the case of Farmers Choice which in the last 15 years has increased its own pig production from nothing to over 60 per cent of the processing capacity.

2) Ability to Practice Price Discrimination: This can be practiced if a group can identify two groups of buyers (markets) with different price elasticities, and when markets are effectively separated to prevent free flow of products (location, time, form of commodity, type of consumer). Price discrimination has been in the past practised by dairy cooperatives to pay farmers higher prices than those fixed by Government in the case of milk. This was a case of net realization pricing (NRP) based on local raw market and KCC market segment.

$$NPR = \alpha pp + \beta Pr - \text{where } \alpha + \beta$$

are percentage sales to processor and local raw markets respectively and  $pp$  and  $Pr$  are respective prices in the two markets as illustrated by a study of cooperatives in 1991 (Wamwea and Muui 1991) in table 4.

In all cases KCC prices was 4.35/litre. It is noted that by using price discrimination, cooperatives were capable of increasing the producer prices by an average of 9 per cent over fixed prices while in milk deficit areas the increase was between 38 per cent and 49 per cent. The potential of this method was limited by the capacity of local demand and only a small proportion could be sold locally. However, a cooperative like Limuru where local demand has managed to reach high local sales as demonstrated by table 5.

Table 4. Price Discovery with Price Discrimination in the Dairy Sector

District	Local Prices	NRP	NRP KCC*(%)	NRP Local
Murang'a	5.50	4.62	106	84
Nyeri	5.67	4.34	100	76
Embu	7.50	6.50	149	87
Machakos	6.0	6.00	138	100
Nandi	6.80	4.36	100	64
Kericho	5.55	4.18	96	75
Nakuru	4.50	4.2	96	93
Baringo	4.40	4.2	96	95
All Districts	5.50	4.75	110	86

Source: (Ref. 17)

Table 5. Price Discrimination by Limuru Cooperative 1988/89 to 1992/93

Year	Locally	KCC
1988/89	46.3	53.7
1989/90	61.8	38.8
1990/91	62.2	37.8
1991/92	81.2	18.8
1992/93	81.2	18.8

Source: (Ref. 11)

3) Ability to Control Imports in the Groups Marketing Area: This can be a weak point if,

surrounding production areas can market at lower prices. It can also be serious if imports are allowed. The recent experiences with milk and maize are a case in point. In such cases the Government has used various measures like tariffs, bans, variable levies to protect domestic products.

### **Future Policy Options**

In 1994 Kenya had 2,683 registered agricultural cooperatives (213 in coffee, 91 in sugar-cane, 46 in pyrethrum, 82 in cotton, 210 in dairy, 1123 multi-purposes, 221 firm purchase, 68 in fisheries and 619 in other activities). There are also other groups the majority of which are women groups. There are over 23,000 women groups with a total membership of about one million. About 44 per cent of these groups are involved in agriculture and livestock related activities. As shown in table 2, groups face various problems related to finance, market information, poor management and organizational problems. Others include high drop-out rates, misappropriation of funds etc.

In a liberalised environment groups can become countervailing force and an enabling environment has to be created for strengthening their bargaining by providing market information, improving the management and organizational skills through training and availing credit for the operations.

## **SPOT OR CASH AUCTIONS**

In Kenya the auction as a price discovery institution is well developed in non-agricultural commodities. The institution has however not drawn favourable remarks as it is associated with debt collection. In the agricultural sector, auctions are well organized in coffee and tea based on grades and samples, and are rudimentary developed in the livestock sector based on actual commodities.

### **Mechanisms of Auctioning as a Price Discovery Institution**

Auction markets provide a price discovery mechanism where commodities are not easily standardized especially in live animals. Physical inspection is usually the only criteria, except in more sophisticated auctions where weights may be used. Price discovery is by competitive bid for each commodity or lot. The auctioneer has usually a reserve price but with many buyers this may not be necessary as they are aware of the level of prices and will usually start at above the reserve price.

A major disadvantage of auctioning is the requirement that the commodity be physically present for visual inspection, but in more sophisticated auctions new aspects like telephone and videos are used e.g. commercial cattle auctions in Zimbabwe for cattle from commercial farms while those from communal farms are auctioned. For example in 1991, 218 heads were offered and 128438 were purchased (87% of total offered) (Muthee 1993). There

were 208 auction stockpens which held 15556 auctions. The average number offered per stockpen was 712 per year ranging from 428 to 10960 while sales per stockpen averaged at 640 ranging from 347 to 912 as shown in table 6.

Table 6. Operations of Communal Areas Cattle Auctions in Zimbabwe 1991

Region	Stockpens	Cattle offer No/Stockpen	Cattle Purchased No/Stockpen	% Sales over offered
Matabele	60	763	666	91
Mashona	49	428	347	81
Manica	30	833	733	88
Midland	35	657	543	83
Masvingo	34	1059	912	86
Average	208	742	640	86

Source: (Ref.9)

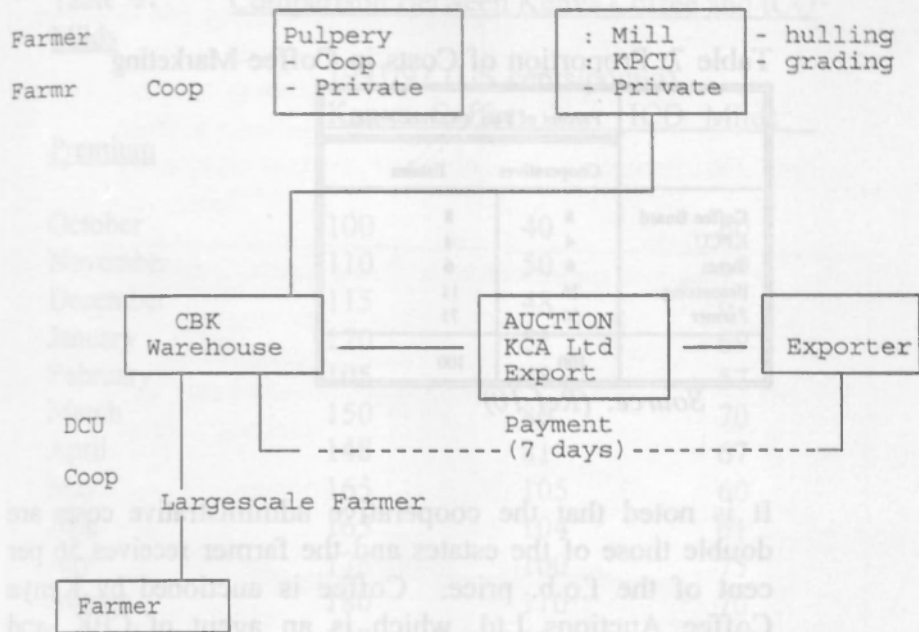
From the table it is noted that on average, the auctions clear about 86 per cent of offered stock, ranging from 81 per cent to 91 per cent. This would seem to indicate some form of efficiency, however, prices can be manipulated by the major buyers like Cold Storage Corporation which purchased 85 per cent of the total number offered.

#### **Case A: Kenya Coffee Auctions**

East African countries have been marketing coffee through auctions, which is hardly used anywhere else except in India. Kenya started auctions in 1935 and Tanzania in

1952. The Kenyan auction system which also applies to arabica from Northern Tanzania is used to illustrate the system (Scnuler, 1995).

The marketing system of coffee is as present in figure 2 below:



1) Transparency and market discipline in export trade

The costs associated with this marketing system vary due to processing and administrative cost experienced by the cooperative and the private sector (Nyoro, 1994) as shown in table 7.

Table 7: Proportion of Costs in Coffee Marketing

	Percent of Fob (Nairobi Price)	
	Cooperatives	Estates
Coffee Board	8	8
KPCU	4	4
Taxes	6	6
Processing	26	11
Farmer	56	71
	100	100

Source: (Ref 10)

It is noted that the cooperative administrative costs are double those of the estates and the farmer receives 56 per cent of the f.o.b. price. Coffee is auctioned by Kenya Coffee Auctions Ltd. which is an agent of CBK, and payments are made within 7 days and paid in US dollars. An analysis of premiums i.e. difference between Kenya Coffee prices and those of other ICO milds shows that for the year 1992 to 1993 (October to September) they ranged from US\$ 0.6 to US\$ 0.90 per pound as shown in table 8. Possibly most of this is due to auctioning but other factors like quality also play a part. The benefits of the auction system have been quoted as:

- 1) Transparency and market discipline in export trade.



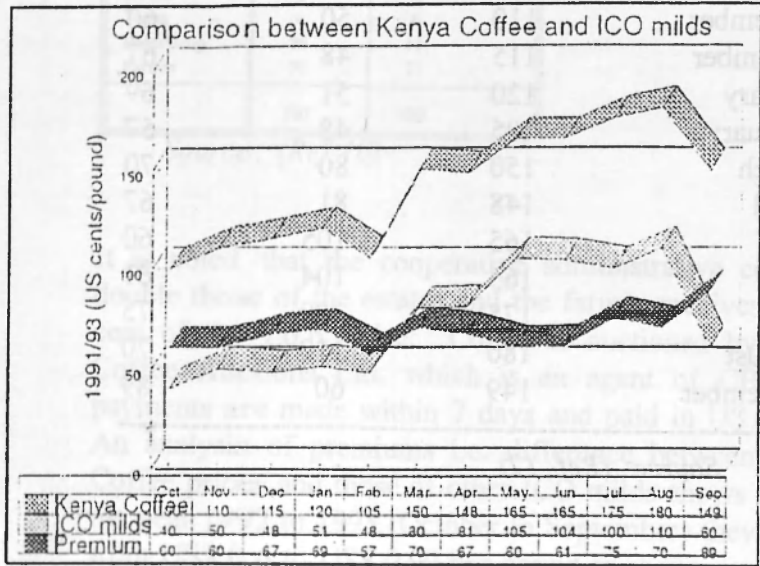
- 2) Competition as there are many buyers
- 3) Confidence for growers and exporters and overseas buyers as prices are openly known.

Table 8. Comparison Between Kenva Coffee and ICO Milds

	1991/92 (US cents/pound)		
	<u>Kenva Coffee</u>	<u>ICO Milds</u>	
<u>Premium</u>			
October	100	40	60
November	110	50	60
December	115	48	67
January	120	51	69
February	105	48	57
March	150	80	70
April	148	81	67
May	165	105	60
June	165	104	61
July	175	100	75
August	180	110	70
September	149	60	89

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 Source: (Ref. 12)

**Case B: The Concept of Standardization and Grading in Price Discovery Institutions: The Case of Pugu Livestock Market in Dar-es-Salaam.**



1) Transparency and market discipline in export trade.

Standards are a yardstick of measurement in terms of weight and quality while grading is sorting commodities in various categories (grades) established by standards for quality. Both encourage the smooth flow and price discovery in the marketing process. Various advantages of standards and grades are as follows:

- . Enables sale by sample or description
- . Enables more meaningful price quotations
- . enables pooling
- . Facilitates market financing as collateral can be calculated
- . Can reduce marketing costs as low grades can be utilized by farmers
- . Can increase demand for specific grades if there is strong consumer preference
- . Can also induce competition as buyers compete for various grades.

The criteria for setting good standards and grades is based on the following

- . Grades should be user-oriented and easily recognizable
- . Terminology in grades should be meaningful to many users
- . Costs of operating grades should be meaningful

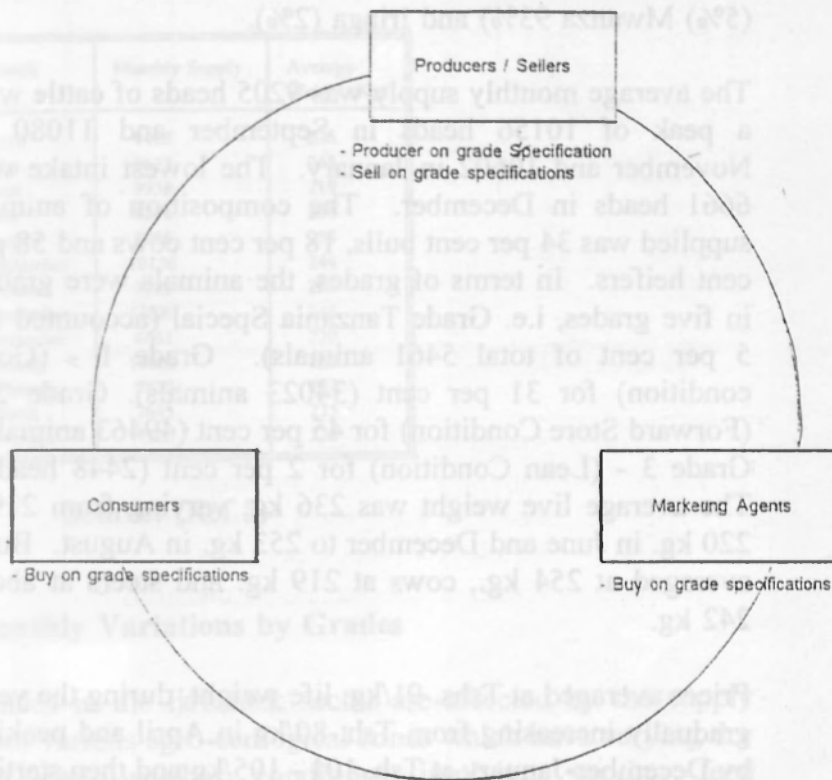
Problems of agricultural products standardization and grading include:

- . lack of price relationship between price and quality.
- . Undefined consumer preference for grades.

- Weak measurement systems - some are subjective and sensory e.g. coffee and tea, while others are easily measurable e.g. physical, biological and microbiological attributes.
- problem of quality deterioration after the initial grading.
- problems of determining boundaries of grades as they follow a normal shaped distribution.
- additional health regulations on place of sale and handling may further complicate grading.

In conclusion it can be argued that agricultural standards are only meaningful and sustainable if the actors involved (producers/sellers, buyers, and consumers) follow a 'circle of agreement' as below\*

### CIRCLE OF AGREEMENT



Livestock Supply to Dar-es-Salaam: The Operation of the Pugu Market (Data from MDB 1989)

It was estimated that Dar-es-Salaam has an annual demand on meat of about 14000 MT, equivalent to 100,000 to 140,000 heads of cattle (at 100 - 120 kg. cdw). The surrounding areas can only supply about 1000 heads and the rest has to come from outside. In 1989, Pugu terminal market handled about 110458 heads which accounts for most of the demand by Dar-es-Salaam. The major sources of supply to Pugu market were Tabora (27%) Shinyanga (25%) Dodoma (16%) Sigida (15%) Mbeya (7%) Morogoro (5%) Mwanza (3%) and Iringa (2%).

The average monthly supply was 9205 heads of cattle with a peak of 10156 heads in September and 11080 in November and 10602 in January. The lowest intake was 6661 heads in December. The composition of animals supplied was 34 per cent bulls, 18 per cent cows and 58 per cent heifers. In terms of grades, the animals were graded in five grades, i.e. Grade Tanzania Special (accounted for 5 per cent of total 5461 animals). Grade 1 - (Good condition) for 31 per cent (34023 animals). Grade 2 - (Forward Store Condition) for 45 per cent (49463 animals). Grade 3 - (Lean Condition) for 2 per cent (2448 heads). The average live weight was 236 kg. varying from 219 - 220 kg. in June and December to 253 kg. in August. Bulls averaged at 254 kg., cows at 219 kg. and steers at about 242 kg.

Prices averaged at Tshs. 91/kg. live weight, during the year, gradually increasing from Tsh. 80/kg in April and peaking by December-January at Tsh. 101 - 105/kg and then starting a gradual decline. By grade, the average prices during the

year were Grade 0 (Tsh. 102/kg); Grade 1 (Tshs.95/kg); Grade 3 (Tshs.81/kg) and; Grade 4 (Tshs.60/kg). The monthly supply and weight characteristics are shown in *table 9*.

Table 9. Monthly Supply of cattle and Average Weight

Month	Monthly Supply	Average Weight (Kg)
April	9405	236
May	9638	248
June	9938	219
July	8278	236
August	8956	253
September	10156	244
October	9229	238
November	11080	245
December	6661	220
January	10602	229
February	8870	227
March	7645	235
Average	9205	236

Source: (Ref.5)

### Monthly Variations by Grades

Grades in the livestock sector are affected by the supply from various agro-ecological zones which have varying dry and wet weather conditions implying varying feed availability. As shown in table 10, they tend to be low in April to June and then remain stable for the rest of the year. Grades tend to follow the statistical bell-shaped distribution.

High quality cattle account for 5 per cent while the average condition (grade 1 and 2) account for 76 per cent, which is the normal situation. Lower quality grades account for 19 per cent of the total number of cattle trades.

Table 10: Monthly Variation by Grade (%)

Month	Grade 0	Grade 1	Grade 2	Grade 3	Grade 4
April	2.1	14.1	67.7	15.1	1.0
May	3.0	32	51.8	12.9	0.3
June	2.0	40.2	49.4	8.0	0.4
July	7.9	33.8	39.8	16.5	2.0
August	6.0	37.0	40.0	14.0	3.0
Sept.	5.9	35.7	43.6	12.8	2.0
October	4.4	27.0	46.0	18.6	4.0
November	5.0	27.1	40.5	25.1	2.3
December	5.2	23.2	38.8	27.6	5.2
January	5.3	29.8	38.5	23.9	2.5
February	5.4	31.8	42.2	18.2	2.4
March	8.4	37.8	36.2	15.0	2.6
	5	31	45	17	2

Source: (Ref. 5)

Note: Grade 0 - Tanzania Special

Grade 1 - Good Condition

Grade 2 - Forward Store Condition

Grade 3 - Lean Condition

Grade 4 - Emaciated Condition

### Monthly Variation by Prices and Grades

The logic of standardization and grading is to show that producers and sellers can gain by supplying higher quality grades. This is demonstrated in table 11. It is noted that



the prices change on a monthly basis and across grades. Taking the average annual price the following can be noted: First, the price differential between the lowest and highest grade is Tsh. 42/kg while that between the lowest and average of grade 1 and 2 is Tsh.33.50. The difference between the average and the highest grade is Tsh.10/kg. Basically, this implies if there is an agreement between buyers and sellers, the sellers would gain considerably by improving the quality of their cattle. In the Tanzanian situation where most of the supply comes from pastoral areas, the improvement in the quality would involve extension i.e. time of selling rather than financial resources for supplementary feeding.

December	92	100	97.5
November	101	117	109
January	102	112	107
February	99	111	105
March	102	114	108
April	91	103	97

Source: (Ref. 2)

#### Monthly Variation by Type of Cattle (Tsh/kg)

There is noticeable preference by type of cattle offered for sale (bull, cow, steer). Bulls, cows and steers account for 24 per cent, 18 per cent and 58 per cent respectively. Bulls and cows are usually cull animals, mostly old while steers are mature at about 3-4 years. The price exhibits some seasonality aspects in that between April and June, they are

Table 11: Monthly Variation in Average and Grade Prices (Sh/kg)

	Average	Grade 0	Grade 1&2	Grade 3	Grade 4
April	79	89	84	66	45
May	86	91	87	85	80
June	78	97	79	65	50
July	88	98	89	80	37
August	87	96	89	73	49
Sept.	83	97	83	74	62
October	91	107	94	85	66
November	93	109	97.5	76	55
December	101	112	107.5	93	72
January	105	113	107.5	100	75
February	89	111	100.5	87	64
March	102	114	106	85	63
	91	102	93.5	81	60

Source: (Ref.5)

#### Monthly Variation by Type of Cattle (Tsh.kg)

There is noticeable preference by type of cattle offered for sale (bull, cow, steer). Bulls, cows and steers account for 24 per cent, 18 per cent and 58 per cent respectively. Bulls and cows are usually cull animals, mostly old while steers are mature at about 3-4 years. The price exhibits some seasonality aspects in that between April and June, they are

low for three categories of and for the rest of the year they are stable. The price of the cow lies in the middle of the three prices with a Tshs. 4 difference between the bull and the cow and a Tsh.2/kg difference between the cow and the steer as shown in table 12.

Table 12: Monthly Variation in Weight of Animals (kg)

Month	Grade 0	Grade 1	Grade 2	Grade 3	Grade 4
April	245	240	235	230	225
May	245	240	235	230	225
June	245	240	235	230	225
July	245	240	235	230	225
August	245	240	235	230	225
September	245	240	235	230	225
October	245	240	235	230	225
November	245	240	235	230	225
December	245	240	235	230	225

The average weight of the animals is about 230 kg, while the average price is 1400 Tsh/kg as shown in table 13. As indicated earlier Grade 0 accounts for 5 percent of animals Grade 1 for 31 per cent, grade 2 for 43 per cent, grade 3 for 17 per cent and the final grade for 2 per cent of the

Table 12: Monthly Variation of Prices by Type of Cattle (shs/kg)

	Bull	Cow	Steer
April	72	70	84
May	78	94	87
June	73	74	80
July	86	87	89
August	85	76	89
September	85	76	89
October	75	90	84
November	86	86	94
December	89	84	103
January	100	101	98
February	99	99	103
March	96	112	93
Annual	87	91	58
Annual Supply %	24	18	

Source: (Ref.5)

### Monthly Variation by Weight of the animal

The average weight of the animals is about 236 kg. while the average price is Tsh. 91/kg as shown in table 13. As indicated earlier Grade 0 accounts for 5 per cent of animals. Grade 1 for 31 per cent, grade 2 for 45 per cent, grade 3 for 17 per cent and the final grade for 2 per cent of the

animals. Grade 0 animals average at 291/kg but during the months of November to March, the weight goes down possibly due to the dry weather. Grade 1 and 2 animals average 245 kg and 231 kg respectively and exhibits a similar drop from November to March. The two lower grades also exhibit similar characteristics and weights of around 200-220 kg. During these months there is inadequate supply of animals (with the exception of Christmas festivity period) but as shown earlier, prices are at their highest during the period.

Table 13: Monthly Variation by Weight of Animals (sl/kg)

Month	Grade 0	Grade 1	Grade 2	Grade 3	Grade 4
April	345	260	231	226	180
May	315	256	243	232	230
June	250	226	214	206	120
July	340	242	221	214	203
August	343	256	245	239	211
Sept.	288	254	238	222	201
October	288	245	237	227	214
November	260	261	246	225	209
December	236	224	223	217	183
January	270	243	223	216	200
February	290	228	230	202	207
March	271	242	227	228	224
Annual	291	245	231	221	198

Source: (Ref. 5)

## **COMMODITY FUTURES EXCHANGES: THE FORWARD PRICE DISCOVERY MECHANISM**

Commodity futures market involves buying and selling standardized contracts for delivery of a commodity of a specific grade at a specific time and location. The concept introduces the need for dealing with grades, temporal and spatial attributes of efficient pricing discovery institutions. In the following sections, we shall deal with its mechanics and price relationships, functions and risks and its economic rationale.

### **Mechanics and Relationships**

Commodity adaptable to futures trading have to meet three conditions:

- . homogeneous and capable of adequate standardization
- . must be deliverable over some length of time implying the need for storage
- . supply and demand is uncertain and movement of goods is unlimited.

These conditions introduce some element of uncertainty which is the lifeblood of speculation.

Futures trading depends on pricing relationships in respect to form (quality and grades), spatial price relationship (introducing concept of transfer costs) and temporal relationships (introducing concepts of storage costs). The relationship of grades and prices have been discussed earlier and in this section they are only briefly mentioned. Prices

associated with quality are usually premiums or discounts. Grading in futures trading facilitates faster transactions in the following aspects:

- Contracts can be made on samples
- Uncertainty on quality is reduced
- Premiums or discounts can easily be calculated
- Price discrimination can be set according to grades and buyer preferences

### ***Spatial Price Relationship***

The relationship is mostly determined by transfer costs (TC). These include transport, loading and handling costs. Assuming the conditions of a perfectly competitive market are met, the principles governing prices between regions can be stated as follows:

- 1) Price differences between two locations which trade with each other will just equal transfer cost ( $PX = PY - TC$ ).
- 2) Price differences between two locations which do not trade will be less or equal to transfer costs.

These principles basically imply that price difference between two regions cannot exceed transfer costs as arbitrage will always occur. However, in most situations price differences exceed transfer cost due to incomplete or inaccurate information, non-homogeneity of products, irrational preference for products and institutional and legal barriers on movement.

### **Temporal Price Relationships**

Temporal price relationships are associated with seasonal, cyclical, trend and other factors. In futures trading, the seasonality factor is possibly the most important with prices being low at harvest time and rising to a peak before the next harvest. With storable commodities as in the case of grains, the potential for futures trading can be exploited after introducing the concept of storage.

The price rise of a seasonal crop is a function of storage costs:

$$P_f - P_c = M$$

Where  $P_f$  = future price

$P_c$  = current price

$M$  = storage costs

Storage costs include, warehousing costs, insurance interest on investment in facilities and inventories and risk premium. A non-perishable commodity defined as one which can be stored from crop year to the next, especially grains meets the conditions. However, the degree of storability and timing of new crops can influence the pattern. Price differences can also be influenced by reaction to additional (price) reaction to unexpected large transactions and due to annual changes due to size of supply and demand and slopes of functions.



**Functions and Mechanics**

The main function is to facilitate resource allocation through hedging and providing forward prices as follows:

- 1) Temporal allocation of seasonally-produced commodities by carrying inventories.
- 2) Risk aversion and transferring price risks.
- 3) Operational and margin hedging.
- 4) Price discovery and establishment of forward prices.

**Terminology and Mechanics**

The 'basis' which is difference in cash and future prices at any one point in time is the pivotal aspect of futures trading, while the 'standardized contract' which is a legal document specifying delivery of a specific grade of a commodity, at a specific time and location specifies the 'commodity being traded'.

The trading occurs in a designated place (trading floor) and selling is done by open outcry. The actors of the trading floor include:

- 1) floor traders selling or buying for their own account.
- 2) brokers (speculators and hedgers) buying for non-members.
- 3) clearing house to facilitate members transactions and for keeping records.

The central issue in trading is that prices and price changes are known and actors can trade on small price changes, on expectations or seek contracts. Market position can be

determined by 'trading long' (purchase contracts not covered by equivalent amounts of sales and offset in the future).

Speculation in futures trading is subject to chicanery and manipulations and legal aspects have to be covered by commodity exchange authorities in terms of licensing exchanges, setting guidelines for client-broker relationships and controlling price manipulations. The typical illegalities includes:

- 1) **Cornering a Market:** This means basically getting control of a large proportion of a market by long trading position in futures.
- 2) **Bear raid:** This is manipulative selling to force down prices.

### **Economic Rationale of Futures Trading**

A successful futures market depends on:

- 1) Non-perishable commodity with reasonable storability.
- 2) Homogeneous commodities easily standardized.
- 3) Inventory hedging (taking risks).
- 4) Many buyers and sellers.
- 5) Accessibility to available information.

With the above conditions prices may possibly approach the economic equilibrium prices if the following conditions apply:

- 1) Volume of transactions is large.
- 2) Quality offered is representative of total production.
- 3) Sufficiently large numbers of sellers to avoid price manipulation.
- 4) Unbiased and complete information in respect to supply and demand.

### **Policy Implications**

Kenya does not have a commodity futures trading institution, although some interest has been indicated in starting one similar to those in Zimbabwe and South Africa. Possibly, the main hindrance has been due to the nature of production which is predominated by smallholder production. In the case of grains most of the maize is traded in the informal markets, and government involvement has been heavy through marketing parastatals. In the case of wheat, Kenya does not produce adequate supplies.

For a commodity futures market to develop the actors have to form groups or cooperatives, and team up with buyers, millers and other processors to operate an exchange. Government can facilitate by providing the enabling environment in training, legal framework and adopting trade policies which can allow a commodities future exchange to exist.

## **FORMULA PRICE DISCOVERY MECHANISM**

Formula pricing, although not very common in Kenya is used extensively elsewhere. In Kenya, it had been used in the past in setting fertilizer prices before liberalization in 1991. In other places it is used in setting prices for meat, eggs and milk.

### **Mechanisms of Price Discovery**

Formula prices are based on various bench marks e.g. prices at a central market, c.i.f. bench mark prices as used in the Kenyan fertilizer base, according to butterfat or protein base as is the case of milk in some countries or on biological and microbiological base as done in milk.

The whole concept of using formulae is to facilitate direct buying and lower costs involved in pricing. They have an advantage in that they can be easily adjusted in relation to base price as other variables change. However, they also have weakness in that the formula may get out of date or the base price may become unrepresentative. It may also face a problem when producers refuse the formula to be changed if changes cause lower prices. A case in point is the current maize crisis in Kenya where producers maintain that the costs of production used in 1993/94 during a period of rising inflationary trends should be maintained even if the costs have been on a downward trend in 1995. Possibly this could not happen if maize marketing was fully liberalized.. In Kenya the ideal candidate for future formula pricing is milk and the cases of milk pricing by formula in

Britain and Netherlands (Muthce 1993) will be presented here.

### **Milk Price Setting in the UK**

The price of milk is set by the Milk Marketing Board based on quality and hygienic consideration, while the price for dairies is determined by a joint committee and based on end-use. In setting the producer price based on quality considerations samples are collected from each farmer on daily basis and tested for: butterfat, protein and, lactose to determine composition. They are also tested for bacteria and antibiotics to determine the hygienic quality. Finally, a somatic cell count is made to measure general herd health. MMB operate a central testing system through 5 regional laboratories. The basic price is based on compositional quality, while a bonus or deductions are based on hygienic quality considerations. In a simplified formula, the individual farmer's price (PF) is as shown below.

$$PF = B \text{ (Basic price)} + X \text{ (bonus or deductions)}$$

Where  $B = +a$  (% butterfat) +  $b$  (% protein) +  $c$  (% lactose).

$a, b, c$  are monetary values for certain percentage levels.

$X + \pm w$  (level of antibiotics, bacteria count, number of somatic cells) the value  $\pm w$  is determined from a set level to determine bonus or deductions.

#### FORMULA PRICE DISCOVERY MECHANISM

This pricing method is possible because the number of farmers is small (about 31500 compared to Kenya's 300,000) and the amount delivered is large (each farmer delivers over 1000 litres per day so a 20,000 litre tanker collects from only about 20 farmers while in Kenya many farmers deliver less than 10 litres per day. To fill a tanker would require 2000 farmers and samples would be unmanageable) and there is a considerable demand for butterfat products. However, it is noted that even with this elaborate system the farmer gets only 39 per cent of the consumer price.

The price paid by dairies is determined by a Joint Committee in which MMB represents the farmers interest and the Dairy Trade Federation represents the dairies. Prices are based on end-use with liquid milk commanding the highest price and skimmed milk powder the lowest as it is considered a market of last resort.

#### **Milk Pricing in the Netherlands**

Dutch milk pricing is freely fixed by market forces and as in the United Kingdom, it uses the quality pricing method based on fat and butter value to determine the basic advance. Premiums or bonuses are given based on quality seasonal quantity etc. The typical price structure for 1989 was as shown below:

*Comparative Milk Prices in Netherlands (f/100kg)*

f	50.30	(5.84)	Fat value
F	34.00	(3.94)	Protein value
<u>f</u>	<u>84.00</u>	<u>(9.78)</u>	<u>GROSS ADVANCE</u>
f	7.00	(0.81)	Reduction for transportation
f	0.66	(0.08)	Fixed deductions/overheads/stop money
<u>f</u>	<u>76.36</u>	<u>(8.86)</u>	<u>NET ADVANCE</u>
F	8.42	(0.98)	Subsequent payment cash on account
f	2.27	(0.26)	Premiums
			Seasonal premium
			Quantity premium
			Quality premium
			Special premiums
<u>f</u>	<u>87.05</u>	<u>(10.1)</u>	<u>TOTAL PAYMENT/MILK PRICE</u>
f	0.36	(0.04)	Fat correction (4.20%)
f	0.22	(0.025)	Protein correction (3.40%)
f	0.68	(0.08)	Interest correction
<u>f</u>	<u>85.79</u>	<u>(9.95)</u>	<u>COMPARABLE MILK PRICE</u>
f	0.33	(0.04)	Addition to reserves
<u>f</u>	<u>86.12</u>	<u>(10.00)</u>	<u>PERFORMANCE PRICE</u>

(1 Figures in brackets are equivalent Ksh/kg)

The farmer is advanced money based on fat and protein value with protein value emphasis on butter as most milk (44%) goes to cheese. About 8 per cent and 0.8 per cent are subtracted to transport and dairy operations overheads. The farmer is then paid about 90 per cent of gross advance plus bonuses based on season quantity and quality. In 1989, the average payout was about Kshs. 10/kg and when corrected for butter fat, protein and payments procedure, it

amounted to Kshs.9.95/kg. However, as in the case of UK the farmer receives less than 50 per cent, 31 per cent and 26 per cent of the consumer price pasteurised whole milk, semi-skimmed and UHT milk respectively.

In conclusion it can be said that by improved quality of milk, quality pricing can be introduced. However, considering the number of farmers, the small quantities delivered and the lack of testing facilities, it is likely to take a considerable time in Kenya. However, it can be introduced in some cooperatives if they can be assured of a high price for the quality milk.

#### **ADMINISTRATIVE PRICE DISCOVERY INSTITUTIONS**

Administered pricing in agriculture has been exclusively a government function. However, some agro-industrial firms which practice integrated agriculture e.g. brewing and tobacco industries have been performing this function. With liberalization, this function will increasingly become a private sector function as the government gradually divests from marketing operations.

Governments in both developed and developing countries have been providing subsidized support services to farmers. In developed countries with few farmers, the level of support has been influenced by farm lobbies and protectionist trade policies, and farm programmes based on such legislation as the Common Agricultural Policy (CAP), the Agricultural basic law of Japan etc, which have made



the few households participating in agriculture richer than the urban workers. In developing countries with myriads of smallscale poor farmers, governments have provided subsidized support services to uplift the level of farming by introduction of improved technology.

The level of farm support in developed countries is staggering; costing between US\$ 200-300 billion per year. Annual farm subsidies exceed total World Bank and IMF lending since 1980 and 1970 respectively, and exceed the total amount of development aid given to Sub-Sahara Africa since 1980. In OECD countries, Japan, EC-12 and USA account for 89 per cent of these transfers, and farmers in these countries are among the most heavily subsidized in the world. In EEC countries two thirds of the budget is used to support farmers who account for 4 per cent of economic activity. In the US the annual subsidy per dairy cow is more than per capita income of half of the population in the World. The Dairy Programme costs US\$ 5.6 billion to support 180,000 farmers. The average income of a full time farmer in the US is US\$ 168,000 which is 4 times the national average household income. In Japan the average producer subsidy is 72 per cent across all crops. Farmers are paid 4 to 5 times above the world price to produce wheat, soya beans and silk etc. and average farm household incomes is 30 per cent more than the average income of blue-collar households.

The agricultural terms of trade have deteriorated in most developing countries due to government interventions which was as a result of economic development thinking of the

early 1950's. Basically the economic thinking ran like this: productivity and productivity growth rates are much higher in non-agricultural, particularly manufacturing sectors; priority in development should be given to development, implying that resources from agricultural surplus and foreign exchange should go to manufacturing. This brought about issues of raising export taxes from agriculture, need to placate pressure groups (urban areas) by keeping food prices low, physical control and subsidies etc.

**Objective of Intervention:**

Basically Government interventions are based on political considerations and are supported by the following objectives:

- 1) Reduce price and income instability.
- 2) Improve allocation of resources.
- 3) Increase self-sufficiency in food.
- 4) Raise average of prices and income.

Arguments in support of reducing price instability dwell on the concept that price instability can lead to fluctuations in production, while those in support of resource allocation dwell on the need for appropriate planning prices. The issues of food security in terms of strategic reserves, and stabilization funds dominate in terms of administered prices.

Reduction in price instability has been through purchase of buffer stocks and setting stabilization funds with the principle of paying less in favourable years and doing supplementary payments in bad years. In situations where

production is less than demand, price support mechanisms have been the introduction of tariffs, variable levies, and import restrictions. In a situation where supply is greater than demand, the usual tool is government production or by deficiency payment through guaranteed prices.

## **PRICE DISCOVERY IN MAIZE MARKETING AND PROCESSING: PAST AND FUTURE MECHANISMS**

Maize is the major staple food for most Kenyans, and as such has attracted most government intervention in the last 30 years. Government's objective has been the maintenance of an orderly and efficient market with a reasonable degree of price stability and ensuring food security, and food self-sufficiency. However, in the past, this objective, due to heavy emphasis on food security, has been interpreted to mean actual physical control over maize supplies. This has greatly distorted the market. The short review will concentrate on historical development to 1988, policy changes between 1988 and 1995, operation of the maize market in 1992 and future development in a liberalized system.

### **Historical Development in Reform of the Maize Market**

In the post-independence period the initial pressure for reform on maize marketing was first voiced in 1966 (1966 Maize Commission of Inquiry). It has been noted that the then Maize Produce Board which had monopoly status and used administrative prices had the following weaknesses.

- 1) MPB as any other parastatal was inherently inefficient and operated at high costs.
- 2) Administrative set prices and controlled flows of the commodity created distortions in the market.
- 3) Inefficiencies in maize marketing lead to a heavy financial drain on the exchequer.
- 4) Public sector should be involved in strategic reserves.

The 1966 report came with the following recommendations based on the observed constraints.

- 1) The Government should be confined to market stabilization and maintenance of strategic reserves.
- 2) The private sector should play a greater role in maize marketing
- 3) Administrative controls should be removed.

Basically, very little action was taken because the overall concern on food security and possibly because the performance on MPB was healthy until 1977 when it started experiencing financial pressure. Some action was taken in removing movement restrictions in 1977/78 but these were reversed in 1979/80 at the start of the drought period which lasted to the severe drought of 1984/85. During the period NCPB operations were expanded with the establishment of 700 buying centres, and at the same time NCPB's financial situation deteriorated.

In 1983 the Government created an inter-ministerial committee to look into issues related to NCPB and cited the following areas for reform:

- a) Poor integration of inter-regional market prices implying physical shortages and surpluses
- b) Lack of orderly inventory management, especially during short falls (stocks too low to support ex-depot prices or too high to support farm prices)
- c) Very high operating costs
- d) Delays in farmers payment.

Overall the report recommended the re-organization of the marketing system and NCPB. Additional reports were commissioned in 1983 and 1986 and the findings were translated to the Cereal Sector Reform Programme (CSRP) of 1988, with financial support from European Community. The Key components of CSRP included:

#### **Changes in trading rules**

These basically included removal of controls in movement of grain by the private sector and removal of controls on millers which required them to purchase maize from NCPB.

#### **Pricing reform**

This was to be a gradual process, where eventually Government was only to be involved in a regulatory role and buyer of last resort in terms of setting floor prices in relation to target for food security and ceiling price as per

import parity pricing. NCPB was to incorporate cost-reducing measures and adjust to competition.

#### *Private market development*

Funds were set aside for private sector and cooperative involvement in grain trade through credit schemes for inventory purchase, and management improvement. NCPB was also expected to run down its storage network and release some to the private sector. Other aspects included some aspect of provision of market information development of rural infrastructure under the USAID's Kenya Market Development Project.

#### *NCPBs operations and network*

It was expected that NCPB would gradually reduce its market network to a level where NCPB would operate a network only capable of defending floor and ceiling prices through open market operations.

In the second phase of CSRP a Crop Purchase Revolving Fund (Kshs. 1 billion) was to be started. Other aspects were the NCPB management re-organization and financial restructuring and finally NCPB was to operate according to a performance contract ensuring full funding for losses incurred for carrying strategic reserves and improvement on NCPB's efficiency.

### Policy Decisions Between 1988 and 1995

Policy decisions in the past have shown Government's preference for emphasizing food security through strict control of maize market at the expense of introducing measures to improve the efficiency of the maize marketing system. Policy decisions have not been consistent and as a result the maize marketing system has not operated efficiently, as summarized below:

#### *Policy decisions on maize movement*

The restriction on 2 bags was lifted in 1988/89 when restriction was raised to 10 bags. In 1991 the restriction was raised to 44 bags and in April 1992 it was raised to 88 bags but this was reversed in November, 1992 and the ban lifted in 1993. The cost implications on quantity movement is as shown in table 14.

Table 14: Cost of Maize Transport

Transport Technology	Cost/Ton/Km (sh)
1. Bicycle	11.0
2. Donkey	11.0
3. Matau	6.60
4. Canter (4 Ton)	3.26
5. Lorry (8 ton)	2.43
6. Lorry (12 - 15 Ton)	0.60

It is shown that using bicycles and donkeys is the most expensive technology due to their lower carrying capacity, while using lorries of 10 tons and over is the cheapest



technology. The prevailing NCPB rates were Kshs. 1.88/ton/km (canter 44 bags) and kshs.2.75/ton/km for long distance 8 ton lorries. At the first rate only with lorries of over 12 tonnes would be profitable. At the second rate transporting with lorries over 8 tons would be profitable. Basically this means that the maize movement restrictions were introducing technical distortions to the maize marketing system.

***Purchase by millers from the private sector***

In 1989/90 they were allowed to purchase 20 per cent of their requirements from the private sector, which was increased to 30 per cent in 1990/91 and to 40 per cent in 1991/92. In late 1992, they were allowed to purchase any amount from farmers. The gradual increase in proportion was a consistent approach.

***Full liberalization of the maize sector in december 1993***

The sector was fully liberalized in 1993 but in 1994 there was a ban on importation which later replaced by variable levies. A second ban was introduced between April and June 1995, and later replaced by tariffs. Although the bans were necessitated by the need to protect local producers from cheap imports it still distorts the performance of markets.

### **Operation of the Maize Grain and Products Market Prior to Liberalization**

The issue of maize grain marketing was discussed under the individual price discovery institutions, and under this section emphasis will be put on the price discovery for maize products, mostly milled products. Three products are usually produced, i.e. whole meal where germ are not removed, granulated meal with partial degerming and bran removal and sifted maize floor which is fully degermed and all bran removed. These products are associated with large roller mills and has a storage time of about one month. Granulated is associated with smallscale millers, using hammer mills and with a storage time of less than one week while the whole meal with smaller hammer mills which produces 'posho' meal with a storage time of less than two days. The issues to be discussed include, the effect of the prevailing policy and distribution of mills, pricing discovery in relation to form, surplus and deficit areas.

The existing policy in 1991/92 as it affected the milling industry can be summarized as follows:

- 1) NCPB supplied maize at almost uniform prices across the country and as grain maize accounted for almost 80 per cent of milling costs this favoured location mills in deficit/consuming areas.
- 2) Private mills could purchase 40 per cent of their requirements directly from farmers.
- 3) Movement controls was restricted to 88 bags and as stated earlier this has considerable impact on

transport costs.

- 4) Prices were fixed by Government but adhered only in the official maize market.

The implication of this is that 55 per cent of sifted maize milling capacity is in Nairobi while small mills are mostly located in rural areas, as shown in table 15.

Table 15: Regional Distribution of Millers in Kenya

Province	% of National Production	% of National Consumption	of Total capacity for large mills	% of total for capacity for mills
Central	10	14	3.7	19.6
Eastern*	12	16	9.7	12.4
Western	20	14	0	0.9
Rift	35	27	19.8	24.4
Nrb/Msa*	0	6	55.9	21.7*
Coast*	2	4	0	1.5
Nyanza*	14	18	10.9	7.5
North*	0	NEGL.	0	7.5
TOTAL	100	100	100	4.9
				100

Source: (ref .1)

\* Deficit regions

Pricing discovery has predominantly been done by Government especially for sifted and granulated maize .  
The pricing structure is as shown below:

Cost Component	Kshs/90 kg
Producer	300
Price into depot	344.45
NCPB costs	100.80
Subsidy	(86.68)
Price into mill	358.57
Ex-mill price	545.59
Wholesale price	559.46
Retail price	603.0

The major thing to note is the element of subsidy. For every bag of maize the exchequer subsidised NCPB or the consumer Ksh.86.68 per bag. The pricing was set on annual basis using pan-territorial and very occasionally pan-seasonal pricing methods. This approach favoured mills in consuming areas as the crucial spatial and temporal aspects were not considered.

Some form of pricing differentials existed between surplus regions as shown below in Table 16.

Table 16. Summary of Official and Private Market Prices 1991/92

Product	Surplus Region		Deficit Region	
	Official	Private	Official	Private
<i>Maize Grain (Ksh/90kg)</i>	353.40	300.0	361.15	430.00
Sifted Meal (Ksh/90kg)	536.40	536.40	556.90	575.60
Unsifted (No.1)(Sh/90kg)	367.00	585.00	370.00	585.00
Unsifted "Posho" (sh/90kg)	367.00	390.00	370.00	564.90

Source: (Ref.1):

It is noted that in surplus regions official grain prices were about Kshs.50/bag higher than open market prices while in deficit areas the price differences were Ksh.30/bag as the main source were NCPB and interregional traders. In surplus regions, official prices consumers of posho and granulated flour were paying only 68 per cent of official price of sifted maize. Without controls granulated flour price was 9 per cent more expensive while consumers of 'posho' still paid less at 72 per cent of sifted maize and 67 per cent of granulated flour price.

#### **Maize Sector After Liberalization**

Since December 1993, the market for maize has been liberalized except for occasional bans on imports and introduction of variable levies and tariffs. However, the position of NCPB has not been firmly clarified and it exerts some uncertainties on the development of the private sector.

#### **Current Situation**

The 1994/95 maize production figure is estimated at about 34.4 million bags. Possibly due to on-farm losses of 10 to 12 per cent it is assumed 30 million bags enter the market of the total production 25 per cent (7.5 mil. bags) and 75% (22.5 ml. bags) are produced by large scale and smallscale farmers respectively. All production from largescale farms and 50 per cent if small scale production enter the market respectively. Implying that 18.75 million bags is marketed both formally informally.

Of the total marketed output, 26.7 per cent (5 million bags) is marketed through NCPB and 73.3 per cent (13.75 million bags) is marketed through the private sector. This structure basically implies that there is a rudimentary organisation for private sector development which needs to be identified and promoted.

The final consumption of whole grain and processed products indicates that possibly 3.2 million bags are milled into sifted flour (10.7%) and 26.8 million bags consumed as whole grain and semiprocessed 'posho' and granulated mills. This segment is controlled by about 30 large mills and possibly over 400 small mills and myriads of traders.

#### **Price Discovery Mechanisms Under a Liberalized System**

Various actors are already in the field of marketing identified as follows:

- 1) Smallscale producers/sellers
- 2) Largescale producers/Sellers
- 3) Localized and inter-regional traders
- 4) Localized and inter-regional transporters
- 5) Cooperatives
- 6) Farmers organizations
- 7) Posho mills
- 8) Sifted maize millers
- 9) NCPB (Government)

In terms of price discovery the individual price discovery institution would cover, smallscale and largescale farmers,

traders transporters and millers. Group bargaining would cover cooperatives and farmers groups. Administrative price discovery would only cover NCPB. The price discovery mechanisms of formula pricing and commodity futures are not represented. The mechanics for price discovery have been discussed earlier and in this section we shall address the observed constrained to the rapid development of the private sector.

In table 2 the constraints observed in the field were tabulated for each group of actors. The ranking of each of the constraints can be done by attaching value (1 = 50, 2 = 40, 3 = 30, 4 = 20 and 5 = 10) and calculating the percentage score out of a possible 400 points as shown below:

<u>Rank</u>	<u>Constraint</u>	<u>Points</u>	<u>%</u>
1.	Finance	350	87.5
2.	Market Information	270	67.5
3.	Management Skills	230	57.5
4.	Infrastructure/ organisation	160	40
5.	Policy awareness	140	35

### **Improving Pricing Efficiency Addressing Constraints**

In the sections above it has been shown that some aspects of pricing efficiency in respect to temporal, spatial and grading (in processed products) are in place. However, it can be argued that the institutions are not as yet price

efficient due to the observed constraints. These have to be addressed if private market performance has to be improved.

### **Financial constraints**

Inadequate finances for performing marketing operations, i.e. purchase of inventory, storage, maintenance stock and transport was ranked as the highest trading constraint (87.5%). In terms of competitive market model this constraint acts as a barrier to entry while in terms of pricing efficiency it affects the temporal (storage costs) and spatial (transfer costs).

This constraint is genuine as recent studies show that supply of credit to the agricultural sector has been declining. It is estimated that the gap between supply and demand is about Kshs. 55 billion as supply is estimated at about Kshs. 22 billion, supplied as follows:

<b>Source</b>	<b>Sh.(bi)</b>	<b>%</b>
Urban Saccos	5.0	22.0
Cooperative Bank	2.0	9.0
Rural Saccos	0.5	2.2
Commercial Banking	11.0	48.4
NGOs and Donors	0.1	0.4
<u>AFC</u>	<u>4.1</u>	<u>18.0</u>
	<u>22.7</u>	<u>100</u>



The Commercial banking sector is the main source of rural finance but their lending to agriculture has declined from 24% of total advances in 1983 to 12 per cent in 1992. Possibly Government should enforce the 17 per cent lending rule to agriculture which would raise credit to agriculture considerably. The rural and urban saccoes have increasingly become important in agricultural lending and ways should be found to channel more credit through them. There is also need to restructure AFC and the Cooperative Bank to be in line with lending in a liberalized system. The Crop Purchase Revolving Fund suggested under CSRP should be reactivated and implemented, as a short-term measure.

#### **Market Information**

This was ranked second by all actors (67.5%). In terms of spatial aspects information on prices in deficit and surplus areas is critical. The current price differential between two regions are far in excess of transfer costs and possibly some traders are reaping some windfall profits. In terms of temporal considerations, lack of information on post-harvest expected prices hinder farmers from storing the produce, and they get lower prices.

Lack of information is a barrier to market entry and distorts pricing efficiency. Collection and dissemination of information exhibits characteristics of public good and should be provided by Government. A start had made under the USAID financed Kenya Market Development Project and this should be expanded. Price information in newspapers and electronic media should also be given

adequate coverage.

### **Management Skills**

Over the years the development of the private sector had been hindered by administrative controls. The management skills have therefore not developed and this constraint was ranked third (57.5%). In the case of cooperatives the Cooperative Act has been a major hindrance. Upgrading of management skills in the private sector was suggested under CSRP and this should be reactivated.

### **Infrastructural Issues**

This involves access roads, rural electrification and market centres. This was ranked fourth (40%) but was ranked high by specific actors e.g. posho millers, smallscale farmers, farmers groups and organizations. This possibly implies that the more marketing activities move to rural areas the more costs increase due to power costs differentials between main powered facilities and the normal diesel powered facilities. An accelerated programme of rural feeder roads development and rural electrification would lower costs of transport and processing.

### **Cereal Sector Policy and Adjustment During the Transitory Period**

Frequent policy changes, as described above cause uncertainties in the development of the private sector marketing. The looming shadow of NCPB hinders any

meaningful investment in storage and transport. Changes of policies are not communicated widely by the Government machinery to its field officers and hence to the relevant actors. Segmentation of ministries and lack of emphasis on extension factors e.g. marketing and privatisation is also a hindrance. Policies affecting marketing should be disseminated through a coordinated effort by ministries dealing with agriculture and cooperatives.

#### **Future Role of Government (NCPB)**

Maize is considered the major staple food in Kenya and as such attracts considerable political pressure. As such Government will continue to be involved through NCPB in the following areas:

- a) **Ensuring national food security**  
This is mainly through the maintenance of strategic maize reserves tentatively set at 3 million bags or about 10 per cent of total consumption. The food security aspects will also include some half a million bags for famine relief.
- b) **Market Stabilization**  
Although, this role is usually questionable, it is considered important in preventing price variability. Basically it means setting a ceiling price as a maximum indicative price that consumers would be expected to pay and a floor price a minimum indicative price for producers. These indicative price are variable as they can be influenced by good

and bad years.

- c) Creating an enabling environment for private sector development by appropriate policies, providing market information, training and facilitating provision of credit.

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## THE PROVISION OF AGRICULTURAL INPUTS IN KENYA

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### INTRODUCTION

Growth in Kenya's agriculture derives from three major sources. These are crop area expansion, commodity substitution or switching and intensification. Because of the limited arable land and rapidly rising population, opportunity for increased growth through area expansion has become extremely limited. Only about 20 percent of Kenya's area is classified as medium to high potential and most of these areas are already settled and are being used either for subsistence agriculture or commercial agriculture. The rest of the land are arid and semi arid lands (ASALs) which require substantial investments to become arable. The substituting of more profitable commodities for less profitable enterprises by farmers critically depend on the existence of efficient market. The current economic reforms are geared towards liberalizing the market and therefore making the markets relatively more efficient. However, poor infrastructure still stands on the way of speedy transmission of market information and movement of commodities to ensure accurate decision-making for



profitable enterprise mix. Therefore, this source of growth will become more pronounced as the reforms become more applicable and the markets more efficient.

It is evident then that the prospects of increased growth in agriculture lies in intensification of production. Intensification essentially means increased output per unit area. To facilitate intensification action and progress will be needed in several areas. These include other policy but above all, widespread use appropriate inputs.

This paper focuses on the issue of the provision of crop inputs, especially the provision of fertilizer and seed as crop inputs.

This paper highlights the problems and challenges that have to be overcome if the goal of intensification is to be realised.

Discussion is confined to the provision of these inputs to Kenya's staple commodity-maize-although the issues addressed can apply to other crops.

Almost 60 percent of the total farmed area is occupied by smallholders, who currently supply over 50 percent of the marketable output. Since input use among this group of farmers is still relatively low compared to other groups, intensifying smallholder production offers the best opportunity for substantial increases in overall output. Focusing attention to increase input use among the smallholder is therefore urgent.

### The Status of Use of Agricultural Inputs Use

Limited growth and even decline in input use has characterised agricultural sector in the last decade. Table 1 gives a summary of input expenditures from 1985-1993. While fertilizer purchase accounted of the greater share, the value of all purchased agricultural inputs increased from about K£ 223 million in 1992 to K£ 298 million in 1993 signifying almost 34 percent increase. Higher prices of inputs, reflecting high inflation rate was the primary cause of this expenditure increase. This translated to reduced amounts of actual quantity of input acquired and used. Table 2 give quantum and price indices of the agricultural inputs used over the same period with 1982 being the base year.

Table 1: Purchased Agricultural Inputs K£ million (1985-1993)

## Material Inputs

	1985	1986	1987	1988	1989	1990	1991	1992	1993
Fertilizer	39.38	34.08	43.28	53.51	69.23	48.47	51.40	38.48	49.57
Other Agric.	18.36	21.93	14.97	12.03	13.50	11.13	12.90	12.39	14.04
Chemicals	9.68	10.33	15.47	16.11	19.57	18.82	20.44	18.73	22.24
Livestock Drugs	19.88	22.59	27.85	30.17	25.49	34.58	36.21	45.04	92.69
Fuel and Power	8.61	12.26	12.59	11.15	11.86	11.47	12.64	13.87	14.64
Repairs	17.70	18.89	20.91	20.63	23.39	31.18	32.07	33.78	36.67
Manufactured Feeds	15.77	23.73	20.09	26.03	25.40	27.09	29.25	34.76	19.46
Purchased Seed	8.17	6.91	7.45	9.89	8.08	8.47	9.07	9.36	10.24
Other Material Inputs									
<b>TOTAL</b>	<b>137.06</b>	<b>150.72</b>	<b>162.61</b>	<b>179.52</b>	<b>196.52</b>	<b>191.21</b>	<b>203.98</b>	<b>206.41</b>	<b>279.55</b>
Service Inputs	15.09	14.68	15.84	17.11	15.87	14.18	15.75	16.36	18.24
<b>TOTAL INPUTS</b>	<b>152.61</b>	<b>165.40</b>	<b>178.45</b>	<b>196.63</b>	<b>212.39</b>	<b>205.39</b>	<b>219.73</b>	<b>222.67</b>	<b>297.79</b>

Source: Republic of Kenya, Economic Surveys, 1990, 1991, 1994.

Source: Republic of Kenya, Economic Surveys, 1990, 1991, 1994.

Table 2: Quantum and Price indices of Agricultural Inputs (1985-1993): 1982=100

	1985	1986	1987	1988	1989	1990	1991	1992	1993
Quantum Indices	186.9	162.4	224.1	271.7	158.4	146.6	144.7	93.9	88.4
Fertilizer	107.9	115.5	131.9	128.3	103.6	121.1	114.9	109.9	112.9
Fuel and Power	94.6	139.6	139.1	109.9	97.3	94.1	96.2	99.7	101.7
Bags	100.2	255.7	280.9	257.4	258.7	-	-	-	-
Manufactured Feeds	97.8	145.4	109.3	92.9	125.6	107.4	98.8	115.7	110.2
Purchased Seed	87.5	98.2	106.1	106.5	90.5	92.2	93.5	96.9	96.3
Other Material Inputs									
TOTAL MATERIALS	107.8	143.3	162.9	165.0	133.3	134.9	134.0	124.5	123.9
Service Inputs	105.7	111.2	121.2	121.6	118.0	105.2	106.7	110.6	108.9
TOTAL INPUTS	106.8	139.5	157.9	159.9	131.6	131.0	130.8	122.3	121.1
Price Indices	142.5	151.4	151.4	155.7	167.2	202.3	212.4	233.6	310.1
Fertilizer	129.8	122.9	127.9	140.7	147.7	224.1	252.7	303.6	459.2
Fuel and Power	155.2	157.7	159.0	159.8	158.8	162.4	171.0	197.9	241.8
Bags	158.5	132.4	136.5	151.6	176.6	188.3	226.6	254.5	328.3
Manufactured Feeds	147.9	161.3	175.0	266.0	222.1	238.2	279.1	336.6	466.8
Purchased Seed	77.0	91.1	102.0	117.6	129.4	154.6	173.7	201.1	257.4
Other Material Inputs									
TOTAL MATERIALS	145.1	123.2	129.4	147.2	154.3	188.8	222.1	244.5	331.4
Service Inputs	112.6	123.1	131.7	132.2	136.2	153.2	160.3	164.9	185.0
TOTAL INPUTS	114.7	123.2	129.6	145.5	152.2	186.7	216.1	235.1	314.1

Source: Republic of Kenya, Economic Surveys, 1990, 1991, 1994

The table shows that fertilizer quantum index has generally been declining except for 1987 when there was a significant increase. The index for purchased seed show limited growth from 99 in 1985 to 110 in 1993 signifying about 10 percent growth over the period. The increase in quantity of fuel, power and manufactured feeds make the total inputs register growth from 107 in 1985 to 122 in 1993, about 15 percent over the period.

When the price indices are examined, it is evident that the general rise in input prices have been remarkable. For fertilizer, if 1982 is taken as the base year, the index has risen from 143 in 1985 to 310 in 1993. Purchased seed price index has increased from 148 in 1985 to 467 over the same period.

Overall input price index has risen from 115 in 1985 to 314 in 1993. The above scenario should explain why the input use has registered limited growth. Action is need to address the issue of rising costs of inputs if the farmers have to make use of them.

#### **Agriculture Terms of Trade**

It must be recognized that adoption of inputs by farmers will depend on the profitability of using that input for a given enterprise. If input prices rise and output prices decline or show limited increase, that will translate into adverse terms of trade for the agricultural sector. Table 3 shows the price and terms of trade indices for agriculture between 1985 - 1993. It is clear that the terms of trade has generally been deteriorating since 1988. This indicates that input prices have generally been increasing while agricultural outputs have witnessed limited or declining growth over the same period.

Table 3: Price and Terms of Trade Indices for Agriculture  
(1985 - 1993) 1982=100

	1986	1987	1988	1989	1990	1991	1992	1993
General Index of Agric. Output Price	149.0	150.3	168.7	177.0	187.0	200.2	236.2	324.2
PRICE PAID								
Purchased Inputs	123.2	129.6	145.5	152.2	186.7	216.1	235.1	314.2
Index of Purchased								
Consumer Goods Rural Areas	159.9	167.8	178.6	188.4	205.9	228.6	254.8	442.3
INDICES OF PRICES PAID								
Agricultural Sector	150.7	158.8	170.5	181.2	196.5	214.4	263.9	372.2
Terms of Trade	98.9	94.7	98.9	97.7	95.2	93.4	89.5	87.1

Source: Republic of Kenya, Economic Surveys, 1990, 1991, 1994.

The deteriorating terms of trade call for an effective policy to reduce the cost of inputs or ensure long-term output price increases in relation to the input prices. A key policy issue may be the foreign exchange policy since a large portion of inputs are either imported or manufactured using imported intermediate inputs while only coffee, tea and horticultural crops are exported and receive foreign currency.

### FERTILIZER PROVISION AND USE

All chemical fertilizers used in Kenya are imported because the country does not have her own fertilizer manufacturing plant. Only single superphosphate (SSP) is produced in a small amount (5000 - 6000 tons per year). The fertilizer is either obtained from world commercial sources or donor aid.

### Fertilizer Supply and Demand Situation

### *Fertilizer Supply and Distribution*

The Fertilizer imported in the country has varied between 200,000 to 350,000 metric tons per year since 1982. Of this amount, the share of donor aid fertilizer has been about 50 percent although this share has decreased dramatically in the recent past. For 1994/95 year, only Japan supplied aid fertilizer amounting to 15 percent of the total imports. The private sector including cooperatives and large commercial producers imports the rest. The aid fertilizer is procured by the Ministry of Agriculture through international tenders and sold by tender to private sector for eventual distribution.

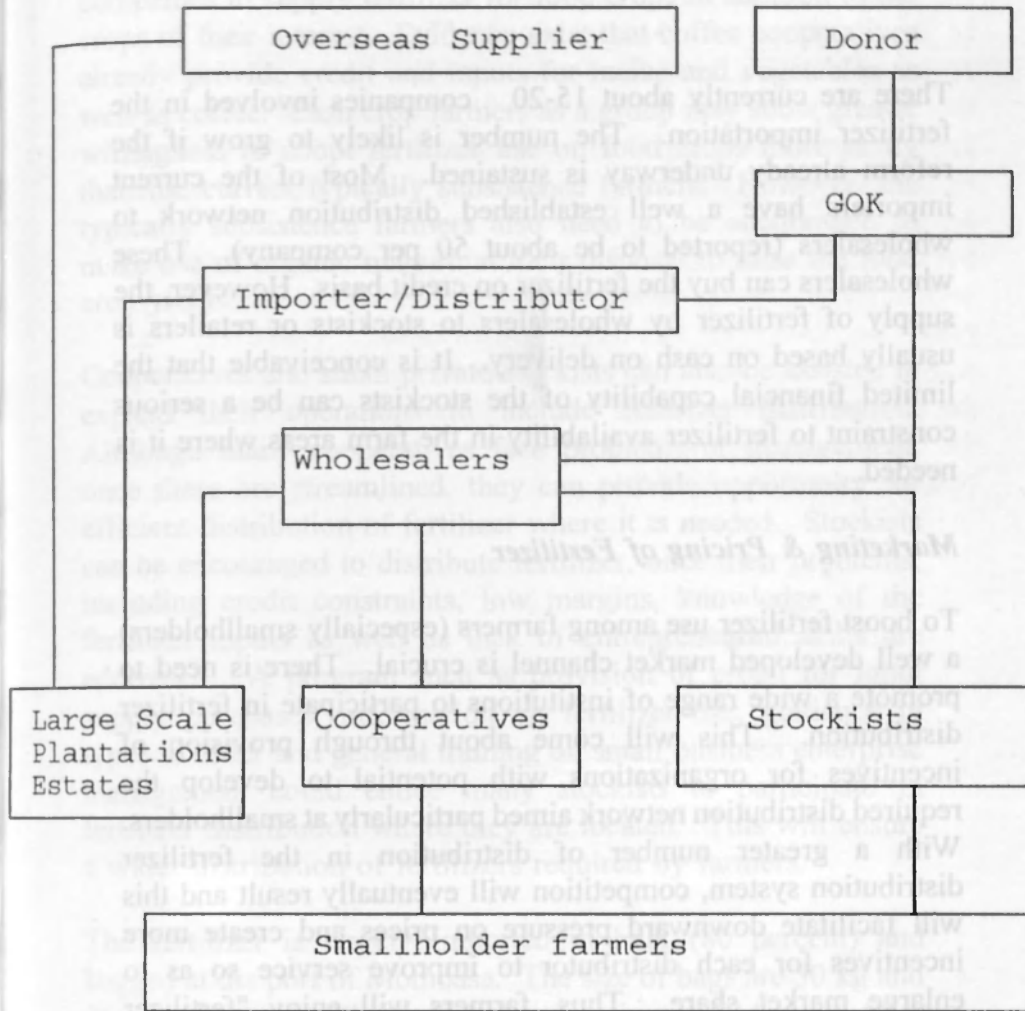
Upto 1989, the government under the assumption that control of the fertilizer market would lead to availability of the input to farmers exercised a tight control on quantities of fertilizer imported as well as the pricing. This policy in itself led to major constraints in effectively market the commodity to reach all the farmers in time. Therefore, after 1989, the government liberalized the importation of fertilizer but retained the role of monitoring the types and quantities imported. Price decontrol was effected in January 1990 while import licensing requirement was removed in November 1990. Private sector participation was boosted further following the liberalization of foreign exchange on all imports in 1993. Importers are now able to import any amount and types of fertilizer and sell them at their own prices. Similarly, the wholesalers, retailers and stockists can buy any amounts for sale and charge any price of their choice.

Fertilizer is now distributed by an array of commercial firms, parastatal marketing boards, cooperatives and small scale stockists (Figure 1). In the past Kenya Grain Growers cooperative Union

(KGGCU) was the main channel for aid fertilizer on the grounds that it had the most extensive distribution network. However, liquidity problems currently have rendered this organization ineffective in distribution of most inputs.



Fig 1: Fertilizer marketing and distribution system



There are currently about 15-20 companies involved in the fertilizer importation. The number is likely to grow if the reform already underway is sustained. Most of the current importers have a well established distribution network to wholesalers (reported to be about 50 per company). These wholesalers can buy the fertilizer on credit basis. However, the supply of fertilizer by wholesalers to stockists or retailers is usually based on cash on delivery. It is conceivable that the limited financial capability of the stockists can be a serious constraint to fertilizer availability in the farm areas where it is needed.

#### ***Marketing & Pricing of Fertilizer***

To boost fertilizer use among farmers (especially smallholders) a well developed market channel is crucial. There is need to promote a wide range of institutions to participate in fertilizer distribution. This will come about through provision of incentives for organizations with potential to develop the required distribution network aimed particularly at smallholders. With a greater number of distribution in the fertilizer distribution system, competition will eventually result and this will facilitate downward pressure on prices and create more incentives for each distributor to improve service so as to enlarge market share. Thus, farmers will enjoy "fertilizer security". If one distributor fails to provide service, the farmers will have several sources to turn to.

One way of involving more distributors in the distribution of fertilizer may be to encourage crop marketing organizations

such as Kenya Tea Development Authority, (KTDA), British American Tobacco (BAT), Kenya Breweries and horticultural companies to supply fertilizer for food crops in addition to the crops of their interest. Evidence exist that coffee cooperatives already provide credit and inputs for maize and vegetables as well as coffee. Cash crop farmers as a group may show greater willingness to adopt fertilizer use on food crops more easily than the current typically subsistence farmers. However, the typically subsistence farmers also need to be encouraged to make use of organic manure at their disposal to raise the food crop yields.

Cooperatives and small private stockists can also be assisted to expand their operations to include fertilizer distribution. Although many cooperatives face problems of management, once these are streamlined, they can provide opportunity for efficient distribution of fertilizer where it is needed. Stockists can be encouraged to distribute fertilizer, once their problems, including credit constraints, low margins, knowledge of the fertilizer inputs as well as lack of entrepreneurial skills are addressed. A program such as provision of credit for input supply purchases, information on fertilizer use, guidance in types to order and general training on small business enterprise management could entice many stockists to participate in fertilizer distribution where they are located. This will ensure a wider distribution of fertilizers required by farmers.

The fertilizer is largely imported in bulk (80 percent) and bagged at the port of Mombasa. The size of bags are 50 kg and 25 kg. At the distribution level, rebagging of 10 kg quantities is sometimes encouraged. Rebagging to even smaller quantities is undertaken by the stockists which creates room for adulteration and loss of clear identity of the fertilizer.

The quality control of the fertilizer reaching the farmers should be made strict and supported by *effective* legislation. Currently, the Rules and regulations pertaining to fertilizer are contained in the fertilizer and Animal Feedstuff Act (Cap 345) last reviewed in 1977. Since the fertilizer market is now liberalized, the Act needs review with a view to protecting stockists and farmers against unscrupulous businessmen especially regarding reimbursement of purchased fertilizer by farmer/stockist where the quality is disputed.

Fertilizer prices are currently not controlled. It is expected that with more importing companies being involved in the market, price are likely to be forced downwards. However, the fertilizers prices are sensitive to international energy prices and the foreign exchange policy the country adopts. Table 2.1 gives the price trends for the DAP fertilizer at Mombasa, Nairobi and Nakuru from 1991 to 1994.

TABLE 4: Distributor Price for DAP (per ton) at Three Stations (1991/94).

Year	Mean Exchange	Mombasa	Nairobi	Nakuru
Feb 91	27.43	7,403	8,052	8,202
Jun 91	28.65	8,140	8,625	8,742
Dec 91	28.07	8,790	9,400	9,560
Feb 92	29.80	9,000	10,700	11,300
Jun 92	32.20	9,600	11,000	11,600
Dec 92	36.21	9,800	11,200	11,800
Feb 93	36.63	15,500	16,300	16,900
Jun 93	65.00	17,600	19,000	19,600
Dec 93	68.74	19,000	21,000	21,600
Feb 94	67.50	21,800	24,000	24,800
Apr 94	63.90	18,400	20,800	23,000
Jun 94	56.45	18,000	20,800	21,400

Source: Schnier, H.F. (1995)

Both rail and road transport are used for distributing fertilizer from the port. Although road transport is cheaper, by almost 30 percent per unit, bulk transportation is facilitated by rail, if sufficient wagons exist. Value Added Tax is charged on transportation and ideally that should be waived. Transport cost takes about 30 percent of the share of the price of fertilizer. The margins are estimated to be 6-10 percent for imports, 4-8 percent for distributors and 2-6 percent for stockists.

#### *Aid Fertilizer and National Fertilizer Supply*

With almost 50 percent of fertilizer in the market occasionally coming through donor aid one would expect the private fertilizer traders to be affected adversely if the inflow of aid fertilizer is not harmonized. It is usually difficult for private importers to plan on imports, sales and target customers when the quantity, timing and type of aid fertilizer to be imported is unknown to them. Donors vary in the conditions and pricing of their aid fertilizer. Sometimes they donate any type of fertilizer irrespective of the country's specific urgent requirements for

fertilizers. Donors therefor will help the country by ensuring that the country's commercial fertilizer importation and distribution is not adversely affected through their action. Decisions on aid fertilizer should be made jointly with the relevant participants in the fertilizer market.

### **Fertilizer Consumption**

#### ***Consumption Trend***

The trend in fertilizer consumption since 1985/86 has varied from 228000 tons in 1990/91 to a peak of 285000 tonnes in 1993/94. The drought year of 1984/85 recorded the lowest use, (174000 tonnes). Table 5 shows levels of consumption of various types of fertilizer over the last 10 years. The peaking of fertilizer use in 1993/94 may be attributed to favourable weather conditions for crop production, improved prices of coffee generally lower fertilizer prices as well as relatively improved availability of fertilizer. The relative declines in some years were caused either by inflation or severe decline in coffee prices.

Table 5: Consumption of Various Fertilizer Types 1984/85-93/94

Product	Thousand Product Tons									
	84/ 85	85/ 86	86/ 87	87/ 88	88/ 89	89/ 90	90/ 91	91/ 92	92/ 93	93/ 94
DAP	47	63	64	77	81	81	73	80	66	76
MAP	5	3	1	4	3	4	8	5	12	10
SA	11	11	3	4	12	2	3	9	0	6
ASN	3	5	8	4	12	17	11	6	3	4
Urea	12	16	9	14	16	6	19	9	15	20
CAN	21	42	48	31	39	36	22	28	32	36
SSP	2	4	4	3	0	0	0	0	0	3
TSP	10	10	8	6	6	3	7	7	1	3
20-20-0	17	15	18	28	23	12	3	3	7	24
25-5-5+5 S	22	32	36	38	52	52	59	59	55	41
20-10-10	13	28	23	15	12	14	8	8	8	21
23-23-0	0	0	0	0	2	4	24	24	9	20
17-17-17	4	3	5	5	5	1	9	9	11	2
15-15-6	2	0	0	2	1	0	0	0	0	1
6-18-20	2	0	1	1	2	2	0	0	0	2
MOP/SOP	2	3	1	4	3	2	0	0	2	4
Others	1	2	0	5	2	2	5	5	13	10
<b>Total</b>	<b>174</b>	<b>237</b>	<b>229</b>	<b>241</b>	<b>271</b>	<b>238</b>	<b>228</b>	<b>252</b>	<b>234</b>	<b>285</b>

Source: MOALD&M

Available reports indicate that fertilizer consumption during the last decade was characterised by persistent and serious imbalances in the nutrient mix. The imbalance could be attributed to the excessive use of DAP fertilizer which was readily available (thanks to aid fertilizer). Most farmers usually apply DAP at planting but do not top dress their crops with N at later stages. Therefore relatively less N is applied. It is reported that most soil in Kenya is low in available P, so that adequate P fertilizer application is needed but not at the expense of N. Although currently most Kenyan soils have sufficient amounts of K, continuous cropping with no K application will deplete the soil of that nutrient. Awareness needs to be created on the dangers of soil nutrient mining. This will prevent soil nutrient deficiencies in the long term. Farmers should strive to maintain the present K levels in the soil.

Once the farmers know the kind of balanced nutrient mix needed for their crops, the free market is expected to supply the *needed* inputs. Action should then be geared towards strengthening extension and promoting competition in the private sector to increase the availability of the right fertilizer type.

#### ***Use of Fertilizer by Crops and Region***

The pattern of fertilizer use in Kenya is characterised by concentration on major cash crops and certain high potential geographic area. There is also a divergence between large and small scale farms.

About 74 percent of the nitrogen is consumed by coffee, tea, sugarcane, cereals, potatoes, horticultural crops and large scale commercial maize production. This leaves only 26 percent of SN for small scale maize and all other subsistence crops. The extent to which the farmers have commercialized influences the level of fertilizer use. Farmers enjoying good market integration and therefore efficient market networks use more fertilizer than other farmers. Areas where smallholder producers of tea and coffee have access to well established commercial networks such as cooperatives, sometimes record relatively high levels of input use. Areas in Western, Eastern and Coast Provinces where market integration is weaker use relatively less fertilizer. Action is needed in improving the infrastructure in the hitherto disadvantaged areas to improve access to fertilizer input.

#### ***Crop Response to Fertilizer Application***

The Fertilizer Use Recommendation Project (FURP) has thoroughly tested fertilizer requirements of important crops at 64 representative sites in various agro-ecological zones of



Kenya. The results, published in 1994 show the following:

Yield increases for maize in the long rains ranged between 12 percent to 261 percent above the control (no fertilizer), with an average of 73 percent depending on soil organic matter content and initial yield level. On the average, agronomic optimum fertilizer rates for maize were in the order of 75 kg/ha and higher for N and 65 kg/ha for  $P_2O_5$ . These responses to fertilizer application assume that all the other crop husbandry practices such as improved seed, timely planting, optimum plant density (population) timely weeding and crop protection have been taken care of. Applying fertilizer without these relatively less costly measures by the farmer will not yield optimum benefits to fertilizer use.

#### **Economics of Fertilizer Use**

For maize, the FURP used the 1994 prices to show fertilizer use is profitable. Using Ksh. 73/kg N (CAN); Ksh. 54/kg  $P_2O_5$  (TSP) and Ksh. 10 per kg maize, this gave input/output ratio of 7 and 5.4 for N and  $P_2O_5$ , respectively. Using the agronomic efficiency (which measures kg of product produced per kg of nutrient applied) of 17.7 for N and 14.2 for  $P_2O_5$ , respectively and assuming that fertilizer application is done by family labour at no cost, the average value - cost ratios would be 2.5 for N and 2.6 for P application. Usually, it is recommended that a Value - Cost Ratio of 2 is necessary to make use of a technology profitably. Therefore, so long as favourable relative (input/output) prices are maintained, the farmer will be assured of a good return. Farmers therefore need assurance on the minimum floor price for the product if the return to the enterprise is to be attractive. This includes ensuring timely payments for the product without which the inflation wipes out the possible attractiveness of prices. Awareness also need to be created for farmers to base their application and cost on a per

nutrient rather than per bag basis. This is because returns from the same weight of different fertilizers vary.

### **Existing gaps Between Actual and Recommended Application Rates**

Available reports indicate that gaps vary by region and crop. For maize, present levels vary between 5 percent recommended rates in Nyanza Province and 50 - 60 percent in Trans Nzoia District. For cash crops, the gap is much less. Action needs to be taken to promote fertilizer use in the areas currently recording low use.

### **Factors Constraining Fertilizer Use**

These can be discussed under supply and demand factors although the factors are interlinked.

#### ***Supply Factors***

Underdeveloped supply channels provide the greatest constraint to fertilizer use from the supply side. Where supply networks are adequate, there is usually a marked level of consumption of fertilizers. Similarly where the cash crops have been promoted at the expense of food crops, evidence of higher fertilizer consumption exists. Since these cash crops have been managed by some parastatal authority, the cost to the farmers using fertilizers from the parastatal appear reduced. Regions with poor infrastructure, weak cooperative arrangements and limited market integration record low fertilizer use.

Where market channels are well developed, supply disruptions emerge as important constraints. In the past, regulations on imports and repeated shortages due to late arrivals, wrong types translated in low fertilizer use at the local and national levels

hence reduced production. Stable fertilizer supply and attractive output prices seem to be critical in adoption and continuous use of fertilizer. Credit availability for stockists could be an important constraint to fertilizer availability. Small stockists or retailers buy limited stocks on account of impassable roads from main towns and shortage of cash. Improved supply can be realized by enhancing the capability of the retailers to stock adequate and the right types of fertilizer in current sizes of packages.

#### *Demand Factors*

Awareness of the right types of fertilizers, method of application and the benefits are the key demand factors which constrain use. Weak extension services, lack of printed information on fertilizer packages or leaflets and lack of fertilizer promotion through the media and trained stockists contribute to the farmers lack of knowledge.

The subsistence nature of production in many smallholder farms stand on the way to increased use of fertilizer. Many maize farmers tend to grow it for consumption rather than for commercialization. There is some risk factor involved. Given the lack of knowledge of fertilizer benefits, and the low level of husbandry standards, farmers perceive increased costs as likely to outweigh the benefits. Combined with the unreliable rainfall the farmers prefer to insist on subsistence production with no purchased inputs.

Farmers familiar with the benefits of fertilizer use will not use it on account of low returns to the use of fertilizer. Returns are affected by the level of husbandry and the relative input/output price. Government should give guidelines as to the minimum farmgate floor price given the cost of production using fertilizer. This presupposes that dumping of maize is

discouraged in the local market from the overseas markets.

### **Recent Notable Changes in the Fertilizer Market**

Several changes have occurred in the fertilizer subsector regarding the institutions involved.

- The Kenya National Fertilizer Association (KNFA) has been formed and some of the fertilizer allocation responsibilities shifted away from commodity aid allocation and monitoring committee.

- The inputs unit with the Ministry of Agriculture, Livestock Development and Marketing has been elevated into a Branch, strengthened given more autonomy under the Director of Agriculture. It has now direct field linkage through the District Farm Inputs Officers.

- The National and district Fertilizer Development Committees have been formed. Their intention is to create a forum for exchange of ideas and issues on fertilizer by all the players including: farmers, administrators and technical officers.

- The intended shift of fertilizer responsibility from Ministry of Finance to Ministry of Agriculture & Livestock Development is a notable change. Treasury continues to provide liaison with donors and managing counterpart funds where applicable.

### **Recommendations**

The following interventions are necessary in order to encourage fertilizer use in Kenya:

- There is an urgent need to improve the financial returns to fertilizer use. This can be done through (i) increasing the agronomic (physical) response to fertilizer; (ii) lowering the real cost of fertilizer to the farmer, and (iii) increasing the real output prices.

- Promotion of improved crop husbandry standards is

necessary for increasing the agronomic response. The extension service should continue to emphasize this message.

- Strive to lower marketing costs of fertilizer through improved marketing efficiency and promoting high analysis fertilizers. This will lower the real cost of fertilizer to the farmer (aside from subsidy), which is not recommended. It will help if the Value Added Tax (VAT) on transport of fertilizer could be waived.
- The real prices which farmers receive should be considered. Late payment for products have decreased farmers' real returns in the past. They erode the real price for farmers and decrease the economic incentives for fertilizer use.
- Research needs to be done geared towards providing answers to smallholder problems and investigating constraints to inputs use. This will be important in encouraging fertilizer use. There is need to carry out research to investigate reasons for the large inter-district variations in fertilizer use.
- Alongside financial incentives, supply side factors require equal attention from policy makers. There is need to initiate a more active promotion of fertilizers: radio and news paper features, training of stockists and agents, more widespread use of printed information material.
- There is need to establish a 'National Fertilizer Secretariat' operated by both the public and the private sector. Such a secretariat would gather all relevant information on the local and international fertilizer market. The private sector should be prevailed upon to provide all statistics on imports.
- The Kenya National Fertilizer Association (KNFA) should strengthen its role to address more aggressively the problems and challenges in promoting fertilizer use

in the country. A review of fertilizer legislation is necessary, now that the fertilizer market has been liberalized and farmers and stockists need protection.

### SEED PROVISION AND USE

#### Historical Perspective

Kenya's experience with production and distribution of improved seed (especially maize) spans almost three and half decades. Originally the marketing of hybrid maize seed was targeted to large scale commercial farmers but Kenya Seed Company (KSC) working through the extension service and a wide network of small shopkeepers soon managed to interest smallholders to purchase the seed. By 1966, over 50 percent of the large farms used hybrids while by 1967 over 50 percent of the seed maize sales went to small farmers. By 1975 half of all maize farmers in high potential areas east of the Rift used hybrids. With the introduction of composites and drought resistant varieties (Katumani maize) use of improved seed expanded its coverage to the medium-potential and marginal areas. Estimates show that currently, approximately 60 percent of the maize hectareage is planted with hybrids and improved seed. Gerhart (1975) found that virtually all farms in favourable climate zones used hybrid maize seed. Adoption of hybrid seed depend on demonstrated good economic returns to its use, good communication networks including road infrastructure, shopkeepers and motivated extension workers. Table 6 shows the record of acreage planted to maize seed, output, yields and sales since 1963.

**Table 6: SEED MAIZE PRODUCTION, ACREAGE AND SALES WITH ANNUAL AVERAGE YIELDS**

Year Planted	Acres	Total Output KGS	Ave. Yld KG AC	Sales Year	Sales KGS
-	-	-	-	62/63	3,640
1963	322	299,000	929	63/64	234,000
1964	517	699,000	1352	64/65	677,635
1965	1,315	1,077,000	819	65/66	920,470
1966	3,067	4,157,000	1355	66/67	2,283,975
1967	1,742	2,422,000	1390	67/68	1,972,820
1968	1,225	1,549,000	1264	68/69	2,331,350
1969	2,292	2,993,000	1306	69/70	3,207,780
1970	4,282	5,612,000	1311	70/71	4,799,360
1971	6,395	8,128,000	1271	71/72	6,287,025
1972	7,900	8,718,000	1104	72/73	7,141,385
1973	8,852	9,536,000	1077	73/74	7,447,355
1974	9,110	11,058,000	1214	74/75	9,047,205
1975	10,980	15,738,000	1433	75/76	10,699,875
1976	13,122	15,169,000	1156	76/77	12,223,965
1977	14,210	22,731,000	1600	77/78	10,921,890
1978	11,040	13,473,000	1220	78/79	9,192,430
1979	6,792	9,385,000	1382	79/80	13,073,245
1980	11,815	15,661,000	1326	80/81	12,197,230
1981	17,902	22,451,000	1254	81/82	13,482,320
1982	12,640	16,436,000	1300	82/83	13,013,365
1983	10,510	14,074,000	1339	83/84	15,484,725
1984	11,962	14,243,000	1191	84/85	16,854,690
1985	16,410	22,702,000	1383	85/86	20,696,362
1986	19,822	25,123,000	1267	86/87	20,430,719
1987	22,437	23,687,000	1056	87/88	21,833,922
1988	22,269	27,581,700	1239	88/89	22,057,595
1989	16,174	22,228,900	1374	89/90	17,228,863
1990	12,088	15,779,878	1305	90/91	19,623,957
1991	13,799	18,826,712	1364	91/92	21,608,262
1992	14,826	14,788,884	997	92/93	19,273,771
1993	21,111	15,983,932	757	93/94	17,658,702
1994	22,599	19,500,000	863	94/95	20,424,607
1995	27,463	-	-	-	-

Source: Kenya Seed Company

It is clear that the production and adoption of hybrid seed has been sustained over the years, although in the recent past, decline in yields has been evident. (Figure 2).

policy, training program, and provision of infrastructure.

**Table 2: Constraints and their Order of Importance by Participant Constraint and Indicative Order of Importance**

**Table 2: Constraints and their Order of Importance by Participant Constraint and Indicative Order of Importance**

Participant (Existing & Potential)	Inadequate Financial Resources	Inadequate Market Information	Lack adequate Managements & Tech. Skills	Lack of Policy Awareness & Preparedness	Infrastructure & Organizational Problems
Small Farmers	1	2	4	5	3
Large Farmers	1	2	3	5	4
Farmer Groups Organizations	1	2	4	5	3
Coop. Unions and Societies	1	4	2	5	3
Millers (Sifted)	3	1	4	2	N/A
Posho Millers	1	3	4	5	2
Traders	1	3	2	4	5
Transporters	1	4	2	3	5

Source: (Ref.6)

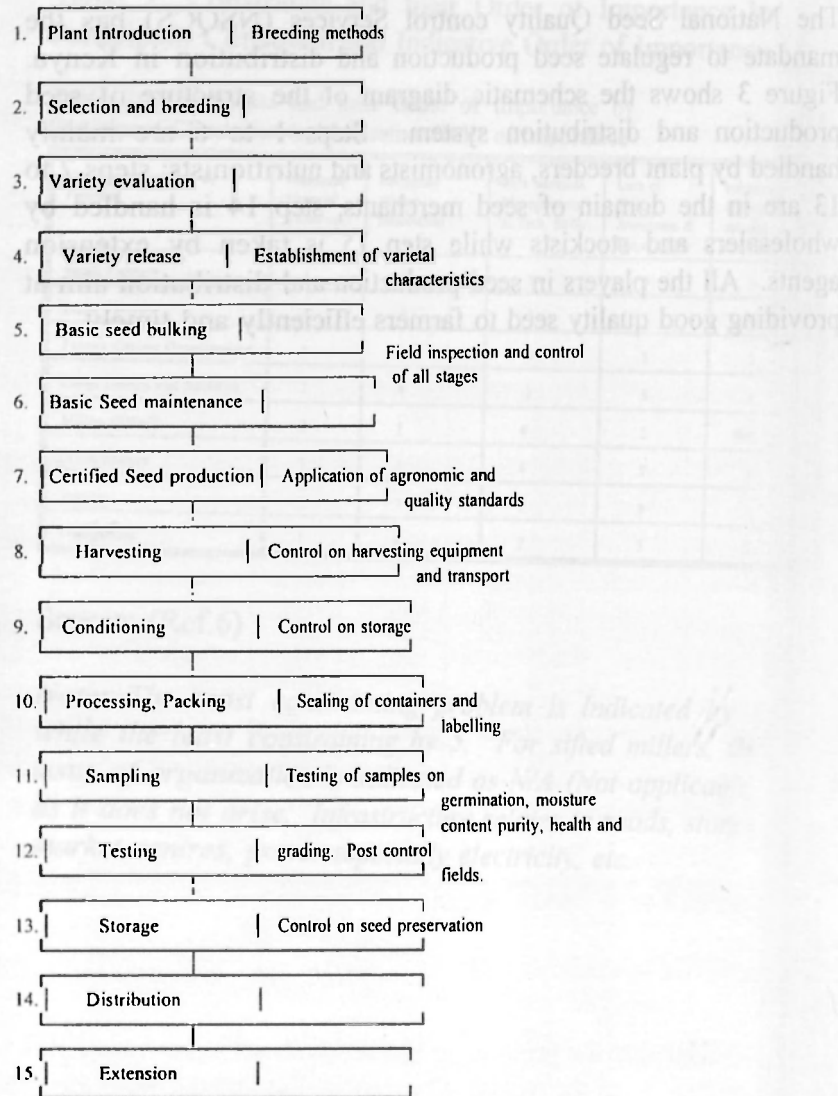
**Note:** The most constraining problem is indicated by 1 while the least constraining by 5. For sifted millers, the issue of organization is indicated as N/A (Not applicable) as it does not arise. Infrastructure relates to roads, stores, market centres, power especially electricity, etc.



### The Structure of Seed Production

The National Seed Quality control Services (NSQCS) has the mandate to regulate seed production and distribution in Kenya. Figure 3 shows the schematic diagram of the structure of seed production and distribution system. Steps 1 to 6 are mainly handled by plant breeders, agronomists and nutritionists; steps 7 to 13 are in the domain of seed merchants, step 14 is handled by wholesalers and stockists while step 15 is taken by extension agents. All the players in seed production and distribution aim at providing good quality seed to farmers efficiently and timely.

Fig. 3: Schematic diagram of seed production in Kenya and the role of the National Seed Quality Control (NSQCS)



Although there was rapid development of maize hybrids between 1960 - 1980, progress in genetic research on maize has stagnated over the last decade. The reason given for this stagnation is lack of funding. For instance, no new maize hybrids have been produced since the variety H626 was released in 1989. Action is needed to strengthen research to keep pace with the demand for high yielding maize variety.

At present, there are 16 registered seed companies responsible for seed multiplication. Kenya Seed Company is the largest with responsibility for seed maize production. It was a private company prior to 1976. After 1976, the government through Agricultural Development Company (ADC) assumed a majority share 52 percent. Other shareholders became KGGCU, farmers and KSC staff. The parastatal regulation which KSC has to adhere to has led to financial and managerial problems which consequently lead to deterioration of seed supply services. KSC grows basic seed maize at its Elgon Down farm. Certified maize seed is mainly produced by ADC (about 40 percent) and individual contracted farmers (about 40 percent) while the remaining 20 percent is produced by smaller companies. Due to gradual break-up of large farms, there are fewer farmers meeting the criteria for seed production, especially isolation of seed fields. The trend may lead to deterioration of seed quality.

Seed processing is done under supervision of NSQCS staff at the KSC facilities. Very often seed is rejected on account of poor quality because of poor harvesting techniques. Also, despite the availability of facilities, quality deterioration results from poor

drying methods and inadequate storage. Lack of prompt transport and drying lead to damage of seed. The NSQCS are also constrained in several ways. Only about 50 inspectors are available countrywide. Considering the services they have to perform including monitoring of seed stockists, the present number is clearly inadequate. Insufficient operational funds and transport facilities hamper their activity. Fees charged for various services are too low to recover the cost of providing the service. Due to dependence on seed merchants to provide transport and other facilities directly, the integrity of inspectors may be compromised. Moreover, they lack recognition and protection by law. They are not gazetted to execute their duties as provided by the law. NSQCS is a subcentre of Kenya Agricultural Research INSTITUTE (KARI). While the Act gives regulatory responsibility to Ministry of Agriculture NSQCS therefore lacks independence and is subjected to regular interference in its role. It therefore appears that NSQCS is inadequately equipped to cope with the expected tasks. Action is needed to strengthen it if seed quality available to farmers is to be improved.

### **Seed Marketing and Distribution**

Currently, there is an elaborate marketing and distribution network established by KSC and its subsidiaries. Distribution has been through the main agent KGGCU, the sub agents mainly cooperative societies and a network of almost 4000 stockists. In the recent past, KGGCU has failed to meet its full obligation for seed distribution due to liquidity problems. In 1994 for instance, when a substantial amount of maize seed disappeared (probably smuggled out of the country) causing shortage, the government directed that KGGCU should take full responsibility for distributing seed.

However, since KGGCU could not buy seed from KSC on credit basis, it could not distribute any seed. To fill the gap, seed stockists were required to register with District Agricultural Officers and be the distributing agents. This rearrangement has in some cases lead to lack of seed at planting due to inability of stockists to command sufficient capital to acquire the needed seeds.

#### *Timely Availability of Seed*

Currently there are about 4000 seed stockists in the county providing an extensive seed distribution network. This network has facilitated availability of certified maize seed to the farming community. Despite the above advantage, seasonal scarcity of certain varieties have been experienced in the past. The coastal region has been the major victim, reasons being lack of sufficient cold storage facilities at the coast. Seed quality deteriorate rapidly in the hot and humid climate if cold storage is not provided. To solve this problem, the Provincial director of Agriculture at the Coast is now responsible for liaising with KSC to get the seed delivered in good time. Other problems which have affected the availability of seed are: the diversity of Kenya's agro-ecological zones and the overlap in some cases. This means that more than one variety may be recommended. During low rainfall periods farmers demand more of the early - maturing varieties (II511) and sometimes Katunani composite. These shifts in demand for various varieties due to seasonal changes (drought) present a serious challenge to seed producers and merchants.

The Government needs to review the whole question of seed availability with a view to stabilizing the system. One way of stabilizing the seed supply situation is to establish a national *seed*

*reserve*, coupled with improved forward planning to respond to cases such as drought. Because Kenya is a supplier of improved seeds to several neighbouring countries, a combined national and regional seed reserve appears logical. Moreover, a strong case can be made to donors to support a regional strategic seed reserve since already they are usually the major purchasers of the Kenya seed for export to other countries in the region. Liberalizing the seed sector by allowing more companies to produce maize seed may be another strategy. This will spread the risk from concentrating production in one company and in one area of the country. Since dependence on seed from abroad is untenable due to the ecological conditions, a deterioration in supply due to possible problems in KSC is potentially disastrous for Kenya's food security. Review of the parastatal status of KSC and allowing it to operate as a private company as before with a strengthened NSQCS is desirable.

### ***Quality of Seed***

In the recent past, complaints on the quality of seed material available in Kenya have been on the increase. The complaints vary from poor germination (in some cases less than 10 percent) to impurity, disease infected materials and unfavourable plant characteristics. Problems include genetic degeneration (genetic drift) and varietal mixtures. Multiplication of seed is sometimes contracted to unqualified farmers whose fields are side by side with commercial production fields. In some cases, fields are not inspected by the NSQCS. Experts in the fields estimate that about 35 percent of maize seed produced by KSC is contracted to farmers who lack the qualification for seed production.

Seed quality may also be affected by shortage of adequate packing

materials. It is reported that, due to shortages of small bags (2 kg) to pack maize seed, KSC may opt to use 25 kg bags to pack maize seed. The distributors open the 25 kgs packs and repacks the seed in small paper bags without proper labels and seal. During this process, seed materials are tampered with. It is also a common practice to find seeds of unknown origin packed in bags with no labels. To make the matter worse, there have been cases of rejected uncertified maize seeds being sold as seed for planting to unsuspecting farmers.

Due to inadequately equipped NSQCS, concentration on quality control has been confined to seed multiplication. Little control is effected at the seed processing level or seed marketing and distribution. As a result, seed reaching the farmer may not reflect what left other grain. Poor storage conditions of seed during marketing, poor handling of seed by retailers are other reasons for deterioration of quality. Overstocking of seed also leads to large carry-over stocks which if poorly stored lead to low quality of seed. Action is needed to strengthen NSQCS and educate stockists on proper handling of seed to maintain good quality.

### **Seed Maize Pricing**

The price review for seed maize is done regularly although the last one was in 1993/94 financial year. Usually, the recommended price structure is arrived at after consultation between KSC, ADC and the Ministry of Agriculture. The KSC and ADC base their price proposal on the cost of production, including VAT on some items as spares and packaging material. Table 7 shows the elements usually included in arriving at the cost of the seed and subsequently the recommended retail prices. It is evident that costs

of seed can be reduced if the administrative, and marketing functions can be made relatively more efficient.



**Table 7: COMPARATIVE COSTINGS FOR SEED MAIZE FOR THE PERIOD 1992/93-94/95**

	1992/93 cost Ksh per 100 kg	1993/94 cost ksh per 100 kg	1994/95 cost Ksh per 100 kg
<b>A) Raw Materials</b>			
Price paid to grower	1952	2582	2582
Drying costs borne by KSC			
Cost of gunnies	11.48	8.33	8.33
<b>B) Processing Costs</b>			
Fumigation	1.20	1.26	1.26
Dressing	58.26	318.63	318.63
Packaging	115.95	137.10	137.10
Sealing	6.60	6.60	6.60
Seed losses (2 percent)	39.04	51.81	51.81
<b>C) Administrative Costs</b>			
Interest for 10 months	373.06 (25%)	431.72 (20%)	431.72 (20%)
Storage	0.91	10.85	10.85
Company overheads	800.80	1174.84	1174.84
Transport on sales	50.40	99.40	99.40
<b>D) Total Cost</b>	<b>3409.70</b>	<b>4822.54</b>	<b>4822.54</b>
<b>E) Pre Tax Profit</b>	<b>852.43 (25%)</b>	<b>945.51 (20%)</b>	<b>946.51 (20%)</b>
Proposed selling price per 100 kg	4262.03	5787.04	5787.04
Proposed selling price per 10 kg	426.21	578.70	578.70
Current selling price	209.00	421.00	450.00
<b>COUNTRY WIDE STRUCTURE</b>			
KSU to KGGCU price/10 kg	427.00	450.00 (576/-)	450.00
KGGCU to SUB AGENTS	435.00	460.00 (591/-)	460.00
SUB AGENTS to STOCKISTS	445.00	470.00 (603/-)	470.00
RETAIL PRICE	463.00	485.00 (615/-)	485.00

NB: The figures in bracket show the countrywide price structure as proposed by the seed company for 1993/94 financial year. However, following consultations with the Government the current country wide price structure was

adopted after compromises between KSC and ADC.

Source: ADC, (1992).

### **Economics of Improved Seed Use**

The economic return to improved seed use depend heavily on the extent to which good crop husbandry is practised. Available reports show that with good crop husbandry the value cost ratios for using hybrid maize range between 13 and 32! This is clearly appealing. For composites such as Katumani and Coast Composites, yield increases are less but are still very attractive. The rapid adoption of hybrid maize production in Kenya probably is associated with farmers' recognition of the high returns to hybrid maize seed use. The government should strive to maintain high quality seed available to farmers and at the same time educate farmers to adopt other recommended husbandry practice so as to increase yields beyond the current low national average of 1.8 tons/ha. This will ensure attainment of food security which is the primary aim of policy.

### **Recommendations**

The following recommendations are proposed towards enhancing the availability of high quality seed in Kenya:

- There is need for the Government to establish more seed production companies instead of solely relying on KSC. This will be a major move towards greater seed security.
- The parastatal status of KSC company should be reviewed by the Government with a view to making it operate as a private company as before but with a strengthened NSQCS.

Certification fees should be included in the operational budget in order to cover the certification costs by NSQCS. It may also be necessary and justifiable to revise these fees upwards since it affects the seed price only minimally and the seed price does not seem to affect, in a big way, the farmers profit margin.

Establishment of a strong seed variety research program to accommodate all agroecological regions is desirable. Public and the private sector should implement this recommendation.

Encourage private companies to get involved in breeding and maintenance programs. Basic seeds of all varieties be provided to the private sector, on payment. These should include maize developed by public institutions such as universities.

Credit be made available at affordable interest rates for establishment of seed production infrastructure.

There is need to allow registration of new competent seed companies without discrimination. Similarly, the application fees to be paid by seed sellers (gents, sub-agents and stockists) is not healthy and discourages the development of the private sector. It should be discouraged.

All released improved cultivars be described and documented in accordance with the proposed plant breeders' rights regulation.

The government needs to consider establishing a national seed reserve to serve its needs as well as export to the region.

There is immediate need to implement the seed regulations

- regarding seed marketing including expiry dates on seed packages as provided in seed regulations
- Encourage seed merchants to establish strong marketing structures and register for licensing all their agents, sub-agent and stockists.
  - Extension staff of MOALDM should educate the farmers on the sources of good quality seed and monitor quality by ensuring that seed containers are not opened and tampered with.

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## SECTION VI

### SEMINAR DISCUSSIONS

#### **1: Agricultural Policies**

This theme was devoted to giving an overview and analysis of various agricultural policy issues, including macro policy analysis. An opportunity was provided for the participants to test knowledge and skills acquired by doing an exercise in small-group decision making. The first three sessions also provided a framework for most issues raised in Ms Chemengich's paper during day 1 session four. It was noted that policy analysis was a way of thinking and although analytical economists are trained to use it in detail, most individuals both at the MOALDM and university were conversant with the issues.

#### **2: Macroeconomic Policies**

Group reports on cabinet decisions were presented with the rest of participants being the audience clamouring. The policy decisions arrived at by the five countries were extensively similar. All the five countries opted to float their exchange rates and maintain the parallel market but at

a reduced premium. Whereas it was acknowledged that the decisions would lead to cheaper exports and an increase of inflation; the need to adjust slowly and maintain central bank reserves greatly influenced the decisions.

A historical experience with Macroeconomic Policy in Sub-Saharan Africa was presented. The main issues discussed included Economic Growth, Long-term Macroeconomic Management, Short-term Macroeconomic Stabilization and Exchange Rate Policy. Economic Growth was noted to have four major components; extensive growth, intensive growth, utilizing existing resources and exploiting international comparative advantage.

In the area of Long-term Macroeconomic Management and Short-term Macroeconomic Stabilization, it was noted that, the principal lessons were 'the importance of the government maintaining its overall fiscal balance in the long term' and 'the importance of correctly discerning whether external shocks are temporary or permanent, respectively. In assessing both Fixed and Floating Exchange Rates, it was pointed out that 'in theory, no ultimate difference exists but only in the adjustment process to a new equilibrium'.

### **3: Economics and Politics of Public Enterprises**

The discussion was based on experience of twelve countries, categorised into good State Owned Enterprise (SOE) Performance, Mixed SOE Performance, Poor SOE Performance and Transition Economies. The indicators of

performance were; State enterprise financial returns, State enterprise productivity and State enterprise savings-investment deficit. The presentation ended with a discussion of a Decision Tree, assessing whether a country was ready for SOE reform or not and the type of issues to examine.

Experiences of Ghana and Ethiopia on SOE reform was shared. Ghana had poor experience with the reforms, mainly due to low value of the SOE and their poor location. There was also lack of transparency in the way SOE were being sold. On the other hand, Ethiopia's experience with SOE was noted as recent, dating back to 1994. However, since 1993 when the government started implementing Structural Adjustment Programmes (SAPs), the government has established an agency responsible for privatizing SOE. The SOE have to compete with other private sector organizations and subsidies are being reduced or removed. The financial sector has also been opened for the private sector and more banking and financial institutions are being established.

#### **4: Policy Analysis Matrix**

Participants were introduced to PAM as a conceptual framework. It was noted that the framework uses some basic concepts in economics and farm management. It is also used for organising information at the microeconomic level, determining prices, and qualitatively measuring the impact of policy on certain commodities.

Details of PAM was given, showing different effects of



policy when variables change. Cases were shown where policies were formulated in a manner making the system unprofitable and in some cases policies were enhancing the private sector, whereas the social sector was suffering. The latter is useful for equity distribution. After giving two examples of how the model operates, participants did an exercise and reported.

Issues relating to data collection for PAM Analysis were also discussed. Participants were informed that in order to undertake a PAM analysis, one needs to collect a lot of raw data. It was expensive to collect data and normally, the PAM team begins by looking at secondary data from all sources.

When collecting raw data, the team relies on expert observers, such as the DAOs and inquires about farming commodity system. Once such baseline information is gathered, the team gets down to interview farmers, using a checklist. This is conducted with individual farmers and through focus group discussions.

PAM team have acknowledged the fact that policy issues in agriculture are not only at the farm level but also off (post) farm activities. Such activities, for example transport and power affect agriculture and have to be considered when calculating cost. It was observed that in Kenya, farmers, for example sugar cane farmers, are often paid the same price by weight irrespective of location. This was attributed to the operations of the public sector, contending that, it would not be the case if the private market was handling the

commodity.

### **5: Public Sector and Institutional Economics**

An overview and framework within which to understand the roles of both the public sector and institutions was presented. It was noted that the two are related and are important for understanding economic behaviour. In the economy there are different kinds of goods and services, which can be grouped into three categories; Subtractability, Excludability and Voice.

Three different allocation mechanisms for the above goods and services were listed as; hierarchy, market and participation. Hierarchy was noted to be a characteristic of government and other larger organizations. It is characterised by command and control from top to bottom. Market was indicated as a characteristic of the private sector, involving voluntary, impersonal exchanges of goods and services between buyers and sellers. Participation was characteristic of the non-profit sector, characterised by collective decision making based upon rules and procedures that are either written down or generally accepted. The three sectors were noted to have different motivations and comparative advantages.

The participants were exposed to macro and micro-level institutions, the market, participation and hierarchy as allocation mechanisms and their failures. The role of the public sector and institutional economics and the efficient

provision of different kinds of goods and services were also discussed.

The groups were given an assignment on efficient provision of agricultural research services in Kenya. The exercise was aimed at applying skills and knowledge gained during session two and three. Participants were to establish a legal and regulatory framework that will maximize the involvement of the private and non-profit sectors in the agricultural research in Kenya. They were also to concentrate on public sector research resources only on those research activities that the other sectors will not undertake.

Group assignments were presented and discussed. At the end of the reports another assignment, for over-night and first session of day eight was given. In the assignment a hypothetical country, Romanovia (said to represent a real situation) was said to be in crisis and the groups were required to restructure agriculture and food.

Operationally, they were required to select a permanent secretary and a rapporteur. The rest members were to act as principal advisers to the permanent secretary. The mandate of the groups was to improve provision of agricultural services with an aim of developing new income sources in agriculture and its related industries. They were expected to pursue the mandate with 25% fewer resources than used in 1992 and had to cut the budget by 25% and reduce the staff in proportion to reduction in programme expenses.

Group assignment given on day seven continued. Reporting was done during session two. All groups had assessed their country's economy and reduced their budgets drastically. A summary of the exercise, indicating that the crisis was solved by reducing staff by 17.4%, budget by 26.9%. Staff was reduced by 100 and 30 new positions created. Surprisingly, the hypothetical country, which many participants thought was in Africa was the province of Saskatchewan in Canada.

Group three and four presented their policy recommendations for the hypothetical country in crisis, not presented during session two. The plenary went through another example of data backed guesswork of a newly independent country in crisis. Participants missed the guess work and to their surprise the country was U.S.A. in 1786. In the evening participants concentrated on computer lab exercises

#### **6: PAM and Kenyan Agriculture**

PAM team's experience with PAM in the Kenyan Agricultural Sector was presented. It was noted that prior to the implementation of SAPs, most international financiers of the sector, gave funds which were not appropriately used. A high percentage of money disbursed were channelled to support overall government budget and not agriculture. Due to this, the World Bank insisted that the government had to come up with a long term programme.

In response to the World Bank's condition, the government

commissioned a number of task forces in different sectors of agriculture. PAM is a product of the task forces and has been examining the area of food and cash crops. About 15 commodities have been researched and analysed. The case of maize was used to illustrate the work of the PAM team.

Until 1970, there was increase of maize production due to hybrid varieties and subdivision of land. With intensification of land, expansion of maize was becoming difficult. Additionally, working capital was a constraint in maize production and there is often an impasse during good and bad year. Maize was only sufficient during good year and was in many cases imported during bad year.

In future, demand is expected to outstrip supply more consistently; unless technology and changes in policy towards the sector was addressed. In the area of policy, farmers have been active but policies have not accommodated them. An example of storage was given, noting that farmers have on-farm storage and yet no policy has focused on that potential. This is despite acknowledgment that storage is a problem which even the NCPB can not manage.

In examining farm-level issues, it was noted that technological constraints are hampering agriculture. This was attributed to inadequate funding of research and sluggish adoption of improved methods. It was pointed out that setting of priorities within research institutions should be encouraged and stakeholders involved. In addressing the problem of certification, multiplication and distribution of

planting material, the involvement of the private sector was called for. The issue of linking research, extension and farmers as well as availability of credit was recommended.

On marketing and processing issues; infrastructure, liberalization, privatization and market reform should be looked into. It was noted that in the maize sector, both public and private sector have roles to play. Overall, the PAM team ranked credit followed by liberalization, privatization and market reform as the main priority. Planting materials, infrastructure and technology followed respectively.

It was observed that PAM had contributed to the policy debate, especially on maize movement. PAM information had been used by donors to debate with the government.

PAM case studies were presented, followed by presentation of the preliminary work on the commodities the groups intended to handle. Each of the four groups described the commodity system of their interest and defined the policy issues they intended to focus on. The four commodity systems isolated were cotton, bananas, green beans, maize and french beans.

### **8: Rural Financial Institutions**

The role of rural financial institutions was discussed. It was noted that the institutions are involved in credit, savings and insurance; mobilization and allocation of capital and pooling of risks. The types of risks involved in rural financing were

default in payments, price risk, liquidity risk and covariate risks.

Market failures with respect to rural financial institutions included; asymmetric information, high transactions costs, credit rationing due to lack of collateral and raising interest rates leading to adverse selection of high-risk borrowers. Non-market failures were listed as political intervention and favouritism, problems in enforcing loan contracts and poor local management.

The poor record of rural financial institutions worldwide was acknowledged. Their supply driven nature, subsidized interest rates, regressive nature, fungibility, poor loan collection rates and high budgetary costs for governments was noted. The emphasis on development institutions which cut transactions costs, reduce risk of loan default and spread covariate risks across sectors and regions was viewed as relevant.

The need to have linkage between liberalised formal sector and member-based institutions such as savings and credit groups or cooperatives was noted. Common characteristics of member-based institutions were indicated as reduced asymmetric information problems, cutting of transactions costs and having incentives and sanctions to obey contracts.

A live case on Indonesian People's Bank was presented. Participants were expected to break into groups, appoint a spokes-person and a rapporteur; and analyse the problems of and find solutions for the Indonesian People's Bank.

They were to deal with both market and non-market failures.

Later groups reported on their deliberations on the live case of Indonesian People's Bank. After presentation by all groups, the plenary was given the actual results of the Indonesian People's Bank. The government created the BUD (General Rural Credit Programme) in 1984. US\$ 100 million was used as equity contribution to each village branch and as liquidity credit. The internal financial management system was reformed and the village institutions utilized to ensure the appropriate allocation of credit. New financial policies were also instituted.



**CLOSING SPEECH****SPEECH BY THE DIRECTOR OF AGRICULTURE,  
DR. MATHIAS W. OGGEMA, READ BY MR. ENOSH  
O. WANGA, SDDA/MOALD & M.**

Ladies and Gentlemen.

It is indeed a great pleasure for me to have been invited here to officiate in the closing ceremony of this workshop on agricultural sector management and policy analysis: creating an environment for growth and development at the district level.

As may have been mentioned during the formal opening of this workshop, the government attaches high priority in the development of the agricultural sector as it is the engine of growth of the Kenyan economy. One aspect of development of the sector is the human resource development. Skilled manpower in both Technical, Administration and Management aspects are essential for creating an enabling environment for the development and growth of the agricultural sector especially at the district level. The Ministry attaches great importance to this type of training especially at this time when the economy including the Agricultural sector is undergoing structural transformation.

I am glad to note that during the last ten days of your training, you have had an opportunity to be introduced and exposed to various analytical tools and policy instruments of agricultural sector management. These tools will be useful to you in the course of your duties as District Agricultural Managers. The Policy Analysis Matrix will assist you to understand and interpret the circumstances under which the government implements certain fiscal measures to enhance agricultural production and consumption. You now understand the reasons behind the government imposing tariffs on imports, compensate exports or even subsidise some sub-sectors of the agricultural sector. You will be expected to convey the same information to the farmers, the consumers, your staff and the administrators at the districts level. The Kenyan Agricultural Sector is greatly influenced by uncertainties of weather. During the times of drought the sector experiences shortages in production, while at times of good weather, the sector experiences surplus production in various commodities. Being a partner of the International Trading Community, the performance of Kenya's agriculture is also influenced by production and consumption trends of agricultural commodities in the world market. And especially at this era of trade liberalisation. Under these circumstances, and although the government is committed to the principles of privatisation and liberalisation of the economy, some kind of policy intervention will be called for. I am certain that with the training you have had you will now be able to explain such policy decisions.

The Ministry, as you are aware, is currently being

restructured with a view to identify strategic functions to be performed by the Ministry, and the Non-Strategic functions to be handed over to the private sector. Some functions which are considered to be of "Public Good" will still remain with the Ministry but will be commercialised i.e. full cost recovery. Public enterprises within the Agricultural Sector such as sugar factories, cotton ginneries, etc. are also being sold to the private sector so as to enhance their efficiency in their operation. The Ministry will, however, maintain a regulatory role over these concerns. I believe with your introduction to public sector and institutional economics as well as the efficient provision of agricultural research and extension services, you now have a greater insight into the principles being taken into consideration in the restructuring process.

In this new approach the role of DOAs has to change. They will have to be managers of resources and delivery systems, promoters of agriculture as well as intermediaries between policy research and extension. This entails coordination of agriculture and other rural development activities, essentially, being a sales person and a motivator.

You were also briefed on the marketing of agricultural products in Kenya. The marketing of agricultural products plays a significant role in influencing the level of production of agricultural commodities especially the cereal sub-sector. A lot of factors inhibit proper marketing of such commodities. In the International scene. Downturn in world economic activities leading to low consumption, low demand and hence low prices of marketed agricultural

commodities. Locally, lack of infrastructural facilities, credit facilities, poor information dissemination, social and cultural practices all contribute to poor marketing of our agricultural products. This in turn affects the earning capacity of the farmers and hence the production levels. Recently, as you are aware, the Ministry sent out a team of officers to the field to study the situation on the ground and to come up with concrete proposals. These studies covered all the subsectors of the agricultural sector and their recommendations are being studied with a view to making policy decisions that will improve the situation.

At the macro level you were introduced to agricultural pricing policies. I am sure you were able to learn some of the drawbacks of liberalisation process in terms of the relationship between the producer, the trader and the consumer. The reform process does assume the existence of a well developed market system and well prepared private sector. However, in the Kenyan experience, the private sector is not quite willing to engage in certain businesses due to uncertainties in policy direction, the poor status of some of the state enterprises being sold, lack of adequate investment capital and unfavourable competition from multinationals. Mr. Chairman, it is the hope of the government to overcome all these bottlenecks and to create a level playing ground for all players in the game of trade under a liberalised environment.

I hope this workshop has provided you with an opportunity to know and understand the various policy changes that are being implemented within the sector. It has also provided

you with an opportunity to review the effectiveness of, and the means for analysing alternative policy option for stimulating the agricultural sector to greater productivity. It has also enhanced your capacity to analyze and interpret the policy impact as well as provide feedback to the policy formulators.

Mr. Chairman, Ladies and Gentlement I wish to thank once again the Institute for Development Studies, University of Nairobi, for having organised this workshop, and for the financial and material contribution towards the succes of this workshop. I would also wish to thank the Economic Development Institute of the World Bank for their continued assistance in organising the workshops. I hope this assistance will continue in future.

With these remarks, Mr. Chairman, Ladies and Gentlemen I now wish to declare this workshop on Agricultural Sector Management and Policy Analysis formally closed.

Thank you.

**SECTION V****SEMINAR RECOMMENDATIONS****5.0.0 Recommendations**

Kenya's agricultural sector is undergoing structural adjustment transformation geared towards improving the performance of the sector in respect to production, processing, pricing and marketing of various agricultural commodities and the efficient delivery of services within the sector.

The district agricultural staff are entrusted with the responsibility of making sure that the farmers are enlightened of these policy changes. To accomplish this, it is important that the district staff and other key actors are well versed with all the reform measures the government is undertaking within the agricultural sector. In turn they should be able to educate the farmers on the same. During the seminar, a number of observations and recommendations were made;

- There was lack of consultation and poor co-ordination of different ministries/agencies involved in agricultural production, processing and marketing.

**Recommendation 1**

Co-ordination of all ministries and agencies at all levels especially at district level should be improved.

- Rural infrastructure is important in the promotion of intensive use of land in high potential areas.

**Recommendation 2**

The district staff and farmers should participate in the identification of infrastructure needs in the rural areas.

- Land sizes continue to diminish due to increased population and employment opportunities lies in the industries that serve agriculture other than agricultural production itself.

**Recommendation 3**

Special attention should be given in the development of agro-based industries in the country.

- On the provision of inputs.

**Recommendation 4**

Financial returns to fertilizer use should be increased and extension services strengthened. Other measures should include; promotion of high analysis fertilizer, avoidance of late payments, research on smallholder production, promotion of fertilizer use through the media and review of fertilizer legislation.

- There have been persistent complains over

quality of seed. This was attributed to ; multiplication being contracted to unqualified farmers, lack of inspection fields, shortage of packaging materials, re-packaging without proper labels, sale of rejected uncertified seeds and inadequately equipped NSQCS among others.

#### **Recommendations 5**

There should be establishment of more seed companies, review of KSC, introduction of certification fees, strengthening of research programmes, credit to stockists, establishment of a National Seed Reserve, effective legislation, improvement of infrastructure and intensified extension service.

Important changes in the agricultural sector were noted and problem areas indicated as; the unreadiness of the private sector to take up agricultural services, remote districts not receiving attention, preference of imports to locally produced goods, dumping of cheap produce, imported contaminated products, exploitation of loopholes and flooding the market.

#### **Recommendation 6**

It was recommended that producers and the private



sector should be encouraged to complement government's efforts, the financial institutions should support the industry and the Government to manage the transition period. Local competition should be facilitated and quality output services strengthened.

In examining farm-level issues, it was noted that technological constraints are hampering agriculture. This was attributed to inadequate funding of research and sluggish adoption of improved methods. The setting of priorities within research should be encouraged and stakeholders involved. In addressing the problem of certification, multiplication and distribution of planting material, the involvement of the private sector was called for.

#### **Recommendation 7**

Research, extension and farmers should be linked and availability of credit ensured.

Taking the above into consideration it was further recommended that there was need;

- i to train the remaining district staff i.e. DLPOs and DVOs so as to have the knowledge gained by DAOs who have gone through the

programme.

- ii to avail major policy documents to the district staff.
- iii for the district staff who are entrusted with the responsibility of communicating on issues relating to policy to effectively participate in policy formulation.
- iv to change the role of district staff. The DLPOs, DVOs and DAOs have to be managers of resources and delivery systems, promoters of agriculture as well as intermediaries between policy, research and extension. This will entail co-ordination of agriculture and other rural development activities essentially being a sales persons and motivators.

## APPENDIX 1

## FINAL PROGRAM

Date and Time	Topic	Resources
Tuesday July 18 8:30-10:30	Registration Seminar objectives and program Opening Session Welcoming and keynote addresses	Ben Okech and Chris Gerrard (Seminar Co-directors) Chairperson, Prof. P. O. Alila, Director, IDS Chris Gerrard, EDI Professor Francis Gichaga, Vice-Chancellor, University of Nairobi Eng. Peter Wambura, Permanent Secretary, MOALDM
11:00-12:30	Participants' introduction	Chris Gerrard and Fred Odok
12:30-14:00	L u n c h	
14:00-15:30	Overview of Kenya's agricultural sector: Historical perspectives and future expectations	Ms. Margaret Chemingeche, Head, Planning Division, MOALDM
16:00-17:30	Working group exercise: Obstacles to the implementation of national agricultural policy at the district level	Chris Gerrard and working group
19:00-21:00	Opening reception for participants and resource persons	

Date and Time	Topic	Resources
Wednesday July 19 9:00-10:30	"Agricultural policy analysis: An overview of policy issues and approaches to policy issues"	Chris Gerrard
11:00-12:30	"A macroeconomic framework for agricultural policy analysis in sub-Saharan Africa"	Chris Gerrard Schiff and Valdes, <i>The Plundering of Agriculture in Developing Countries</i>
12:30-14:00	L u n c h	
14:00-15:30	"Establishing Macroeconomic and agricultural pricing policies: An exercise in small-group decision- making"	Chris Gerrard
16:00-17:30	Working group exercise (cont.)	Working groups
Thursday July 20 9:00-10:30	Presentation of small-group decisions and plenary discussion	Chris Gerrard presiding
11:00-12:30	Historical experience with macroeconomic policy in sub-Saharan Africa	Chris Gerrard Little <i>et al. Booms, Crisis, and Adjustment</i>
12:30-14:00	L u n c h	
14:00-15:30	"Price discovery institutions in the marketing and processing of agricultural commodities in Kenya	Dr. A.M. Muthee, Senior Policy Adviser, MOALDM
16:00-17:30	Public enterprise reform in less developed and transition economies Public enterprise reform in Ghana and Ethiopia	Chris Gerrard World Bank, <i>Bureaucrats in Business</i> Kwame Nyanteng and Ghebre-Medhin Belay
17:30-19:30	Computer lab: Introduction to PAM computer spreadsheets	Daniel Sellen and Gem Argwings-Kodhek

Date and Time	Topic	Resources
Friday July 21 9:00-10:30	Introduction to the Policy Analysis Matrix (PAM) as a framework for organizing information at the micro-economic level	Roger Fox Monke and Pearson, <i>The PAM for Agricultural Development</i>
11:00-12:30	Introduction to PAM (cont )  PAM exercise #1	Roger Fox  Daniel Sellen
12:30-14:00	L u n c h	
14:00-15:30	PAM exercise #2	Daniel Sellen and Working groups
16:00-17:30	Kenya PAM example  PAM assignments	Gem Argwings-Kodhek  Daniel Sellen
Saturday July 22	Field trip to Machakos district	Fred Odok
Sunday July 23 14:00-16:30	Discussion of PAM case study proposals	Daniel Sellen (Pool area)
Monday July 24 9:00-10:30	"The provision of agricultural inputs in Kenya	Dr. W.O. Kosura, Dept. of Agricultural Economics, University of Nairobi
11:00-12:30	"Introduction to public sector and Institutional economics"	Chris Gerrard
12:30-14:00	L u n c h	

14:00-15:30	"Introduction to Public sector and Institutional economics" (cont)	Chris Gerrard
Friday July 29 14:00-15:30	PS&IE exercise #1: "The efficient provision of agricultural research services in Kenya"	Chris Gerrard and Working groups

12:30-14:00	Lunch	14:00-15:30
14:00-15:30	Introduction to Public sector and Institutional economics	Chris Gerrard
15:30-17:00	Working group exercise	Working groups
Friday July 30 8:00-10:00	Introduction to Public sector and Institutional economics	Chris Gerrard
11:00-12:30	Historical perspective on agricultural research in Kenya	Chris Gerrard
12:30-14:00	Lunch	14:00-15:30
14:00-15:30	Public provision of agricultural research in Kenya	Chris Gerrard
15:30-17:00	Public provision of agricultural research in Kenya	Chris Gerrard
17:30-19:30	Conclude with introduction to PAN program	David Bellon and Chris Argeringer-Kerbel

Date and Time	Topic	Resources
16:00-17:30	Working group presentations and plenary discussion  PS&IE exercise #2: "Restructuring the Ministry of Agriculture in the Republic of Romania"	Chris Gerrard presiding  Chris Gerrard
Tuesday July 25 9:00-10:30	PS&IE exercise #2 (cont.)	Working groups
11:00-12:30	Working group presentations and plenary discussion	Chris Gerrard presiding
12:30-14:00	L u n c h	
14:00-15:30	"Agricultural research and extension in Kenya"	Dr. W. Oggema, A/Director Agriculture Division, MOALDM
16:00-17:30	PS&IE exercise #2: Working group presentation and plenary discussion (cont.)	Chris Gerrard presiding
17:30-19:30	Computer lab: Use of "Quick PAM"	Daniel Sellen
Wednesday July 26 9:00-10:30	PAM and Kenyan agricultural Policy	Gem Argwings-Kodhek
11:00-12:30	Group presentations: PAM policy issues and commodity systems	Daniel Sellen, Roger Fox and working groups
12:30-14:00	L u n c h	
14:00-15:30	PAM working groups: Data assembly	Sellen and Argwings-Kodhek
16:00-17:30	Rural Financial Institutions PS&IE exercise #3: "The Indonesian People's Bank"	Chris Gerrard Chris Gerrard and working groups

Date and Time	Topic	Resources
Thursday July 27 9:00-10:30	Working group presentation and plenary discussion	Chris Gerrard presiding
	Communicating PAM results	Roger Fox
11:00-12:30	PAM working groups: Data entry (computer lab)	Fox, Sellen and Argwings- Kodhek
12:30-14:00	L u n c h	
14:00-17:30	PAM working groups: Analysis and preparation of case study presentations	Fox, Sellen and Argwings- Kodhek
19:00-21:00	Seminar dinner for participants, resource persons, and guests.	Master of Ceremonies: Maurice Awiti Introductions by Fred Odok, Ben Okech, and Chris Gerrard
Friday July 28 9:00-10:30	PAM working groups: Presentation of case studies	Fox, Sellen and Argwings- Kodhek
	Concluding comments on PAM	Roger Fox
11:00-12:30	Completion of seminar evaluation	Chris Gerrard
	Official closing of the seminar Presentation of certificates and closing remarks	Chairperson, Frederic Odok Prof. P.O. Alila, IDS Chris Gerrard, EDI Mr. E.O. Wanga, Senior Deputy Director, MOALDM
	Vote of thanks	Participant representatives
12:30-14:00	L u n c h	
Afternoon	Participant departures	



## APPENDIX 2

PARTICIPANTSDISTRICT

1. Onyango, Tom Adede-----	Kwale
2. Zakayo Mekenye Magara---	Mt. Elgon
3. Nehemiah C.A. Chepkwony--	Turkana
4. Kibe Muturi Gichuhi-----	Nyandarua
5. Anthony Chemweno-----	Trans Nzoia
6. Albert O. Okongo-----	Basuba
7. D.M. Kangesa -----	Nyamira
8. John Kipkorir Meli-----	Bomet
9. Modest M. Muthembwa-----	Isiolo
10. Tom Opiyo Bonyo-----	West Pokot
11. Zachariah Mairura Kyondi-	Kuria
12. Phoebe A. Odhiambo (Mrs)-	Mombasa
13. Henry Omale Muliro--	Taita Taveta
14. Jacob N. Pwanali-----	Nyambene
15. J.M. Otieno-Sewe-----	Vihiga
16. Nthiga, John Nyaga---	Meru
17. Lilian M. Koech-----	Kericho
18. Hassan A. Mohamed----	Wajir
19. Jama Ali Warsame-----	Garissa
20. Muchoki John C.Thuku-	Tana River
21. Asol Richard Nyamira-	Kisumu
22. Andrew Abiero Dibo---	Siaya
23. W.N.M. Nyayiera-----	Homa Bay
24. Daniel K. M'Reri---	Tharaka Nithi
25. Maling'a J.K. -----	Marakwet
26. Benjamin K. Kemboy---	Keiyo

27. Samwel M. Maiko ---	Makueni
28. I.G. Imaita -----	Nakuru
29. Muia Muindi -----	
30. Toya, Ayuya Joshua --	Kakamega
31. C.C. Muyesu -----	Trans Mara
32. Mrs. Mary W. Mugo ---	Nairobi
33. G.P. Ondanje -----	Bungoma
34. G.K. Melli -----	Uasin Gishu

### APPENDIX 3

#### WORKSHOP MANAGEMENT AND SUPPORT STAFF COMMITTEE MEMBERS

1. Prof. Patrick O. Alila	Director IDS
2. Dr. Chris Gerrard	Representative EDI
3. Dr. Benjamin A. Okech	Senior Research Fellow IDS/Workshop Coordinator
4. Mr. Fredrick Odok	Head Training Division of MOALDM/Co-Coordinator
5. Dr. Winnie Mitullah	Research Fellow IDS
6. Dr. Maurice Awiti	Lecturer Department Economics U.O.N.

7. Mr. F.K. Kimata Ministry of Agriculture

8. Mr. N.I. Sabwa Ministry of Agriculture

9. Mr. James Gatei Ministry of Agriculture

#### **SUPPORT STAFF**

1. Mr. Hesbon Nyagowa I D S S e n i o r  
A d m i n i s t r a t i v e  
A s s i s t a n t / M e m b e r  
a n d S e c r e t a r y t o  
t h e C o m m i t t e e

2. Mr. Joshua Randiki IDS Accountant

3. Mr. Samson Otieno IDS Secretary

4. Ms. Judith Ndirangu IDS Secretary

5. Mr. Elijah Mugo IDS Driver

6. Mr. Oscar Mbui K. M i n i s t r y o f  
A g r i c u l t u r e D r i v e r

**RESOURCE PERSONS**

1. Dr. Willis Oluoch-Kosura Senior Lecturer,  
Department of Agricultural  
Economics
2. Dr. Oggema W. A g . D i r e c t o r ,  
Ministry of Agriculture
3. Mrs. Margaret Chemengich Head Planning  
Division of MOALDM
4. Dr. C. Gem Argwings-Kodhek PAM Kenya
5. Dr. A.M. Muthee MOALDM
6. Dr. Chris Gerrard EDI/World Bank
7. Dr. Roger Fox EDI/World Bank
8. Dr. Daniel Sellen EDI/World Bank

